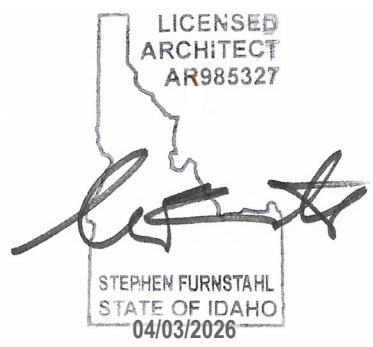
PROJECT MANUAL

POTTERY BARN

PB VILLAGE AT MERIDIAN
Meridian, ID 83646
47WSMX.2091.000

Issue for Construction
February 19,2026

Architect Signature/Seal	Engineer Signature/Seal



ARCHITECT
IA Interior Architects
100 Broadway 12th Floor
New York City, NY 10005

PROJECT MANUAL

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NOTE: REFER TO STRUCTURAL DRAWINGS FOR MORE INFORMATION

NOTE: REFER TO MEP DRAWINGS FOR MORE INFORMATION

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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 other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Project requirements.
   2. Type of Contract.
   3. Work covered by Contract Documents.
   4. Other work.
   5. Permits
   6. Access to site.
   7. Coordination with occupants.
   8. Occupancy requirements.
   9. Work restrictions.
   10. Specification and drawing conventions.

B. Related Requirements:

1.3 PROJECT REQUIREMENTS

A. Dimensions: Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings. When a dimension is required, request information from Architect.

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

1.4 PROJECT INFORMATION

A. Project Identification: PB Village at Meridian .
   1. Project Location: 3300 E Longwing Lane, Meridian, ID 83646.

B. Owner: William-Sonoma, Inc..
   1. Owner's Representative: Jimmy Castellucci, 777 Davis Street, San Francisco, CA 94111, 415.823.9553, jcastellucci@wsgc.com.

C. Construction Manager/Owner's Project Manager: Genovese Construction Management.
   1. CM/Owner's Representative: Tracy Genovese, 33 Merced Ave., San Anselmo, CA 94960, 415.717.5870, tracy@genovesecm.com.

D. Landlord: Centercal Propoerties LLC.
   1. Landlord's Representative: David Gruenefeldt, 1600 E Franklin Ave, El Segundo, CA 90245, 310.563.6900, dgruenefeldt@centercal.com.

E. Architect: IA Interior Architects.
   1. Architect's Representative, Architect of Record (AoR): Stephen Furnstahl, 100 Broadway 12th Floor, New York City, NY 10005, 212.682.6909, s.furnstahl@interiorarchitects.com.
   2. Architect's Representative, Person of Contact (PoC): Ken Swoyer, 1001 Fourth Ave, Suite 3600, Seattle, WA 98154, 206.686.9648, k.swoyer@interiorachitects.com.

F. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:
   1. MEP Engineer: RTM Engineering Consultants.
      a. MEP Representative: Jessica Iversen, 3120 139th Ave. SE, Suite 500, Bellevue, WA 98005, jessica.iversen@rtmec.com.
   2. Structural Engineer: VLMK Engineering.
      a. Structural Representative: Zandin Burke, 3933 S Kelly Ave., Portland, OR 97239, 503.222.4453, zandinb@vlmk.com.

1.5 TYPE OF CONTRACT

A. Type of Contract: Project will be constructed under a single prime contract.

1.6 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work consists of interior construction, including but not limited to:
   1. First generation tenant improvement of an existing shell building with initial partition buildout by landlord under separate permit. Scope of work includes new finishes, new millwork, new partitions and related structural, mechanical, electrical and plumbing.

1.7 OTHER WORK

A. Separate Contract: Owner will award separate contracts for performance of certain construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract. These contracts will include the following:
   1. Security systems (Contractor to furnish and install empty conduits with a junction box where indicated on the Contract Documents).
   2. Information Technology, Data and Communication System (Contractor to furnish and install empty conduits with a junction box where indicated on the Contract Documents).
   3. Fixtures, furnishings, and equipment to the extent not identified in the Contract Documents. A separate Contract will be awarded by Tenant.
   4. Furniture: A separate Contract will be awarded by Tenant for the supply and installation of workstations, office furniture, loose furniture and conference room tables. Other furniture to be determined.
   5. Audio Visual systems (Contractor to furnish and install empty conduits with a junction box where indicated on the AV Contract Documents). A separate Contract will be awarded by Tenant for remainder of system.
   6. Graphics and Signage Work. A separate Contract will be awarded by Tenant for this work.
B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, and without interfering with or delaying work under this Contract.

1.8 PERMITS

A. Contractor shall secure and pay for all permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required.
B. If required by governmental authority, Owner will make application for permits and licenses using forms obtained and prepared by Contractor and with all costs paid by Contractor.

1.9 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
B. Access: At all times, provide Architect and Owner's representatives, easy and safe access to the Work wherever it is in preparation and progress. Provide such access so Architect may perform its functions.
C. Landlord's or Property Manager's Rules: Conform at all times to Landlord's and Property Manager's requirements for protection of plant, materials, equipment, and noise levels. A copy of Landlord's or Property Manager's rules (tenant work letter or lease requirements) will be furnished upon written request from Owner.
D. Use of Site: Confine operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents and do not unreasonably encumber the Site with materials or equipment.
   1. Driveways, Walkways and Entrances: Keep driveways parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

E. Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.10 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and existing buildings during entire 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.

B. Schedule use of premises for Work and coordinate construction operations with the Owner to allow for Owner occupancy.
   1. Schedule use of premises for Work and coordinate construction operations with the Owner to allow for use of site and premises by the public.
   2. Perform the Work during normal business hours only upon approval of the Owner.
   3. Perform demolition work after business hours or at such times as approved by Owner Demolition work includes, but is not limited to, sprinkler work, concrete saw cutting, spray painting, hammering, nailing, and similar work, which may cause noise, dust, or odors, thereby disturbing occupants.
   4. Keep premises orderly, clean and with a minimum of obstruction and inconvenience to the tenants and the public.
   5. Limit use of site to areas designated unless otherwise allowed by OwnerOwner in writing.
   6. Relocate stored products that interfere with public access, operations of the Owner or separate Contractor. If necessary, obtain and pay for additional storage or work areas needed for operations.
   7. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
   8. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.11 OCCUPANCY REQUIREMENTS

A. Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of the site, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of incomplete portions of the Work, nor shall it relieve the Contractor of its responsibility for completion of the Work in accordance with the Contract Documents.
   1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.

a. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of the site.
b. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of the site.

1.12 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
B. Contractor's Conduct on Premises: The Contractor and their employees shall behave in a respectful, courteous and safe manner. Abusive, harassing, and lewd behavior is prohibited. Music playing is prohibited. Alcohol, tobacco, and drug use is prohibited.
1. Comply with Owner's security requirements.
C. On-Site Work Hours: Limit work in the existing building to normal business working hours of Monday through Friday, unless otherwise indicated.
D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others.
E. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
1. Notify Owner not less than two days in advance of proposed disruptive operations.
F. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.
G. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.13 SPECIFICATION AND DRAWING CONVENTIONS

A. These specifications are a specialized form of technical writing edited from master specifications and contain deviations from traditional writing formats. Capitalization, underlining and bold print is only used to assist reader in finding information and no other meaning is implied.
B. Except where specifically indicated otherwise, the subject of all imperative statements is the Contractor.
C. Sections are generally numbered in conformance with Construction Specifications Institute Masterformat System. Numbering sequence is not consecutive. Refer to the Table of Contents for names and numbers of sections included in this Project.
D. Pages are numbered separately for each section. Each section is noted with "End of Section" to indicate the last page of a section.
E. 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.
3. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
F. 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: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and as scheduled on Drawings.

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)
END OF SECTION 01 10 00

SECTION 01 23 00 - ALTERNATES

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 administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
   2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, costs of related coordination, revisions, and adjustments.
   2. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

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 administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 01 23 00 - Alternates for products selected under an alternate.
2. Section 01 33 00 - Submittal Procedures for submittal requirements.
3. Section 01 60 00 - Product Requirements for requirements for submitting comparable product submittals for products by listed manufacturers.
4. Divisions 02 through 32 Sections for specific requirements and limitations for substitutions.
5. Section 09 22 16 – Non Structural Metal Framing for EQ studs.

1.3 DEFINITIONS

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

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

B. Refer to Section 01 60 00 - Product Requirements for additional definitions.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit searchable pdf file with documentation and attachments for each substitution request. Provide 3 copies of samples and, where necessary, 3 copies of range samples per requirements in Section 01 33 00 - Submittal Procedures.

1. Substitution Request Form: Use facsimile of form provided in Project Manual.
2. Documentation: Provide documentation as specified herein with each request.

1.5 QUALITY ASSURANCE

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

1.6 COORDINATION WITH OTHER WORK

A. Coordination: Revise or adjust affected work as necessary to integrate work of approved substitutions.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

A. General: Any proposed substitution must maintain the quality standards established by the Contract Documents for the specified product without any detrimental effect to Owner.

1. Substitutions require prior review and acceptance by Architect per process specified herein. Substitutions shall be submitted per procedures specified herein and shall not be submitted as part of a submittal.
    a. Substitutions submitted as a submittal prior to acceptance shall be rejected and returned to Contractor without action.
2. In instances of dispute as to whether any substitution proposed by Contractor is acceptable, the judgment of Architect shall govern. The burden of proof rests solely with Contractor to show compliance and acceptability of proposed substitutions.
    a. Submit complete documentation for substitution as specified herein. Incomplete substitution requests will be returned to Contractor without action.

3. If substitution is accepted by Architect, Contractor shall submit required submittals for that portion of the Work per submittal procedures in Section 01 33 00 - Submittal Procedures.
4. Contractor shall address impact on Submittal Schedule and Contractor's Construction Schedule and shall accept schedule changes without change in time or cost to Owner.
5. Acceptable substitutions shall comply with all requirements in the Contract Documents including those within individual specification sections and in Section 01 60 00 - Product Requirements except where deviations have been accepted in writing by Architect. Deviations not pointed out by Contractor are not accepted.

B. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
   1. Conditions: Architect will consider Contractor's request for substitution for cause only when the following conditions are satisfied and will return requests without action, except to record noncompliance if the following conditions are not satisfied.
      a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, maintenance service or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, and similar considerations. Claims for additional costs related to the accepted substitution are waived.
      b. Requested substitution does not require revisions to the Contract Documents that are extensive, change design intent or are unacceptable to Architect.
      c. Requested substitution is consistent with the Contract Documents and will produce indicated results with no adverse effects on other trades.
      d. Substitution request is fully documented and properly submitted.
      e. Requested substitution will not unnecessarily adversely affect Contractor's Construction Schedule.
      f. Requested substitution has received necessary approvals of authorities having jurisdiction.
      g. Requested substitution is compatible with other portions of the Work.
      h. Requested substitution has been coordinated with other portions of the Work.
      i. Requested substitution provides equal or better than specified warranty.
      j. If requested substitution involves other work, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to providers of other work. This includes both the contractor and all affected subcontractors.

C. Substitutions for Convenience: Not allowed.

D. Change in Project Condition as Justification for Request - Extenuating circumstances as follows:
   1. Product is no longer manufactured.
   2. Product is not available due to a strike, lockout or bankruptcy.
   3. Product is not available due to an Act of God.
   4. Specified product is identified as incompatible or inappropriate for Project.
   5. Specified item fails to comply with building code requirements.
   6. Manufacturer or fabricator declares a specified product to be unsuitable for use intended and refuses to warrant its installation.
   7. Requested substitution will provide Owner with a cost savings without affecting desired effect of specified product.

2.2 SUBSTITUTION REQUEST PROCEDURES

A. Substitution Request Procedures: If substitution request is justified per preceding article, submit each substitution request per the following substitution procedures:
   1. Limit each request to one proposed substitution.

2. Substitution Request Form: Use Form attached at end of section. Complete all lines. If a line is not applicable, indicate “N/A." Identify product to be replaced and product to be substituted. Include Specification Section number, title and paragraph and Drawing numbers and titles.
3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    a. Statement indicating why specified material or product cannot be provided.
    b. Coordination information including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitution with those of product specified. Include annotated copy of applicable Specification Section addressing each item in section in left hand margin stating whether proposed substitution complies with requirement or deviates. Specifically indicate deviations and impact on Work.
        1) Significant qualities may include attributes such as performance, weight, deflection, tolerances, size, durability, visual effect, warranties, and specific features and requirements indicated.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples showing full range of colors including submission for specific finish to match Architect's control sample or selected product.
        1) Where color or finish does not match Architect's control sample or selected product, provide custom color or finish.
        2) When, due to the nature of the material, the material is available in a range of colors, i.e., natural stone, brick, and tile, Contractor shall submit the full available range of colors for that material for Architect's review.
        3) When material is available with varying characteristics, Contractor shall submit a range sample depicting the applicable range proposed for this project as specified in Section 01 33 00 - Submittal Procedures.
        4) Provide photographs of quarried materials showing proposed selection.
    f. Certificates and qualification data, where applicable or requested.
    g. List of similar installations for completed projects with project names and addresses and names and addresses of Architect and Owner.
    h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    i. Research/evaluation reports from model code organization acceptable to authorities having jurisdiction showing compliance with building code in effect for Project.
    j. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on overall Contract Time. If specified product or method of construction cannot be provided within Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    k. Cost information, including proposal of change, if any, to Contract Sum.
    l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
    m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
    n. Other information as necessary to assist evaluation.

B. Architect Review:

1. Architect will review Contractor's written request for substitution when the conditions noted previously under “Substitution for Cause" are satisfied.
2. If those conditions are not satisfied, Architect will return request to Contractor, without recommendation to Owner, except to record noncompliance with those requirements:
3. If necessary, Architect will request additional documentation for evaluation within 5 days of receipt of a substitution request.

C. Architect will notify Contractor of acceptance or rejection of proposed substitution within 10 days of receipt of request, or 5 days of receipt of additional documentation, whichever is later. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.
D. Contractor shall issue a Proposed Change Order documenting acceptance of substitution.
E. Contractor may proceed with using substitution in lieu of the product specified if Architect does not issue a decision on use of a proposed substitution within time allocated. Contractor shall proceed with submitting Shop Drawings, Samples and Product Data for the proposed product for review by Architect.
F. Submission of a Shop Drawing, Sample or Product Data indicating proposed variance from Contract Documents is not a proper submission and does not constitute a Substitution Request. Approval of a Shop Drawing, Sample or Product Data indicating a proposed variance from the Contract Documents does not constitute approval of a Substitution.

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 25 00

Owner:		Project Name:	
		Location:	
		Date:	
Attn:		Substitution No:	
From:			

Contractor requests for substitutions will be considered upon receipt of this completed substitution request form and all
required supporting documentation. Substitutions made without completion of this form and the Architect's approval will be considered non-compliant work. The Contractor proposes the following substitution in accordance with the requirements of
the Contract Documents.

Specified Product / Material / Equipment:

Substitution Description:

IA Drawing References:

IA Specification References:

Deduct $ from Base Bid if Substitution is selected.

Add $ to Base Bid if substitution is selected.

Deduct days calendar

Add days to base bid if substitution is selected.

Performance Evaluation

☐ New Product
☐ 2 – 5 Years old
☐ 5 – 10 years old
☐ More than 10 years old
☐ Product / Material Performance & Test Data Attached
☐ Project(s) where last used (Include date(s)

Differences between proposed and specified Product/Material:

Certification

The undersigned certifies that:

1. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product or material.
2. Same warranty will be furnished for the proposed substitution as for the specified product or material.
3. Same maintenance service and source of replacement parts, as applicable, are available.
4. Proposed substitution will have no adverse affect on other trades and will not affect or delay progress schedule.
5. Cost data as stated above is complete. Claims for additional cost related to accepted substitution which may subsequently became apparent, are to be waived.
6. Proposed substitution does not affect dimensions and functional clearances.
7. Coordination, installation, and changes in the work as necessary for accepted substitution will be complete in all respects.
8. Proposed substitution change will not lengthen contract time.

Submitted by

Signed by

Date

Firm

Phone

Address

Email

Attachments

A/E's Review and Recommendation

☐ Substitution approved. Prepare submittals per Spec Section 01 33 00 after award

☐ Substitution Rejected - Resubmit with additional information requested

☐ Substitution Rejected - Use specified materials

☐ Substitution Rejected - Received too late- Use specified materials

Signature

Typed Name of Signer:
Typed Title of Signer:
Date:

Owner's Review and Action

☐ Substitution Approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Process. Prepare Change Order.

☐ Substitution Approved as Noted – Make submittals in accordance with Specification Section 01 25 00 Substitution Process. Prepare Change Order.

☐ Substitution Rejected - Use specified materials

Signature

Typed Name of Signer:
Typed Title of Signer:
Date:

Additional Comments:

☐ Contractor ☐ Subcontractor
☐ Supplier / Manufacturer ☐ Building Management ☐ Architect

Attachments:

Distribution:

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Administrative and supervisory personnel.
   2. Digital project management.
   3. Documentation from Architect
   4. Project coordination.
   5. Requests for Information (RFIs).
   6. Project meetings.
   7. Project tracking.
   8. Project reports.

1.2 INFORMATIONAL SUBMITTALS

A. Subcontract List: Provide a directory identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information:
   1. Name, address, and telephone number of subcontractor and suppliers.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 10 working days of starting construction operations, submit a list of key personnel assignments, including superintendent and personnel in attendance at site. Identify individuals and their duties and responsibilities; list addresses, office, and cell phone numbers and e-mail addresses. Provide same information for individuals assigned as alternates assigned to Project.
   1. Post copies of list in project meeting room and in temporary field office. Maintain copy on DPM as defined in this Section. Keep list current at all times.

1.3 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. Provide administrative and supervisory personnel as required for proper performance of the Work including a project manager and project superintendent with experience in the administration and supervision of construction similar to this Project. Contractor's project staff shall be experienced in the following as a minimum:
   1. Scheduling and sequencing of Work.
   2. Coordination of the Work.
   3. Temporary services and facilities.
   4. Submittal review.
   5. Selections for compatibility
   6. Installation of the Work.
   7. Protection of the Work
   8. Cutting and patching.
   9. Inspection and tests.

1.4 DIGITAL PROJECT MANAGEMENT

A. Digital Project Management (DPM): Provide, administer and use an Internet-based Project Management site acceptable to Owner and Architect for hosting, managing and archiving of Project communication and documentation until Final Completion. Contractor shall include cost of DPM in Contract Sum.
   1. As a minimum, use DPM for the following Project procedures:
      a. Project Directory: Compilation of Project personnel, including companies, names and contact information for Contractor, Owner, Architect, Consultants, subcontractors and other entities involved in Project.

b. Project Communications including creation, logging, tracking, and notification for RFIs, Submittals, Proposed Change Orders, and final Change Orders.
c. Creation and distribution of agendas and meeting minutes.
d. Distribution of Project Documentation including Contractor's Construction Schedules, Schedule of Values, Submittal Schedule and draft Applications for Payment.
e. Contract Document Management: Maintain locked pdf of issued documents including Drawings, Specifications, Modifications and Architectural Supplemental Instructions (ASIs).
f. Punch list items and status.

2. DPM shall allow for the following:
   a. Access control for each entity to limit entity's digital rights to create, modify, view, and print documents.
   b. Tracking of status of each Project Communication in real time, including log time and date when information is transmitted to DPM.
   c. Notifying addressees via email that documents are available on DPM.
   d. Securing items on DPM from changes once submitted to DPM.
3. DPM Users: Contractor and Architect are required to use DPM service. Subcontractors, suppliers, and Architect's consultants shall be permitted to use DPM service at no extra charge.
   a. Users of DPM service are required to have an email address, Internet access, and PDF review software able to mark up and apply electronic stamps to documents (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless this capability is provided by DPM service.
   b. Provide 7 user licenses for use of Owner, Architect, and Owner's and Architect's consultants.
   c. Provide training on DPM for Owner and Architect.

B. Provide Project required submittals and documentation to Owner and Architect in electronic, searchable pdf utilizing DPM.
1. Upload, transmit, log and store Project submittals and documentation on DPM in separate directories.
2. Notify Owner, Architect and other concerned parties via email using DPM capabilities when submittals and documentation has been uploaded.
3. Maintain submittals and documentation on DPM. Do not delete or modify documentation at any time. Name new documents by type of document and date of issuance so each has a separate unique title. Do not archive documentation until end of Project after transferring copy to Owner and Architect.
4. Transmit documents used for construction contract administration only through DPM. Do not use email or hard copies. If hard copies are required for meetings or at site, provide pdf of document on DPM.
   a. Emailed and hard copies of documents intended to use DPM service will not be reviewed.
      1) When hard copies are required, an electronic pdf file shall be posted to DPM in addition to hard copy being transmitted.
5. At Project Closeout, Architect will determine when to terminate DPM services in conjunction with Contractor and Owner.
6. Prior to terminating DPM, provide Owner and Architect with complete copy of files on DPM, in locked format to prevent further changes, on portable drive.
7. Acceptable DPM Services: One of the following Internet-based Project software packages under their current published licensing agreements:
   a. Autodesk Construction Cloud
   b. Procore Technologies, Inc.
   c. If not listed, one submittal for approval by Owner and Architect.

8. Contractor can propose their own standard service provided it meets the requirements herein for the DPM service and is acceptable to Architect and Owner.

C. Digital Project Documentation: Documents transmitted to Architect and Owner shall be in pdf files that are fully searchable. Scanned pdf documents are not acceptable.

1.5 DOCUMENTATION FROM ARCHITECT

A. The Contract Documents in pdf format will be provided to Contractor for the Project. Modifications will be provided in pdf format electronically when issued.
   1. Architect makes no representations as to the accuracy or completeness of pdf files as they relate to the Contract Drawings. Notify Architect of any errors or deficiencies.
   2. Maintain archived unmarked “locked" pdf of Contract Documents on DPM.
   3. When modifications are issued, add modifications and other issued documentation to maintain complete sets of Contract Documents.
   4. Contract Documents in pdf format are not to be used to determine dimensions, construction or existing conditions, or any other purpose then to provide an electronic document record of the Contract Documents.
      a. Do not use pdf files to determine dimensions by scaling, Where dimensioning information is required but not apparent, notify Architect and request additional information.

B. Markup of Contract Document Documentation:
   1. Maintain copy of Contract Documents at Project site complete with all modifications and request for information attached. Slip sheet documents so that all versions of issued documents are maintained with latest version on top.
   2. Utilize separate electronic pdf reference copy of Contract Documents on DPM with original content locked for reference but allowing mark-up electronically at site.

C. Architect will provide digital drawing files for Contractor's use in preparing Shop Drawings and Coordination Drawings.
   1. Prior to Architect transferring files, Contractor shall execute and return to Architect an Electronic File Transmittal Agreement (EFTA), on form available from Architect, signed and dated by responsible person representing Contractor.
   2. Architect will transfer files by method to be determined by Architect.
   3. Prior to Contractor transferring files to others, Contractor shall require entity to which Architect's digital drawing files are conveyed to abide by the terms and conditions of the EFTA, and only to use these files for this Project.
      a. Contractor shall not furnish copies of Architect's digital drawing files to any party that is not directly providing services for this Project.

D. Limitations of Usage of Architect's Files:
   1. Using Architect's digital drawing files does not relieved Contractor of the duty to fully comply with the Contract Documents, including and without limitation:
      a. Coordination of the Work with the Contract Documents, field conditions, and other work required by the Contract Documents.
      b. Preparation, coordination, checking, and detailing of shop drawings and/or other submittals, including measurements, dimensions and quantities of the Work.
   2. When modifying Architect's digital drawings for project-related services, Contractor and/or third party using Architect's digital drawing files shall add its company name, address, telephone number, and contact information to the title block of each sheet, and all references to Architect shall be removed from the digital drawing.
      a. Contractor shall be responsible for removing information not normally provided on Shop Drawings, including Architect's title block and any references to the Contract Documents from Architect's digital drawing files.
         1) Shop Drawings and other type submittals submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.

b. Contractor shall make changes to Architect's digital drawing files as necessary to coordinate with the Work, existing conditions, changes in the Contract Documents and as necessary to accurately depict the Work.

3. Architect makes no representations as to the accuracy or completeness of digital drawing files as they relate to the Contract Drawings.
   a. Contractor shall be solely responsible for verifying the accuracy of all results created with the use of Architect's digital drawing files.
4. In the event of ambiguity, discrepancy or conflict between information on electronic media and that in Contract Documents, the Contract Documents shall govern.
   a. Contractor is responsible for determining if any conflict exists.
   b. Promptly notify Architect of any discrepancy in digital drawing files.

E. Digital Drawing Files Available from Architect:
1. Digital drawing files of floor plans and reflected ceiling plans will be provided as dwg files in AutoCAD version to be determined by Architect.
2. At Contractor's written request, electronic copies of Project Building Information Model (BIM) Digital Data Files will be provided by Architect in Revit version to be determined by Architect.
3. Architect's digital drawing files will be provided by Architect once during the Project and will not be updated or maintained. Digital drawing files with modifications will not be issued.
4. At Contractor's written request, digital drawing files for engineering systems will be provided to Contractor for use in connection with this Project, per conditions indicated in Engineering specification sections, including signing required release form by Contractor and other entities provided the files. Engineering digital drawing files will be made available in software to be determined by engineer.

1.6 PROJECT COORDINATION

A. Coordinate construction operations included in the various sections of the Specifications to provide for proper installation, connection, and operation of the Work where portions depend on each other and to provide an efficient and orderly installation of each part of the Work.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, testing and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to parties involved, outlining special procedures required for coordination, including required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
2. Preparation of schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
   1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

1.7 COORDINATION OF THE WORK

A. Layout of the Work:
   1. Layout partitions for Architect's review and confirmation at the Project Site. Taking care to include furred walls, additional layers of gypsum board and materials with thickness and support, including wood paneling, stone paneling and stretched fabric wall systems.
   2. Mark locations of devices, including switches, outlets and data devices.
      a. Where devices are installed above a counter 42" AFF, coordinate with drawings and electrical engineer for device orientation.
   3. Mark panelized areas to indicate jointing and equal panel sizes to coordinate between the device placement and panel construction.
   4. Mark overhead items including lights and diffusers, access panels and ductwork. Where multiple systems intersect or overlap, provide coordination drawings.
   5. Architect will review and address any issues with dimensions.

B. Coordination drawings:
   1. Contractor shall prepare coordination drawings where careful coordination is needed for installation of Work fabricated by separate entities, or where limited space availability necessitates maximum utilization of space for efficient installation of different components.
      a. Where more than one trade is involved, provide Coordination Drawings that are drawn as a single file with each trade item or assembly on a separate layer.
      b. Provide coordination drawings per requirements in individual Sections and per requirements in Section 01 33 00 - Submittal Procedures.
      c. Refer to Divisions 21 through 28 for specific coordination drawing requirements for mechanical and electrical installations.
         1) Provide coordination drawings for Work in mechanical and electrical rooms and spaces where two or more entities provide the Work and separate shop drawings are insufficient to show coordination.
   2. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Use Drawings as basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
      d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
      e. Indicate required installation sequences.
      f. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
   3. Separate layers shall be prepared for the following areas of work.

a. Ductwork, diffuser locations, mechanical piping, mechanical equipment, plumbing and automatic temperature control.
b. Sprinkler System.
c. Electrical, lighting layouts, speaker layout, sound masking system, emergency lighting and exit signs.
d. Reflected ceiling plans.

4. Utilize graphic symbols as indicated on Contract Drawings.
5. Prepare final Coordination Drawings using uniform drawing size, no larger than original Contract Document drawing size.
6. Key and cross-reference Coordination Drawings to the Contract Drawings.
7. Detail complex areas of building systems at larger scales than that used for the typical floor plans to provide a clear representation of the work being described.
8. Submit Coordination Drawings on a composite floor-by-floor or area-by-area basis and include representations of the work of all trades for the particular floor or area being submitted.
9. Coordination Drawings shall bear the signed approval stamp of each trade and subcontractor to indicate that the final composite drawings accurately represent their work in coordination with other trades.
10. Processing Time: Refer to Section 01 33 00 - Submittal Procedures.
    a. Relocations of Work installed or modified prior to review of Coordination Drawings, shall be made without additional expense to Owner.
11. Organize coordination drawings as follows:
    a. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
    b. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
    c. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
    d. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
        1) Show openings and sleeve locations required in slabs, walls, beams and other structural elements, including openings necessary but not shown on structural drawings, and deviations in the location of holes shown on structural drawings.
        2) Specifically note or indicate relocated openings and new openings.
    e. Mechanical and Plumbing Work: Show the following:
        1) Sizes and bottom elevations of rectangular ductwork.
        2) Sizes and centerline elevations of round ductwork, piping and conduit runs.
        3) Acoustical lining in ductwork, flange dimensions, reinforcement and insulation for ductwork, as well as flange dimensions and insulation for all pipes and ducts.
        4) Sizes and bottom elevations of ductwork and piping support systems.
        5) Identify low, medium and high-pressure ductwork
        6) Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
        7) Orientation of equipment requiring electrical connections and indicate, where required, location of architectural access panels as may be required by code or to facilitate maintenance.

8) Fire-rated enclosures around ductwork.
9) Show double lines for ductwork and pipes 6 inches and larger. Ductwork shall be drawn with allowance for sound lining, insulation, connection flanges and reinforcing. Show single lines for electrical work, conduit runs and lines below sizes noted above. Draw busways to scale.

f. Electrical Work: Show the following:
1) Vertical and horizontal conduit runs, 1-1/4 inches in diameter and larger.
2) Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
3) Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
4) Location of pull boxes and junction boxes, dimensioned from column center lines.
5) Dimension the location of all major components from column centerlines and indicate, where required, code required clearances by cross-hatching.
6) Location of access panels to comply with code, or facilitate maintenance.

g. Fire-Protection System: Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

h. Architect will review coordination drawings to confirm that the Work is being coordinated, but not for details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

C. Coordination Drawings Submittal:
1. Provide Coordination Drawings in searchable pdf format at a scale of not less than 1/4"= 1'-0".
2. Represent each trade by a unique layer and color. Files shall contain a color key.
3. Submit Coordination Drawings via DPM to Architect per submittal requirements in Section 01 33 00 - Submittal Procedures.
4. Contractor's Review:
a. Review Coordination Drawings and check for compliance with the Contract Documents. Note corrections and field dimensions.
1) Highlight and encircle deviations from the Contract Documents. Note reason for deviation adjacent to each item.
b. Mark Coordination Drawing submittal with Contractor's approval stamp before submitting to Architect.
1) Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
5. Architect's Action:
a. Architect will review Coordination Drawing submittal as an Action Submittal per Section 01 33 00 - Submittal Procedures.
b. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

D. Record Drawings:
1. Maintain at project site an orderly file of Coordination Drawings available for reference during regular working hours to Owner, Architect and their representatives.
2. Keep Coordination Drawings up-to-date with revisions which reflect the actual construction. Owner reserves the right to check that Coordination Drawings have been updated at every Progress Meeting.
3. Submit Coordination Drawings to Architect for Owner at the completion of all work, corrected by Contractor, if so required, and returned to Architect prior to final payment to Contractor.

1.8 REQUESTS FOR INFORMATION (RFIS)

A. During bidding process or progress of the Work, Contractor may submit a request for interpretation of the Contract Documents, for clarification of a portion of the Contract Documents, to secure additional information regarding the Work due to site or unforeseen conditions, or to address discrepancies.
   1. Submit RFIs in a prompt manner to avoid delays in the Work.

B. Requests for Information (RFI) shall meet the following requirements:
   1. RFIs shall be originated by Contractor.
      a. RFI's from subcontractors or material suppliers shall be submitted through, reviewed by, and signed by Contractor prior to submittal to Architect.
         1) Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
   2. The number of RFIs shall be kept to a minimum by Contractor.
      a. Contractor shall carefully study Contract Documents to assure that requested information is not available therein.
         1) RFI's which request information available in Contract Documents will be deemed either improper or frivolous, and may be returned unanswered when the information is clear in the Contract Documents.
   3. RFIs shall be fully documented by Contractor including references to the Contract Documents with digital photos of plans and site conditions.
   4. RFIs shall clearly state reason for clarification or request including discrepancies and site conditions.
   5. RFIs issued to request clarification of layout shall include the full layout of the Work and Contractor suggested solution using drawings to scale to be submitted with RFI.
      a. RFI's that fail to include a suggested solution will be returned unanswered with a requirement that Contractor submit a complete request.
   6. RFIs shall not be used for purposes as follows:
      a. To request approval of submittals.
      b. To request approval of substitutions.
      c. To request changes which entail additional cost or credit.
      d. To request different methods of performing work than those drawn and specified.

C. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI per the following:
   1. Content of RFI: Include a detailed, legible description of item needing information or interpretation and the following:
      a. Project name.
      b. Project number.
      c. Date.
      d. Name of Contractor.
      e. Name of Architect.
      f. RFI number, numbered sequentially.
      g. RFI subject.
      h. Specification Section number and title and related paragraphs, as appropriate.
      i. Drawing number and detail references, as appropriate.
      j. Field dimensions and conditions, as appropriate.
      k. Contractor's suggested resolution. If Contractor's suggested resolution impacts Contract Time or Contract Sum, Contractor shall state impact in the RFI.
      l. Contractor's signature.
      m. Attachments: Include sketches, notations, measurements, photos, Product Data, Shop Drawings, Coordination Drawings, and other information necessary to fully describe items needing clarification or interpretation.

1) Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on sketches.
2) Include digital photographs of conditions.

2. Use software-generated form on DPM with substantially the same content indicated above. Submit RFI as searchable pdf file including attachments.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow 7 working days for Architect's response for each RFI. RFIs received by Architect after 2:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in Contract Time or Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.
2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's response to RFI may result in a change to Contract Time or Contract Sum, and may be eligible for Contractor to submit a PCO according to Section 01 26 00 - Contract Modification Procedures.
a. If Contractor believes RFI response warrants change in Contract Time or Contract Sum, notify Architect in writing within 10 days of receipt of RFI response.

E. RFI Log: Prepare and maintain a RFI log on DPM. Submit log with agenda for progress meetings. Update and submit at progress meetings. Log to include the following:
1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's response, immediately post response on DPM, update RFI log and notify affected parties. Notify Architect within 7 days if Contractor disagrees with response.

1.9 PROJECT CONFERENCES AND MEETINGS

A. Schedule and conduct conferences and meetings at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare meeting agenda. Distribute agenda to invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Within 3 days of meeting, post proposed meeting minutes to DPM and notify concerned parties, including Owner and Architect.
a. Minute Action Items:
1) Number each item in minutes by discernable number.
2) Note date of meeting when first discussed.
3) Annotate the party responsible for resolving the item.
4) Update item at each meeting with progress. Change responsible parties when item passes to new party to resolve.
5) Maintain minute items on official minutes for minimum one meeting after item is resolved and parties agree to strike item in meeting.

b. Notification: Inform participants including Owner and Architect 3 days prior to meetings that are not regularly scheduled.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
   1. Conduct conference to review responsibilities and personnel assignments.
   2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties. Participants at conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance affecting progress, including:
      a. Tentative construction schedule.
      b. Phasing, when applicable.
      c. Critical work sequencing and long-lead items.
      d. Designation of key personnel and their duties.
      e. Lines of communications.
      f. Digital Project Management. (DPM)
      g. Procedures for processing field decisions and modifications.
      h. Procedures for RFIs.
      i. Procedures for testing and inspecting.
      j. Procedures for processing Applications for Payment.
      k. Distribution of the Contract Documents.
      l. Submittal procedures.
      m. Preparation of record documents.
      n. Use of the premises and existing building.
      o. Work restrictions.
      p. Working hours.
      q. Owner's occupancy requirements.
      r. Responsibility for temporary facilities and controls.
      s. Procedures for moisture and mold control.
      t. Procedures for disruptions and shutdowns.
      u. Construction waste management.
      v. Parking availability.
      w. Office, work, and storage areas.
      x. Equipment deliveries and priorities.
      y. First aid.
      z. Security.
      aa. Progress cleaning.
   4. Minutes: Contractor shall record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
   1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting.
   2. Provide 2 work days written notice to Architect and Owner Project Manager of all pre-installation conferences. They may attend as appropriate.
   3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
      a. Contract Documents.
      b. Options.
      c. Related RFIs.
      d. Related Change Orders.

e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility requirements.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection.
y. Agreements, and disagreements,.
z. Required corrective measures and actions.

4. Minutes: Contractor shall record and distribute meeting minutes.
5. Do not proceed with installation if conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at biweekly intervals with dates of meetings coordinated with preparation of payment requests.
1. Attendees: Representatives of Owner and Architect, each Contractorr, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
a. Review present and future needs of each entity present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Resolution of conflicts.
4) Status of submittals.
5) Deliveries.
6) Off-site fabrication.
7) Access.
8) Site utilization.
9) Management of outages.
10) Temporary facilities and controls.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Status of RFIs.
16) Status of proposal requests.

17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

b. Contractor's Construction Schedule:
1) Review progress since last meeting.
2) Review 2 week look ahead.
3) Items impacting Building Management including after hour work, noise, utility shutdowns, etc.
4) Determine whether each activity is on time, ahead of schedule, or behind schedule.
5) Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so.
6) Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within Contract Time.

c. Site Walk-through of in-progress Work including site review of issues discussed during progress meeting; attended by, at a minimum: Contractor's Superintendent and Project Manager, Architect and Owner.

3. Minutes: Contractor shall record and distribute meeting.
a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with minutes of each meeting.

E. Coordination Meetings: Conduct project coordination meetings at regular intervals, to verify detailed coordination procedures for the upcoming construction operations in order to avoid potential problems and misunderstandings.
1. Attendees: In addition to Contractorr's and Owner's representatives, each subcontractor, supplier or other entity involved in coordination or planning construction activities shall be represented. All participants shall be authorized to conclude matters relating to the Work.
2. Agenda: Review plans and requirements of each entity present, including but not limited to subjects listed for Progress Meetings.
3. Contractor shall record and distribute minutes of meeting.

F. Special Meetings:
1. Call special meetings when warranted and of frequency deemed necessary, place and time as mutually agreed to by Architect and Owner.
2. Key review meetings: During the course of the work, Contractor shall meet with Owner and Architect to review work done to date. These key meetings shall be held at commencement of the appropriate construction phases:
a. Start-up meeting: Review project procedures, establish communication channels, issue Contract Documents “Issued for Construction" and review questions regarding the project.
b. Layout review: Review layout of partitions, doors, jambs, ceiling and soffits, ceiling tile start point, and electrical, data, telecommunications and audio-visual outlets marked on the floor for review prior to start of construction.
c. Above ceiling review: Review work above the ceiling including mechanical systems, light fixtures, cable trays, conduit, sprinkler lines, plumbing and plenum barriers.
d. Drywall completion: Review drywall installation prior to finish materials application.

G. Other Meetings: In addition to meetings previously listed, Architect and Owner reserves the right to call additional meetings on topics including demonstration and training, or on any subject Architect or Owner deems necessary to discuss.

H. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to scheduled date of Substantial Completion to review requirements and responsibilities related to Project closeout.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties. Participants at meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    a. Preparation of record documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Submittal of written warranties.
    d. Requirements for preparing operations and maintenance data.
    e. Requirements for delivery of material samples, attic stock, and spare parts.
    f. Requirements for demonstration and training.
    g. Preparation of Contractor's punch list.
    h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    i. Submittal procedures.
    j. Owner's partial occupancy requirements.
    k. Installation of Owner's furniture, fixtures, and equipment.
    l. Responsibility for removing temporary facilities and controls.
3. Minutes: Entity conducting meeting will record and distribute meeting minutes.

1.10 PROJECT TRACKING

A. Maintain Project Log for the following:
    1. Requests for Information.
    2. Submittals.
    3. Inspections.
    4. Change Orders.
B. Include the following in each as a minimum: Date of Issuance, Date of Return and Status.
C. Attach Logs to Progress Meeting Minutes.

1.11 PROJECT REPORTS

A. Submit to Owner, Architect and Project Manager weekly written progress reports, including the following:
    1. Percentage of work completed by phase and trade.
    2. Statement as to expected completion and occupancy date.
    3. Changes introduced into the work.
    4. General remarks on items that could affect project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

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 administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Submittals Schedule.
   2. Contractor's Construction Schedule.

B. Related Requirements:
   1. Section 01 33 00 - Submittal Procedures for submitting schedules and reports.
   2. Section 01 40 00 - Quality Requirements for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a Construction Schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

1.4 INFORMATIONAL SUBMITTALS

A. Submit required submittals in the following format:
   1. Electronic copy of file.
   2. Searchable pdf file.

B. Submittals Schedule: Submit Submittal Schedule as required in Section 01 33 00 - Submittal Procedures in conjunction with initial Contractor's Construction Schedule.

C. Contractor's Construction Schedule: Submit electronic copy of schedule. Include type of schedule (initial or updated) and date on label.

D. CPM Reports: Concurrent with CPM Construction Schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
   3. Total Float Report: List of all activities sorted in ascending order of total float.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing, area separations, interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
   3. Issue updated Construction Schedule with each Application for Payment.

PART 2 PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Provide a Submittals Schedule per requirements in Section 01 33 00 - Submittal Procedures in accordance with the Contract and General Conditions to Architect for review. Submittals Schedule shall be consistent with information in overall project schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend from date established for Notice to Proceed to date of final completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 - Submittal Procedures in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
   4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
   6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Include a separate activity for each portion of the Work performed by Owner.
   2. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.
b. Limitations of continued occupancies.
c. Uninterruptible services.
d. Partial occupancy before Substantial Completion.
e. Use of premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, Notice to Proceed, Substantial Completion, and final completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Outline the following in critical path format using a software program similar to MS Project.
1. Overlapping trades and intersections created between subs.
2. Durations of activities expressed by a bar line.
3. Procurement Schedule outlining off-site manufacture, submittals and submittal review periods.
4. Clearly identified long-lead materials or any expedited submittal reviews that are required to meet the date of substantial completion.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.
1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for commencement of the Work.
a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
3. Use "one workday" as unit of time for individual activities. Indicate nonworking days and holidays incorporated into schedule in order to coordinate with Contract Time.

D. CPM Schedule Preparation: Prepare a list of activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
a. Preparation and processing of submittals.
b. Mobilization and demobilization.
c. Purchase of materials.
d. Delivery.
e. Fabrication.
f. Utility interruptions.
g. Installation.
h. Work by Owner that may affect or be affected by Contractor's activities.
i. Testing.

j. Punch list and final completion.
k. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of proposed change on overall project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.

G. Schedule Updating: At request of Owner or Architect, when making revisions to Construction Schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before regularly scheduled progress meeting preceding issuance of paper copy of application for payment.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

END OF SECTION 01 32 00

SECTION 01 32 33 - PHOTOGRAPHIC DOCUMENTATION

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 administrative and procedural requirements for construction photographs.
B. Related Requirements:
   1. Section 01 33 00 - Submittal Procedures for submitting photographic documentation.
   2. Section 01 77 00 - Closeout Procedures for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
B. Digital Photographs: Submit image files within 7 days of taking photographs.
   1. Digital Camera: Minimum sensor resolution of 8 megapixels. Cell phone camera providing required resolution is acceptable.
   2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
      a. Documentation using PlanGrid software is acceptable.

1.4 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
   1. Maintain key plan with each set of photographs identifying location.
   2. Field Office Images: Maintain one set of images accessible in field office, available at all times for reference. Identify images in the same manner as those submitted to Architect.
B. Views:
   1. Take photographs from a sufficient number of different exterior views and from a sufficient number of interior views to show construction progress. Consult with Architect for recommendations on views.
   2. Photograph from locations to factually illustrate condition of construction and state of progress.
   3. To the extent practicable, take successive monthly photographs from same overall view as preceding monthly photographs.
C. Do not sell or display photographs in publications without permission of Owner.
D. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction. In particular, take photographs of any existing damage or deficiencies in existing conditions, including conditions adjacent to the project site, prior to commencement of work.
   1. Flag construction limits before taking construction photographs.
   2. Take 20 photographs to show existing conditions adjacent to property before starting the Work from different vantage points.
   3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

E. Periodic Construction Photographs: Take 20 photographs monthly, coinciding with cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

F. Digital Images: Submit a complete set of digital image electronic files as a Project Record Document.
   1. Submit images exactly as originally recorded in digital camera without alteration, manipulation, editing or modification.
   2. Provide images in uncompressed TIFF format, produced by a digital camera with minimum sensor size of 4.0 megapixels and with an image resolution of not less than 1600 x 1200 pixels.
   3. Images shall have same aspect ratio as the sensor, uncropped.
   4. Provide following information:
      a. Date and Time: Include date and time in filename, if photograph is not accurately date stamped by camera.
      b. Orientation of view including description of vantage point, in terms of location, direction viewed (by compass point), and elevation or story of construction,
      c. Unique sequential identifier.

END OF SECTION 01 32 33

SECTION 01 33 00 - SUBMITTAL PROCEDURES

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 requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
B. Action Submittals: Indicated as such in individual Specification Sections, including written and graphic information and samples that require Architect's responsive action.
C. Informational Submittals: Indicated as such in individual Specification Sections, including written and graphic information that do not require Architect's responsive action, but which may be rejected for not complying with requirements.
D. Coordination Drawings: Drawings prepared per Section 01 31 00 - Project Management and Coordination showing relationship and integration of different construction requiring coordination of fabrication or installation to fit in space provided or function as intended.
E. Field Samples: Full-size physical examples erected on-site to illustrate construction, or finish materials, and to establish standard by which the Work will be judged.
F. Range Samples: Set of multiple samples of materials whether natural or man-made exhibiting the variations in color, finish and other characteristics apparent in the material.
G. Digital Project Management (DPM) per Section 01 31 00 - Project Management and Coordination.
H. MSDS: Material Safety Data Sheets.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit Submittal Schedule with Contractor's Construction Schedule per Section 01 32 00 - Construction Progress Documentation as active spreadsheet in Microsoft Excel and as searchable pdf file.
    1. Format: Include the following information in tabular format.
        a. Specification Section number and title.
        b. Submittal Name and Number.
        c. Submittal category: Action, Informational, Closeout, LEED, etc.
        d. Submittal Type: Product Data, Shop Drawing, Sample, Product Certification, etc.
        e. Name of entity responsible including subcontractor, supplier, manufacturer, etc.
        f. Description of the Work covered.
        g. Proposed date for first submittal.
        h. Days for Architect's review.
        i. Proposed date for Architect's approval.
    2. List proposed submittals required in each specification section of the Contract Documents and as necessary to verify compliance with Project requirements such as Range Samples. Include information required under format, for each submittal.
        a. Coordinate submittals so that submittals from each specification section are sent at same time.
            1) When approvals for some submittals are required prior to submitting other submittals, such as Samples for Initial Selection, indicate submittals to be sent later and highlight in Submittal Schedule.
    3. Make submittals of all items required in any specification section at the same time.
    4. Make submittals of related work items in logical groupings to facilitate inter- relation of associated items; i.e. doors, frames, and hardware submittals made at same time.
    5. Indicate proposed dates coordinated with Contractor's Construction Schedule.
        a. Coordinate sequencing of submittals with requirements of the Work and submittals from other specification sections.

b. Include time required for review (as detailed herein), allowing sufficient time for ordering, manufacturing, fabrication, and delivery when establishing dates.
c. Indicate dates and days of review for all recipients for each submittal, with sufficient days for sequential review.
d. Allow time for resubmittals including addressing Architect's comments and for handling and reviewing submittals required by those corrections.
e. Coordinate Submittal Schedule with list of subcontracts, Schedule of Values, and Contractor's Construction Schedule.
f. Highlight items that differ from Contract Documents including differences in days allowed for review or packaging of submittals.
g. Revise Submittal Schedule per Architect's comments until Submittal Schedule is acceptable to Architect and Contractor. Architect will return Submittal Schedule as accepted by Architect, to be considered final Submittal Schedule.
    1) Review proposed revisions to Submittal Schedule at Progress Meetings. Revisions shall be acceptable to Architect and Contractor.
        (a) Revisions may result in additional time required for review.
        (b) Updated Submittal Logs shall include acknowledgement of resubmissions and any impact on Construction Schedule.
    2) Architect's review time will not be finalized until Submittal Schedule has been accepted by Architect and Contractor.
h. Upon acceptance of Submittal Schedule by Architect, provide revised version in pdf format and utilize final Submittal Schedule as basis for Submittal Log.

6. Submit Submittal Log representing Architect accepted Submittal Schedule prior to submitting submittals to Architect by DPM. Do not make any changes from final Submittal Schedule days and dates.
    a. Submittals sent to Architect prior to final Submittal Schedule and Submittal Log acceptance will be returned without action.
7. Preliminary Submittal Schedule: Preliminary Submittal Schedule is acceptable when schedule is complex or long lead items need approval prior to full development of Construction Schedule, notify Architect. Submit Preliminary Submittal Schedule concurrently with start-up construction schedule to cover submittals required in first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required due to long lead time for manufacture or fabrication.
8. Updated Submittal Logs: Submit with agenda for Progress Meetings to reflect changes in current status and timing for submittals with additional update at Progress Meeting.
    a. Highlight any revisions to Submittal Log when dates of submittal are delayed.
    b. Indicate resubmissions and pending dates of posting to DPM.
    c. Do not include changes not approved by Architect.

1.4 SUBMITTAL PROCEDURES

A. Utilize Architect‘s digital drawing files per requirements in Section 01 31 00 - Project Management and Coordination for preparing submittals.
B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
    1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
    2. Submit all Action and Informational submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
        a. Exception: Where samples for initial selection and samples for verification are both required, submit samples for verification after initial selection has been returned by Architect.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals. Time for review shall commence on Architect's receipt of submittal. Submittals received after 3 p.m. will be considered as being delivered the following working day.
    1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination. Delaying submittals to facilitate coordination between submittals shall not constitute a delay of the Work nor shall it be the basis for an extension of time.
    2. If intermediate submittal is necessary, process it in same manner as initial submittal.
    3. Resubmittal Review: Allow 10 days for review of each resubmittal.
    4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated or where noted in the review of the Submittal Schedule, allow 15 days for initial review of each submittal.
    5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 12 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
        a. Direct Transmittal to Consultant: Where Contract Documents indicate that submittals may be transmitted directly to Architect's consultants, provide duplicate copy of transmittal to Architect. Submittal will be returned to Architect before being returned to Contractor.

D. Post Submittals to DPM per agreed upon, final Submittal Schedule. Notify Architect, Owner and concerned parties when submittals are posted to DPM.
    1. Do not post submittals to DPM prior to date agreed upon in final Submittal Schedule.
    2. Remove items not posted in accordance with final Submittal Schedule.
    3. Hold incomplete submittals until all required items in technical sections can be posted at same time.

E. Prepare submittals required by specification to show compliance with Contract Documents.
    1. Make submittals in the English language and in the English system of measurement.
    2. When specifications require more than one item of submittal, submit required submittals at the same time.
    3. Separate submittal into separate submittals to facilitate review and approval of submittals without requiring resubmittal of all items from a specification section.
    4. Identify each submittal per identification requirements.
    5. Make submittals of related work items in logical groupings to facilitate interrelation and coordination of associated items.
    6. Use Architect's numbering and references when referring to materials and items such as doors, hardware and finishes.
    7. Mark all items that differ from the Contract Documents.
    8. Indicate items that require Architect's review.
    9. Furnish copies of final submittals to authorities having jurisdiction as required.
    10. Distribute final submittals as necessary for coordination of the Work.

F. Transmit submittals electronically where possible. Identify and incorporate information in each electronic submittal file as follows:
   1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
   2. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
   3. Provide PDF files that are fully searchable and to scale for all original documentation created for this Project, such as Shop Drawings.
   4. Scanned Copies: Legible scanned PDF files of printed paper originals are acceptable for Product Data, if published PDF file is not available. Scanned submittals that are not legible will be rejected.
   5. Sheet Orientation: Orient PDF sheets to a "Ready-to-Read" orientation with majority of text horizontal to the sheet with no additional adjustments or formatting required by the viewer.
   6. File Security: Do not set any permissions on the file. Protected documents will not be accepted.
   7. Metadata: Include the following information in the electronic submittal file metadata:
      a. Title: Project title
      b. Author: Contractor's name.
      c. Subject: Submittal type (product data, shop drawing, report, etc.)
      d. Keywords: Number and title of appropriate Specification Section; manufacturer name; product name/model number.
   8. File Size: Limit file size of each submittal as follows. Break larger PDF files into multiple packages where necessary to meet delivery restrictions. Identify split packages as "1 of #" and "2 of #" in the subject line.
      a. Email Delivery: 10 Megabytes.
      b. FTP Delivery: 100 Megabytes.

G. Maintain Submittal Log on DPM in agreed upon format, with the following information included for each submittal as a minimum:
   1. Submittal number using specification section number where item is specified.
   2. Subcontractor, Supplier and Manufacturer names.
   3. Category of submittal as defined in this Section.
   4. Number of days for review.
   5. Dates, including time:
      a. Date for required submission to Architect from final Submittal Schedule.
      b. Date of actual submission to Architect.
      c. Date of return to Contractor.
   6. Action on Architect's Stamp on returned submittal.
   7. Highlight or otherwise indicate submittals requiring resubmission.

H. Submittal Documentation:
   1. Provide a coversheet with the following on each submittal. Bind coversheet to electronic submittal.
      a. Project name and Architect's Project Number.
      b. Date of submission to Architect. Other dates regarding drawing completion date or transmission between entities can be included.
      c. Name and address of Architect.
      d. Name and address of Contractor.
      e. Name and address of subcontractor, supplier, and manufacturer as applicable.
      f. Name and address of entity that prepared submittal.
      g. Submittal Number: Number with specification section number followed by decimal point and a sequential number (e.g., 061000.01). Add alphabetic suffix after another decimal point (e.g., 061000.01.A) for resubmittals.

h. Drawing number and detail references, as appropriate.
i. Location(s) where product is to be installed, as appropriate.
j. Other necessary identification.
k. Category of Submittal: Action or Informational.
l. Indicate on submittal, as appropriate, if submittal is Delegated Design or for LEED.
m. Provide space 6 inches by 8 inches on coversheet for Architect's Stamp.

2. Provide Contractor's Stamp on each submittal with signature of Contractor's responsible party approving submittal and date approved, with statement that submittal complies with requirements of the Contract Documents.
   a. Format submittals so documents are 8-1/2 inch by 11 inch, but no larger than 30 inch by 42 inch.
   b. Provide electronic submittals with a digital signature of Contractor's responsible party. Digital signature shall be of type acceptable to Architect and OwnerOwner.
3. List, highlight, encircle, and identify deviations from Contract Documents on submittals, including minor variations and limitations, with reason for deviation.
4. Note options requiring selection by Architect.
5. Indicate compliance with Contract Documents, relationship to other work, and other information as specified, including:
   a. Identification of product or materials
   b. Field dimensions, clearly identified as such
   c. Mark submittals for pertinent information to this Project.
      1) Where printed materials describe more than one product or model, clearly identify which is submitted for review.
         (a) Architect will return submittal REJECTED if submittal has multiple products without identification by Contractor to complete proper checking of submittal.
6. Comply with other requirements in specifications.
7. Provide revised submittals per specified requirements in this Section.

1.5 RESUBMISSION REQUIREMENTS

A. Resubmit submittals stamped REVISE AND RESUBMIT AS NOTED, or REJECTED.
   1. Do not resubmit submittals that are not required by Architect to be resubmitted.
   2. Make resubmittals in same form as previous submittal. Note date and bubble content changed from any previous submittal.

B. Resubmittal procedure shall follow the same procedures as the initial submittal.
   1. Review time for resubmissions to be the same as planned for initial submissions.
   2. Resubmission to contain same information as first submission except that submission numbers to be adjusted per identification requirements.
   3. Highlight items that are changed from previous submission.
      a. Architect's review is restricted to review of revisions to previous submittal.
      b. Architect will return resubmissions REJECTED that include new or revised information or drawings that are not clearly marked.
      c. If resubmittal must include new information or changes other than those requested by Architect, include reason and location of such changes.

PART 2 PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by other specification sections.
   1. Make any corrections required by Architect's comments.
   2. Resubmit corrected Action Submittals until Action Submittals are stamped CONFORMS WITH DESIGN CONCEPT or CONFORMS WITH DESIGN CONCEPT AS NOTED. Final Architect approved submittals must bear one of these stamps.

a. Notify Architect in writing if comments cannot be met or if additional revisions other than those requested are required. Resubmit these modified submittals even if resubmittal is not required by Architect's Stamp.

B. Action Submittals include, the following as well as other noted submittals in other specification sections:
   1. Comparable Product Request.
   2. Product Data.
   3. Shop Drawings.
   4. Samples.

C. Comparable Product Request: Comply with Section 01 60 00 - Product Requirements. Provide Comparable product requests with submittal detailing compliance with specification requirements, showing how product is comparable to Basis of Design product or is “equal" to the stated product when specified as “approved equal."

D. Product Data:
   1. Provide manufacturer's printed information indicating compliance with requirements, including recognized trade association and testing agency standards, tolerances in construction or materials, dimensions and clearances of operation and maintenance. Include data sheets, catalogue cut sheets, assembly documentation, and other data as required to show compliance.
      a. Submit Product Data indicating tolerances, options and construction information affecting performance or appearance in the final installation and information from standards when standards are cited in specification section.
         1) Clearly identify where submitted item is not compliant or cannot meet tolerances, including joint sizes. Note deviation from compliance in Product Data and include same information on Shop Drawings.
      b. If submittal must be specially prepared because standard published data is not suitable for use, submit as Shop Drawing, not as Product Data.
      c. The following are not acceptable Product Data and will be returned REJECTED:
         1) Citing catalog numbers without providing catalogue cut sheets.
         2) Unedited or partially edited standard manufacturer's 3 part specification.
   2. For equipment, include the following, as applicable:
      a. Wiring diagrams showing factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction.
   3. Mark submittal to indicate products and options as applicable. Clearly identify selections meeting Contract Document requirements by highlighting items.
      a. Cross out information which is not applicable to the Project.
      b. Supplement standard information to provide information applicable to the Work.
      c. Show dimensions and clearances required.
      d. Show performance characteristics and capacities.

E. Shop Drawings: Submit Project-specific drawings, diagrams, schedules, and other data specially prepared for the work.
   1. Fully illustrate requirements of Contract Documents, include the following:
      a. Identification of products and thicknesses.
      b. Assembly of components, including fabrication and installation requirements.
      c. Joint locations and sizes, identifying joint variances expected in installed work.
      d. Corner conditions and treatments.
      e. Transitions between materials.
      f. Direction of materials exhibiting graining or texture.
      g. Supports and attachments.
      h. Coordination with adjacent work, including field conditions and new work.

i. Coordination with Work supplied by other trades for inclusion in the work in the Shop Drawing, such as, hardware at doors, frames and architectural woodwork.
j. Dimensions established for the work and adjacent construction.
k. Dimensions established by field measurement or that require field verification.
l. Coordination as required for proper and complete installation of the Work.

2. Provide plans, elevations and details at sufficient scale to show materials, dimensions, thicknesses, assembly, attachments, adjoining work, and other pertinent information.
   a. Minimum Scale: 1/4"=1'-0" for plans and elevations; 1-1/2"=1'-0" for details, unless otherwise required by specification section. Provide plans, elevations and details at larger scale when required by specification section or necessary to show relationships and assembly.
   b. Provide Shop Drawings that are legible and drawn accurately to scale. Freehand drawings are not acceptable.
   c. Graphics shall be original, drawn for this Project and not a reproduction of the Contract Documents or standard printed data.
      1) Use Architect's digital drawing files only for background scope of new and existing construction modified as necessary to represent the Work.
   d. Identify details by reference to sheet and detail number on Contract Drawings.
   e. Use product and finish identifications indicated in the Contract Documents.
3. Coordinate with submittals of other work for proper relationships, installation, component and assembly dimensions and characteristics.
4. Indicate material tolerances allowed by standards or manufacturer.
5. Provide the following as Shop Drawings when required by specification sections.
   a. Setting diagrams.
   b. Schedules.
   c. Patterns.
   d. Templates.
   e. Seaming diagrams.
   f. Wiring diagrams.
   g. Controls.
   h. Signage.
6. Provide Coordinated Shop Drawings that include work of more than one trade, showing adjacent Work in a complete manner, for the following:
   a. Doors, frames, and hardware.
   b. Samples of interior finish materials.
   c. Restoration work including integration with new work.
   d. Sprinkler, mechanical, plumbing, and piping.
   e. Lighting and HVAC.
   f. Decorative metal, architectural woodwork and metal fabrications.
   g. Architectural woodwork doors and door hardware.
   h. Decorative metal railings, stairs, and finish components of stairs.
7. Indicate deviations from Contract Documents or where final appearance may vary in dimension or relationship.

F. Samples: Physical samples which illustrate materials, finishes, and workmanship, and establish visual standards by which the Work shall be judged. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and materials showing color, texture, and pattern. Samples will be reviewed for color and appearance only. Compliance with all other requirements shall be the exclusive responsibility of Contractor.
   1. Approval of samples will not preclude rejection of completed Work, if completed Work deviates from sample or does not otherwise comply with Contract requirements.

2. Samples shall show anticipated range of color and/or texture. Architect may require additional submissions if the range or consistency is not satisfactory.
    a. Architect's determination of Samples and whether installed Work matches Samples in appearance is final.
        1) Where a perceivable range is accepted by Architect, materials installed that are abutting or within 6 inches of each other in the final construction shall not vary by more than one-half the accepted range.
        2) Final Architect approved Samples will be compared with actual material and finish delivered and installed in the Work.
3. Identification: Unidentified samples will be returned to Contractor without review. Attach label on back side of samples with the following:
    a. Submittal Number.
    b. Number and title of applicable specification section and paragraph number.
    c. Project designation for material/finish from Contract Documents.
    d. Generic description of Sample.
    e. Product name and name of manufacturer.
    f. Sample source.
    g. Contact information for manufacturer and manufacturer's representative.
    h. Indicate if product is custom and composition/control number.
    i. Provide separate coversheet for Samples for Initial Selection with the required identification information.
4. Submit digital photos of front and back of samples with electronic submittal.
5. Submit Range Samples showing differences that occur in natural or man-made materials, even if not specifically required by specification section, to indicate color differences, or characteristics representative of materials to be used in Work.
6. Sequence sample submissions when specification requires unfinished samples or veneers to be approved prior to submitting finish sample.
7. Submit samples of materials which are generally furnished in containers bearing manufacturer's descriptive labels and printed application instructions.
8. Date of submittal of sample is when delivered to Architect, and when posted to DPM.
9. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
10. Disposition: Maintain approved Samples at site, available for comparisons throughout the course of the Work, to determine final acceptability of construction and finish. Submit Samples to Owner as part of Project Record Documents.
11. Samples for Initial Selection: Where specifically required in other specification sections or where selection is required by Architect, submit manufacturer's full range of available colors and finishes in the form of color charts, chain sets, or small samples showing the full range of colors, textures, and patterns available. When requested, submit Samples for Initial Selection on actual substrates.
    a. Number of Samples: Submit 1 full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will retain submittal. When Contractor desires a Sample for their records, submit 2 full sets.
12. Samples for Verification: Submit minimum of 5 samples of actual material, prepared from same material to be used for the Work. Architect reserves the right to require submission of any materials whether or not specifically indicated in specifications.
    a. Submit Samples physically identical with material or product proposed for use:
        1) Show full range of color and texture variations expected.
        2) Submit from actual production run or natural material to be used for Project, with all applied treatments, cured and finished. Generic samples are not acceptable.

(a) When materials will be from multiple production runs or of natural materials, submit Range Sample showing differences expected.

3) Apply paint, coating or other applied finish to actual substrate and not a paper sample. When same finish will be in different gloss levels, provide samples for each gloss level. When finish and gloss will be on different substrates, provide samples for each substrate in each gloss level.

b. Submit samples that are 8"x10", unless otherwise specified:
   1) Full size for equipment or device less than 8"x10".
   2) 10" in length for linear devices or materials.
   3) 1 pint for non-solid materials.
   4) 4“x4" for color selection samples.

c. Architect will retain 2 Samples, return 1 to Owner and 2 to Contractor. Samples to be retained at site and shall not be incorporated into the Work. Maintain 1 Sample as Project Record.

13. Range Samples: Submit 5 sets of minimum 5 samples 8"x10" minimum, but not less than required to show size and full range of characteristics expected in actual material to be used for Project. Identify characteristics and their size, quantities and extent expected in the material on back of Range Sample or on separate sheet with submittal identification. Submit electronically photos of front and back of Range Samples. Submit photos of characteristics when extensive.
    a. Where size of characteristic varies from those in sample, provide additional samples and photographic documentation showing variability of characteristics, including sizes, quantities, and scope.
    b. Provide narrative with Range Sample certifying statements regarding expected color and characteristics expected in material to be used for Project.
    c. Range Samples shall show characteristics evident in material.
       1) Characteristics not evident in samples are deemed unacceptable.
       2) Lack of a Range Sample or lack of clear identification of size, quantity and scope of characteristics in Range Sample for a material does not imply any approval of characteristics not clearly identified and approved.
       3) Materials that exhibit characteristics not in final Architect approved Range Samples are not acceptable and will be rejected for replacement at no additional cost to Owner.
14. Fabrication Sample: Submit full-size, fully fabricated Samples identical with the material and arrangement proposed, with edges, corners, and reveals as required in Contract Documents, demonstrating assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics. Include stepped finishes and examples of shop and field work where required in specification.
    a. Submit a single Fabrication Sample unless otherwise required by specification. Architect will retain Fabrication Sample.
    b. Size Fabrication Sample as indicated in specification, allowing for portability to Project site.
15. Field Samples: Provide where required by specification. Use first installations or mock-ups on site to illustrate finishes, textures and the standard by which the Contract Work will be judged. Provide field samples in sizes prescribed or as required by Architect. Comply with requirements in Section 01 40 00 - Quality Requirements.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other specification sections. Informational Submittals are submitted for information only. Architect will review and return with or without comments. Architect will return as REJECTED or REVISE AND RESUBMIT if Informational Submittal is not in compliance with Contract Documents.
   1. Make any corrections required by Architect's comments.

2. Resubmit corrected Informational Submittal until Informational Submittal is stamped FOR INFORMATION ONLY - NO COMMENTS or FOR INFORMATION ONLY – COMMENTS AS NOTED.
    a. Notify Architect in writing to revisions other than the corrections requested even when resubmittal is not required by Architect's Stamp.

B. Informational Submittals include, the following as well as other noted submittals in other specification sections:
1. Coordination drawings or other coordination information.
2. Administrative Submittals from Division 01 Sections.
3. Qualification data.
4. Certifications.
5. Statements.
6. Test reports.
7. Manufacturer's Instructions.
8. Closeout Submittals.
9. Sustainable Design Submittals.
10. Delegated Design Submittals.

C. Coordination Drawing Submittals: Comply with requirements in Section 01 31 00 - Project Management and Coordination.
1. Submit Coordination Drawings in PDF format. If required by Architect, submit Coordination Drawings as active drawing file.
    a. Prepare Coordination Drawings of involved trades in a scale of not less than 1/4 inch = 1 foot or larger, as required by Architect.
    b. Show sequences and relationships of separate components.
    c. Work installed prior to review of Coordination Drawings is at Contractorr's risk. Subsequent relocations shall be made at no additional cost to Owner.

D. Administrative Submittals: Submittals as required by Division 01 Sections. Comply with requirements in other specification sections. Administrative submittals are considered informational submittals and will be reviewed as such by Architect. Architect will not stamp and return administrative submittals unless Architect has specific comments on the submittals, including requirements for additional information or revisions.

E. Qualification Data: Submit information that demonstrates capabilities and experience of entity, including lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified. Comply with requirements for qualifications in specification and Section 01 40 00 - Quality Requirements.

F. Certifications: Submit notarized Certificate on entity's letterhead certifying compliance with requirements in the Contract Documents, signed and dated by individual authorized to sign documents on behalf of the entity responsible for preparing certification. Provide Certificate types as required from specification. Date must be after date of award of Project.
1. Certifications, General:
    a. Provide on each certificate Project name and location, name and address of Contractor, and reference to specification section. List specific requirements that Certificate is intended to address.
    b. When a laboratory test reports is submitted with Certificates, include name and address of qualified inspection and testing agency and dates of tests.
    c. Contractor shall review Certificates of Compliance before submission to Architect, to ensure that the affidavit is properly worded, dated, and signed.
    d. Certification does not relieve Contractor from furnishing satisfactory material. Owner reserves the right to further test installed materials and require removal of material is found not to meet the specific requirements.
2. Installer Certificates: Affidavit by Installer that Installer complies with requirements in the Contract Documents and, where required, is authorized by product manufacturer to install

specified product for this specific Project. Include evidence of installation experience where Qualifications are specified in specification section.

3. Manufacturer Certificates: Affidavit by manufacturer that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where Qualifications are specified in specification section, and authorization of Installer to install specified product for this specific Project when required by specification section.
4. Product Certificates: Affidavit on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
5. Material Certificates: Affidavit on supplier's letterhead certifying that material complies with requirements in the Contract Documents.
6. Welding Certificates: Written certification that welding procedures and personnel comply with requirements in the Contract Documents. Include record of Welding Procedure Specification and Procedure Qualification Record on AWS forms, and names of firms and personnel certified.
7. Statement of Manufacturer's Review: Submit fully executed Statements of Manufacturer's Review on the form bound herein.

G. Test Reports: Comply with requirements in Section 01 40 00 - Quality Requirements and specification sections. Include a statement on an attached coversheet that states compliance with Contract Documents or if compliance is not met.
   1. Include test procedures and results carried out by required qualified entity to verify that materials and equipment used in the work comply with the Contract Documents.
      a. Testing reports are required to be performed and reported on specifically for Project, unless otherwise indicated. Non-Project specific testing and inspection are indicated in specification, and set limitations on age and other requirements.
      b. Only test reports made by qualified agencies operating in the United States, Canada, Japan or United Kingdom for testing not done specifically for this Project.
      c. Submit reports written by a qualified entity, on qualified entity's standard form or letterhead, indicating and interpreting test results for compliance with requirements in the Contract Documents.
      d. Qualified agency shall be per Section 01 40 00 - Quality Requirements.
   2. Material Test Reports: Showing compliance with ASTM or other requirements in the Contract Documents.
   3. Product Test Reports: Reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
   4. Research Reports: Report, from a model code organization acceptable to authorities having jurisdiction, that product complies with code in effect for Project. Include:
      a. Name of evaluation organization.
      b. Date of evaluation.
      c. Time period when report is in effect.
      d. Product and manufacturers' names.
      e. Description of product.
      f. Test procedures and results.
      g. Limitations of use.
   5. Preconstruction Test Reports: Reports indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
   6. Compatibility Test Reports: Reports indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

7. Field Test Reports: Reports indicating and interpreting results of field tests performed either during installation of product or after product are installed in its final location, for compliance with requirements in the Contract Documents.
8. Manufacturer's Field Reports: Reports by manufacturer's authorized representative on manufacturer's letterhead indicating testing, inspections and observations of installation and procedures. Include the following, as applicable:
    a. Name, address, and telephone number of manufacturer's authorized representative making report.
    b. Statement on condition of substrates and their acceptability for installation of product.
    c. Statement that products at Project site comply with requirements.
    d. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
    e. Results of operational and other tests and a statement of whether observed performance complies with requirements.
    f. Statement whether conditions, products, and installation will affect warranty.
    g. Other required items indicated in specification sections.

H. Manufacturer's Instructions: Submit written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

I. Closeout Submittals: Prepare and submit Closeout Submittals required by other specification sections. Comply with requirements in other specification sections.

J. Prepare and submit Sustainable Design Submittals per requirements in other specification sections.

K. Delegated Design Submittals: Comply with requirements in Section 01 40 00 - Quality Requirements - Delegated Design Requirements and specification sections. Submit Delegated Design Submittals including Shop Drawings, Design Data, Certifications and Calculations for permanent or temporary construction structural components as required by specification sections.
1. Prepare Delegated Design Submittals with written and graphic information, as required to show compliance with Delegated Design requirements.
2. Delegated Design Submittals shall clearly state:
    a. Project.
    b. Professional engineer responsible for the design of the system or component.
    c. Specification section.
    d. Drawing references.
    e. Design data, including performance and design criteria, and list of applicable codes and regulations.
    f. List of any assumptions.
    g. Date completed.
    h. Other pertinent information which will allow a complete review.
    i. Name and version of software, if any, used for calculations.
    j. Page numbers and page totals on each sheet as Page _ of _.
3. Provide calculations including load diagrams if applicable.

4. Submit scanned pdf and 3 paper copies, signed and sealed by the responsible professional engineer, for each product and system, with statement that design complies with performance and design criteria in the Contract Documents.
5. Architect and Engineer will only review calculations, performance and design data which are for permanent parts of the Work.
6. Architect and Engineer will only review for compliance with stipulated design criteria.
    a. Architect's and Engineer's review and/or any comments do not constitute any liability for the actual design when delegated by the Contract Documents.
    b. Delegated Design Professional Engineer remains responsible for actual design.

PART 3 EXECUTION

3.1 SUBMISSION REQUIREMENTS

A. Submit submittals to Architect for review and approval prior to commencing work requiring submittal. Make revisions and resubmit as required by comments on submittal. Use only final Architect approved submittals stating “proceed without further input from Architect" including required revisions for fabrication and installation of Work. Retain copies at site.
    1. Architect will return submittals that are non-compliant as defined herein.
    2. No portion of the Work shall commence until all related submittals are reviewed and approved by Architect. Work prior to Architect review is done at Contractor's risk.
    3. Work shall conform to approved submittals. Removal of work deviating from approved submittals and its replacement shall be performed at no additional cost to Owner.
    4. Submittals shall be complete for each portion of the work.
        a. Architect will hold submittals dependent on other submittals until they are available and coordinated and sufficient information is available to permit proper evaluation.
B. Architect will not review submittals that are non-compliant and will return as REJECTED. The following are considered non-compliant submittals:
    1. Submittals without all required information, including Contractor's Stamp, Contractor's review comments and clear identification of deviations from the Contract Documents.
    2. Submittal with numerous errors, or that appear checked superficially by Contractor.
    3. Scanned pdf or image files in lieu of searchable pdf, unless specifically required.
    4. Submittal from source other than Contractor.
    5. Submittal not required by Contract Documents.
    6. Delegated Design submittals that are not signed and sealed.
        a. Architect will review unsigned copies as a draft but will not return Delegated Design Submittals without requiring resubmission that are signed and sealed.
    7. Incomplete submittals without all required items from same specification section.
        a. Partial submittals prepared for a portion of the Work will be reviewed only when partial submittals were accepted by Architect in final Submittal Schedule.
    8. Submittals with MSDS: Architect will not review submittal containing MSDS.
        a. Architect will return submittal with MSDS as REJECTED.
        b. Contractor shall remove MSDS from submittal and resubmit to Architect.
        c. Retain MSDS and include in Operations and Maintenance Manuals.
    9. Submittals with substitutions not previously approved per Section 01 25 00 - Substitution Procedures.
        a. Substitution items will be returned to Contractor requesting submission as substitution.
    10. Submittals with disclaimers, ownership statements, or extraneous information.
    11. Submittals using reproduction of Contract Documents or that were not created specifically for this Project.
    12. Drawings that are not to scale, illegible, non-Project specific, or hand-drawn.
    13. Product Data without identification of specific products for Project.
    14. Resubmitted submittals without revisions clearly indicated.

3.2 CONTRACTOR'S RESPONSIBILITIES

A. Coordinate preparation and processing of submittals with construction activities, providing submittals sufficiently in advance of the Work to avoid delay. Coordinate submittals with the Contract Documents including:
   1. Fabrication, purchasing, testing, delivery, other submittals and related activities.
   2. The Work including other work where indicated, verifying fit and applicability with related trades and furnishing items for installation in work of another trade.

B. Submit required submittals per final Submittal Schedule.
   1. Submit submittals as separate items to allow approval of a submittal without requiring resubmission for all submittals in a specification section.
   2. Coordinate submission of submittals for related parts of the Work to allow concurrent review, coordination and color selection.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Make submittals in accordance with final Submittal Schedule and Construction Schedule allowing sufficient time for Architect's review, including time for resubmittals.
   1. No extension of Contract Time will be authorized for failure to transmit submittals to allow required processing and review.
      a. Contractor shall be responsible for any additional time required for review when submissions vary from final Submittal Schedule in dates or submittal items.
      b. Additional time required for reviewing submittals shall in no way relieve Contractor from performing the Work on schedule.

D. Checking and Approving:
   1. Contractor shall review submittals to confirm compliance with the Contract Documents; to determine and verify materials, field measurements, and field construction criteria, or will do so; and to check and coordinate information within submittals and with previous and concurrent submittals of related work with requirements of the Work. When submittal is a resubmittal, Contractor shall review revisions to verify compliance with previous comments and that revisions have been identified. Contractor shall note their comments required for revision and identify dimensions that have been or will be field verified.
      a. Contractor shall distribute submittals to other parties prior to reviewing and submitting to Architect for input regarding coordination and applicability of components and assemblies.
         1) Provide Certifications to Architect as required in specification sections regarding coordination and acceptability of other and adjacent work.
   2. Provide with each submittal either on the submittal or on Contractor's coversheet a list of any deviations from the Contract Documents and reason for such deviation.
   3. Affix Contractor's Stamp with signature of responsible party for Contractor and date of Contractor's review and approval to each submittal.
      a. Contractor's Stamp shall include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   4. Upon return of submittal to Contractor, review Architect's comments and make corrections or changes indicated. Resubmit when required by Architect's Stamp.
      a. Highlight revisions. Annotate drawing revision number and date in title block.
         1) Make only revisions required by Architect's review.
         2) If additional revisions are made, specifically highlight, noting reason for change.
   5. When Contractor considers comments to be a change to the Contract Documents, notify Architect immediately in writing.
      a. Architect will provide basis for comments citing Contract Documents or issue a contract modification per Section 01 26 00 - Contract Modification Procedures.

b. Failure to notify Architect implies acceptance of comments as applicable to Contract Documents.

E. Distribute final Architect approved submittals to concerned parties as necessary for performance of construction activities.

F. Maintain submittals as Project Record Documents and transmit to Owner at Project Closeout per requirements in Section 01 26 00 - Contract Modification Procedures.

3.3 ARCHITECT'S RESPONSIBILITIES

A. Architect's review of submittals is conducted for the limited purpose of checking for conformance with information and design intent in the Contract Documents and is not a complete check.

1. Architect's review is not for the purpose of confirming or approving:
   a. Deviations from the Contract Documents, including materials, quantities, location, quality, dimension, or orientation.
   b. Substitutions.
   c. Means, methods, sequences, or techniques of construction.
   d. Safety of Contractor's work, workplan, procedures, workers or of the site.
   e. Any clarification of information in the Contract Documents.
   f. Changes in Contract Cost or Contract Time.
   g. Changes not made according to Architect's comments.
      1) Items revised on resubmittal shall be highlighted to be considered reviewed by Architect.
   h. Dimensions and quantities.
   i. Instructions for installation or performance of equipment or systems.
   j. An assembly of which an item is a component.
2. Architect's review of samples is only for visual characteristics.
3. Architect's approval of submittals shall not relieve Contractor of responsibility for:
   a. Compliance with the Contract Documents unless specifically pointed out to the Architect and Owner per requirements in the General Conditions. Architect's comments on submittals cannot change, nor do they permit any departure from the Contract Documents.
   b. Submittal errors or omissions that are not clearly identified.
   c. Adequate connections, erection techniques, bracing, or deficiencies in strength.
   d. Satisfactory performance of work and coordination with the work of all trades.
   e. Proper fitting of the work as performed.
   f. Confirming and correlating quantities and dimensions.
   g. Selecting fabrication processes and techniques of construction.
   h. Coordination of the Work including translating comments to parts and pieces on Shop Drawings, field dimensions and existing conditions.
   i. Performing the work in a safe and satisfactory manner.
   j. Compliance with the construction schedule.
4. Architect will return submittals with reasonable promptness while allowing sufficient time in Architect's professional judgment to permit adequate review.

B. Action Submittals: Architect will review and indicate revisions required, stamp with Architect's Stamp with mark to indicate further action, and return to Contractor.

1. Items on stamp are as follows:
   a. NO EXCEPTIONS TAKEN: Proceed without further input from Architect.
   b. PROVIDE AS NOTED: Proceed without further input from Architect provided that comments are incorporated in the Work. If comments can't be complied with, make revisions and resubmit to Architect.
   c. REVISE AND RESUBMIT: Submittal does not comply with Contract Documents' design intent. Additional review by Architect required.
      1) Do not use, or allow others to use, on Project.

2) Revise per comments and highlight revisions. Resubmit without delay.

d. REJECTED: Submittal does not comply with Contract Documents' design intent. Additional review by Architect required.
   1) Do not use, or allow others to use, on Project.
   2) Revise to comply with Contract Documents'. Resubmit without delay.

e. NO ACTION: Submittal not reviewed by Architect.

C. Informational Submittals: Architect will review and indicate revisions required, stamp with Architect's Stamp marked to indicate any further action, and return to Contractor.
   1. Items on stamp are as follows: FOR INFORMATION.
   2. When comments are noted on submittal, address comments and incorporate into the Work.
   3. Resubmit Informational Submittal when comment requires resubmission.

END OF SECTION 01 33 00

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 other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance, quality control and testing and inspection services to be performed.
   1. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
      a. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
      b. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
      c. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
      d. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of 5 previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quality Levels: The quality level indicated or specified shall be the minimum level to be provided or performed. The actual installation may comply exactly with the minimum quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

C. Comply completely with manufacturer's instructions. Should manufacturer's instructions conflict with Contract Documents, request clarification from Architect.

1.5 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on systems indicated and where required by AHJ.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports as required herein.

G. Quality Control Testing and Inspection Agencies shall submit testing and inspection reports, including Agencies' analysis of results and recommendations, immediately following completion of the test or inspection.
   1. Each report shall include complete detailed information pertaining to the test or inspection, including information required in each related technical specification section.
   2. Reports shall bear the name of qualified individual performing the inspection or test.
   3. Distribution: Submit copies of reports directly to the following:
      a. Architect.
      b. Structural Engineer.
      c. Owner.
      d. Contractor.
      e. Inspectors.

H. Delegated-Design Submittal: Submit Shop Drawings, Calculations, and other required submittals per specification section. In addition, submit a statement, signed and sealed by responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that products and systems are in compliance with performance and design criteria indicated. Include list of Codes, loads, and other factors used in performing these services.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, and telephone number of technical representative making report.
   2. Statement on condition of substrates and their acceptability for installation of product.
   3. Statement that products at Project site comply with requirements.
   4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   6. Statement whether conditions, products, and installation will affect warranty.
   7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
   1. Name, address, and telephone number of factory-authorized service representative making report.
   2. Statement that equipment complies with requirements.
   3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
   4. Statement whether conditions, products, and installation will affect warranty.
   5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than 5 days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.
B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
    1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
    2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
    3. Owner-performed tests and inspections indicated in the Contract Documents.
D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups and first installations.
E. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
B. Manufacturer Qualifications: Firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
C. Fabricator Qualifications: Firm experienced in producing products similar to those indicated for this Project and with a minimum of three years record of successful in-service performance, as well as sufficient production capacity to produce required units. Additional years of experience as indicated in technical sections.
D. Factory-Authorized Service Representative Qualifications: Authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
E. Installer Qualifications: Firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a minimum of three years record of successful in-service performance. Additional years of experience as indicated in technical sections.
F. Professional Engineer Qualifications: Professional engineer who is legally qualified to practice in the State and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
G. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
    1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

H. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

I. Manufacturer's Technical Representative Qualifications: Authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Factory-Authorized Service Representative Qualifications: Authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
   1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not, even if no permit is required for that work.
   2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
   3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 - Submittal Procedures.

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that was revised or replaced Work that failed to comply with the Contract

Documents. Architect retains the right to require the use of a different testing agency for retesting and reinspecting.

F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform any duties of Contractor.
   7. Attend Project progress meetings as requested by Architect.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
   1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 TESTING AND INSPECTION

A. Owner reserves the right to engage independent Testing and Inspection Agencies to verify the adequacy of Contractor's quality control program. The scope and extent of the Quality Control Testing and Inspection is as specified in the technical specification sections.

B. Quality Control Testing and Inspection services are intended to verify compliance of work performed by Contractor with specified requirements. Quality Control Testing and Inspection services do not relieve Contractor of the responsibility for compliance with, or general fulfillment of, the requirements of the Contract Documents. Specified Quality Control Testing and Inspection are not intended to limit or supplant Contractor's own quality control program.

C. Quality Control Testing and Inspection Agencies engaged by Contractor shall be acceptable to Owner and Architect.

D. Quality Control Testing and Inspection Agencies engaged by Contractor shall be fully independent of Contractor and shall perform all functions and responsibilities as if under contract with Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

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

3.2 DEFICIENT WORK

A. General: If any materials or equipment selected for testing fails to meet the requirements of the Contract Documents, such materials or equipment may be subject to removal and replacement. At the discretion of Owner, the installed defective materials and equipment may be permitted to remain in place subject to a proper adjustment of the Contract Sum.

B. If tests or inspections reveal failure of materials to comply with the requirements of the Contract Documents, the costs of additional tests by Owner, and compensation for Owner's and Architect's additional services, made necessary by such failure, shall be charged to Contractor by Change Order.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 - Execution.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

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 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.
B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
H. "Provide": Furnish and install, complete and ready for the intended use.
I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
    1. Architect may require that copies of certain reference specifications be kept at the job site.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
    1. AABC - Associated Air Balance Council; www.aabc.com.
    2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
    3. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
    4. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
    5. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
    6. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
    7. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
    8. AF&PA - American Forest & Paper Association; www.afandpa.org.

9. AGA - American Gas Association; www.aga.org.
10. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
11. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
12. AI - Asphalt Institute; www.asphaltinstitute.org.
13. AIA - American Institute of Architects (The); www.aia.org.
14. AISC - American Institute of Steel Construction; www.aisc.org.
15. AISI - American Iron and Steel Institute; www.steel.org.
16. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
17. ANSI - American National Standards Institute; www.ansi.org.
18. APA - APA - The Engineered Wood Association; www.apawood.org.
19. API - American Petroleum Institute; www.api.org.
20. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
21. ARI - American Refrigeration Institute; (See AHRI).
22. ASCE - American Society of Civil Engineers; www.asce.org.
23. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
24. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
25. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
26. ASSE - American Society of Safety Engineers (The); www.asse.org.
27. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
28. ASTM - ASTM International; (American Society for Testing and Materials International); www.astm.org.
29. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
30. AWI - Architectural Woodwork Institute; www.awinet.org.
31. AWPA - American Wood Protection Association; (Formerly: American Wood-Preservers' Association); www.awpa.com.
32. AWS - American Welding Society; www.aws.org.
33. AWWA - American Water Works Association; www.awwa.org.
34. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
35. BICSI - BICSI, Inc.; www.bicsi.org.
36. CDA - Copper Development Association; www.copper.org.
37. CEA - Canadian Electricity Association; www.electricity.ca.
38. CEA - Consumer Electronics Association; www.ce.org.
39. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
40. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
41. CGA - Compressed Gas Association; www.cganet.com.
42. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
43. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
44. CPA - Composite Panel Association; www.pbmdf.com.
45. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
46. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
47. CSA - Canadian Standards Association; www.csa.ca.
48. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
49. CSI - Construction Specifications Institute (The); www.csinet.org.
50. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
51. CWC - Composite Wood Council; (See CPA).
52. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
53. DHI - Door and Hardware Institute; www.dhi.org.
54. ECA - Electronic Components Association; (See ECIA).

55. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
56. ECIA - Electronic Components Industry Association; www.eciaonline.org
57. EIA - Electronic Industries Alliance; (See TIA).
58. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
59. ESTA - Entertainment Services and Technology Association; (See PLASA).
60. EVO - Efficiency Valuation Organization; www.evo-world.org.
61. FM Approvals - FM Approvals LLC; www.fmglobal.com.
62. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
63. FSA - Fluid Sealing Association; www.fluidsealing.com.
64. GA - Gypsum Association; www.gypsum.org.
65. GANA - Glass Association of North America; www.glasswebsite.com.
66. GS - Green Seal; www.greenseal.org.
67. HI - Hydraulic Institute; www.pumps.org.
68. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
69. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
70. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
71. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
72. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
73. IAS - International Accreditation Service; www.iasonline.org.
74. IAS - International Approval Services; (See CSA).
75. ICBO - International Conference of Building Officials; (See ICC).
76. ICC - International Code Council; www.iccsafe.org.
77. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
78. IEC - International Electrotechnical Commission; www.iec.ch.
79. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
80. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
81. IESNA - Illuminating Engineering Society of North America; (See IES).
82. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
83. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
84. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
85. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
86. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
87. ISO - International Organization for Standardization; www.iso.org.
88. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
89. ITU - International Telecommunication Union; www.itu.int/home.
90. LMA - Laminating Materials Association; (See CPA).
91. LPI - Lightning Protection Institute; www.lightning.org.
92. MCA - Metal Construction Association; www.metalconstruction.org.
93. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
94. MHIA - Material Handling Industry of America; www.mhia.org.
95. MIA - Marble Institute of America; www.marble-institute.com.
96. MMPA - Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
97. MPI - Master Painters Institute; www.paintinfo.com.
98. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
99. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.

100. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
101. NADCA - National Air Duct Cleaners Association; www.nadca.com.
102. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
103. NEBB - National Environmental Balancing Bureau; www.nebb.org.
104. NECA - National Electrical Contractors Association; www.necanet.org.
105. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
106. NEMA - National Electrical Manufacturers Association; www.nema.org.
107. NETA - International Electrical Testing Association; www.netaworld.org.
108. NFPA - NFPA; (National Fire Protection Association); www.nfpa.org.
109. NFPA - NFPA International; (See NFPA).
110. NHLA - National Hardwood Lumber Association; www.nhla.com.
111. NLGA - National Lumber Grades Authority; www.nlga.org.
112. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
113. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
114. NSF - NSF International; (National Sanitation Foundation International); www.nsf.org.
115. PDI - Plumbing & Drainage Institute; www.pdionline.org.
116. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
117. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
118. RFCI - Resilient Floor Covering Institute; www.rfci.com.
119. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
120. SDI - Steel Deck Institute; www.sdi.org.
121. SDI - Steel Door Institute; www.steeldoor.org.
122. SMA - Screen Manufacturers Association; www.smainfo.org.
123. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
124. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
125. SPIB - Southern Pine Inspection Bureau; www.spib.org.
126. SSINA - Specialty Steel Industry of North America; www.ssina.com.
127. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
128. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
129. TIA - Telecommunications Industry Association;; www.tiaonline.org.
130. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance.
131. UL - Underwriters Laboratories Inc.; www.ul.com.
132. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
133. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
134. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
135. WDMA - Window & Door Manufacturers Association; www.wdma.com.
136. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
137. WPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
   1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
   2. ICC - International Code Council; www.iccsafe.org.
   3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up-to-date as of the date of the Contract Documents.
   1. CPSC - Consumer Product Safety Commission; www.cpsc.gov.

2. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
3. DOE - Department of Energy; www.energy.gov.
4. EPA - Environmental Protection Agency; www.epa.gov.
5. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; http://eetd.lbl.gov.
6. OSHA - Occupational Safety & Health Administration; www.osha.gov.
7. USDA - Department of Agriculture; www.usda.gov.
8. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
   2. FED-STD - Federal Standard; (See FS).
   3. FS - Federal Specification; Available from Department of Defense Single Stock Point; http://dodssp.daps.dla.mil.
      a. Available from Defense Standardization Program; www.dsp.dla.mil.
      b. Available from General Services Administration; www.gsa.gov.
      c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
   4. USAB - United States Access Board; www.access-board.gov.
   5. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)
END OF SECTION 01 42 00

SECTION 01 43 30 - MOCKUPS

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. Provide and coordinate mock-up assemblies at Project site for Architect's review and acceptance, in accordance with requirements of the Contract Documents. Refer to individual Specification Sections for mock-up requirements. Generally, without limitation, mock-ups on site include the following:
   1. Mock-ups of individual pieces of the work, as specified within individual Specification Sections.
   2. Integrated exterior mockups.
   3. Preconstruction laboratory mockups.
   4. Room mockups.

B. Contractor to coordinate Work of the related Specification Sections so that each mock-up meets the specified requirements.

C. Related Requirements:
   1. Section 01 40 00 - Quality Requirements for quality assurance requirements for aesthetic and workmanship mockups specified in other Sections.
   2. Individual Specification Sections for Submittal Samples.

1.3 DEFINITIONS

A. Freestanding Mock-Ups: Full-size, physical assemblies that are constructed on-site in a protected location.
   1. Freestanding mock-ups are not part of the final construction. Freestanding mock-ups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects, qualities of materials and execution, and to review construction, coordination, testing, and operation.
   2. Approved freestanding mock-ups establish the standard by which the Work will be judged.
   3. Approved freestanding mock-ups remain on site during the balance of construction and are demolished and removed from site at completion of the Work they represent.

B. In-Place Mock-Ups: Full-size, physical assemblies that are constructed in-place and remain part of final construction.
   1. In-place mock-ups will be used to verify selections made under sample submittals, to demonstrate aesthetic effects, qualities of materials and execution, and to review construction, coordination, testing, or operation.
   2. Approved in-place mock-ups establish the standard by which the Work will be judged.
   3. Approved mock-ups remain part of the completed Work.

C. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as part of permanent construction, consisting of multiple products, assemblies, and sub-assemblies.

D. Preconstruction Laboratory Mockups: Integrated exterior mockups constructed at testing facility to verify performance characteristics.

E. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting as indicated.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

A. Schedule: Construction Manager shall submit a schedule of mock-up construction, including dates for mock-up review by the Architect.

1. Mock-up schedule shall be reviewed at each progress meeting, revised and resubmitted as required.
2. Schedule shall allow sufficient time for mock-ups which are not accepted to be reconstructed and reviewed until accepted by the Architect.

B. Shop Drawings of Mock-Ups: Provide large scale shop drawings for fabrication, installation and erection of all parts of each mock-up. Provide plans, elevations, and details of anchorage, connections and accessory items.

C. Photographs of Mock-Ups: Submit photographs of mock-ups after completion of installation and acceptance of each mock-up.

D. Submittal Samples: Refer to individual Specification Sections for submittal requirements of mock-up components and coordinate accordingly.

E. Delegated Design Submittal: For temporary structural supports for mockups not attached to building structure, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 QUALITY ASSURANCE

A. Design Modifications: Make design modifications to work only as required to meet performance requirements and to coordinate the work. Indicate proposed design modifications on shop drawings. Maintain original design concept without altering profiles and alignments indicated.

1.7 COORDINATION

A. Coordinate schedule for construction of mockups, so construction, testing, and review of mockups do not impact Project schedule.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 - Quality Requirements, to design support structure for free-standing mockups.

2.2 MATERIALS AND PRODUCTS

A. Provide materials, components, and products for mock-ups as specified in individual Specification Sections.

PART 3 EXECUTION

3.1 INDIVIDUAL MOCK-UPS

A. Provide individual mock-ups of types and sizes required by individual Specification Sections to evaluate and set the standard of quality for that work. Obtain Architect's acceptance of visual qualities prior to commencing work that individual mock-up is intended to represent. Protect and maintain approved mock-ups throughout the work of the Contract. Locate mock-ups at the Project site as directed by the Architect.
   1. Provide as many mock-ups as required until Architect's approval has been received.
   2. When indicated in individual Specification Sections, approved mock-ups may be incorporated into the finish work.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as non-visible as possible.

B. Protect construction exposed by or for quality-control service activities.

3.3 REMOVAL AND DISPOSAL

A. Demolish and remove mock-ups from site at the completion of the Project. Legally dispose of demolished mock-up materials.

END OF SECTION 01 43 30

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 other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 01 23 00 - Alternates for products selected under an alternate.
2. Section 01 25 00 - Substitution Procedures for requests for substitutions.
3. Section 01 33 00 - Submittal Procedures for definition of Range Samples.
4. Section 01 42 00 - References for applicable industry standards for products specified.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as “specialties," “systems," “structure," “finishes," “accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

B. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent. Comply with specifications and referenced standards as minimum requirements.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. Materials: Products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. Equipment: A product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.
4. New Products: New Products are items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
5. Basis-of-Design Product Specification: Specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, color, finish, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
6. Comparable Product: A product proposed by Contractor from a list of manufacturers listed in the individual product specification that allows for comparable products, or includes the terms “or approved equal" or “or equal" in lieu of “Basis of Design", proprietary or semi-proprietary product.
    a. Comply with procedure for submission of “comparable products" as required in this Section.
    b. Contractor shall provide information to demonstrate through submittal process, that product submitted have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
    c. In instances of dispute as to whether any product proposed by Contractor is an acceptable “comparable product", the judgment of Architect shall govern.

d. The burden of proof rests solely with Contractor.

7. Match existing: Where indicated on drawings to "match existing," the Contractor is responsible to field verify the existing condition and present for the Architect's approval the existing product assembly and/or finish to match.
   a. If accepted, the installation will follow the assembly manufacturer's current recommendations and standards meeting all applicable codes and testing.
   b. The accepted assembly must also meet all building owner standards if they are more stringent than the manufacturers.
   c. All requirements and procedures in Division 01 sections will apply.
   d. If accepted assembly matches attic stock available from owner, Architect can choose to have attic stock installed in new work.
8. Substitution: A product proposed by Contractor which is different from that which is required by the Contract Documents and is not a listed product or by a listed manufacturer allowing for "comparable products" in an individual product specification.
   a. Comply with procedure for substitutions as defined in Section 01 25 00 "Substitution Procedures." Do not submit as "comparable product" or as part of submittal review process. Submit as substitution with required documentation.
   b. In instances of dispute as to whether any substitution proposed by Contractor is acceptable, the judgement of Architect shall govern.
   c. The burden of proof rests solely with Contractor.

1.4 ACTION SUBMITTALS

A. Product Submittals: Comply with requirements in Section 01 33 00 - Submittal Procedures and individual specification sections showing compliance with requirements.
   1. Comparable Product Requests: Submit sufficient information for consideration of each comparable product, identifying product to be replaced, compliance with requirements and indicating qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product. Include Specification Section number and title and Drawing numbers and titles.
      a. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
      b. Submit in conjunction with other submittals required in technical specification section. Do not submit substitutions as comparable products. Items that are a substitution will be returned "Rejected" for proper submission as substitution.
      c. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
         1) Form of Approval: Per Section 01 33 00 - Submittal Procedures.
         2) Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
   2. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 - Submittal Procedures. Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
B. Compatibility of Options: If Contractor is given an option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
C. Whenever the Contract Documents require that a product complies with Federal Specifications, ASTM Designations, ANSI Specifications or other association standard, Contractor shall

present an affidavit from the manufacturer certifying that the product complies therewith. Where requested or specified, submit supporting test data to substantiate compliance.

D. Nameplates and labels: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
   1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
   2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
      a. Name of product and manufacturer.
      b. Model and serial number.
      c. Capacity.
      d. Speed.
      e. Ratings.

E. Workmanship:
   1. Comply with industry standards, except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
   2. Perform work by persons qualified to produce workmanship of specified quality.
   3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

F. Manufacturer's Instructions:
   1. When work is specified to comply with manufacturer's instructions, submit copies as specified in Section 01 33 00 - Submittal Procedures, distribute copies to persons involved, and maintain one set in field office.
   2. Perform work in accordance with details of instructions and specified requirements.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions. More detailed requirements for transportation and handling are specified under the technical Sections.
   1. Transport products by methods to avoid product damage. Provide appropriate equipment and qualified personnel to move products on-site without damage.
   2. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   3. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   4. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   5. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
   6. Store products to allow for inspection and measurement of quantity or counting of units as well as inspection or review for compliance with requirements of the Contract Documents.
   7. Store materials in a manner that will not endanger Project structure.
   8. Provide suitable temporary weathertight storage facilities as may be required for materials to protect them from damage in storage, maintaining environmental conditions, including temperature, ventilation, and humidity, conforming to manufacturer's requirements,

warranty requirements, and as necessary to protect the stored material from damage. Do not use damaged material in the Work.

a. Available storage space at the job site is limited. Any additional off-site space required is the responsibility of Contractor.
b. Allocate storage areas and coordinate their use by the trades on Project. Maintain current layout of storage facilities. Secure and control access to storage to protect stored materials from theft, vandalism or other damage.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
   3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
C. Provide full warranty period to Owner for any equipment used by contractor for temporary construction purposes.
D. Submittal Time: Comply with requirements in Section 01 77 00 - Closeout Procedures.

PART 2 PRODUCTS

2.1 PRODUCTS, GENERAL

A. Products: Provide products as specified in the different specification sections meeting descriptive and performance requirements indicated. Provide proprietary products indicated unless comparable products or “approved equals" are indicated. Provide substitutions only where allowed or meeting the requirements in Section 01 77 00 - Closeout Procedures.
   1. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
   2. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
   3. In case of conflict between differing specifications for a product, the most stringent specification (or the most stringent combination of specifications) shall apply. Contact Architect regarding interpretation of specifications as required
   4. Materials specified on Contract Documents by reference to title, symbol, or number of a Commercial or Industry Standard, Federal Specification, ASTM designation, ANSI designation, Manufacturer's data, or other similar reference standard are identified hereby as the minimum requirement for the quality of materials required hereunder. References are to latest editions of same, except as indicated otherwise. If not in contradiction to the building code or regulations of other governmental agencies as may have jurisdiction,

such reference documents shall be considered as an integral part of these specifications as if repeated word for word herein.

B. Manufacturers: Provide products by listed manufacturers meeting project requirements. Consideration of other manufacturers where allowed by the specifications or meeting specific requirements for substitutions are dependent on meeting specified requirements including proven expertise, experience and similar project experience as listed under Quality Assurance in technical specification sections.
   1. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
   2. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
   3. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2.2 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Comply with specifications and referenced standards as minimum requirements. Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Products required to be supplied in quantity within a Specification Section shall be of the same manufacture, shall be interchangeable, and shall be the same with regard to function, texture, pattern and color. To the greatest extent possible, provide products from a single source.
   3. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   4. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
   1. Proprietary Specification Requirements: Where only a single product is named, provide the product indicated. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
   2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers.
      a. Drawings and Specifications indicate sizes, profiles, dimensions, colors, finishes and other characteristics that are based on the product named.
      b. Comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed by one of the other named manufacturers.
   4. Semi-Proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products specified. Comparable products or substitutions for Contractor's convenience will not be considered.

5. Where products or manufacturers are specified by name, accompanied by the term “or equal," or “or approved equal" comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
6. Non-Proprietary Specifications: Where Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict Contractor to use of these products only, Contractor may propose any available product that complies with Contract requirements.
7. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
8. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application shown or specified. General overall performance of a product is implied where the product is specified for a specific application.
    a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
9. Compliance with Standards, Codes and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, provide a product that complies with the standards, codes or regulations specified.
    a. Provide an affidavit from the manufacturer certifying that the product complies with standards, codes, or regulations and submit supporting test data to substantiate compliance, if requested by Owner.
10. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Section 01 25 00 - Substitution Procedures for consideration of an unnamed product or system.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
    1. Where multiple items are to match same Architect's sample, finish and color shall be controlled by single entity so that finish is applied by the same finisher or finishing materials from the same production lot shall be used at multiple finishers. Final finish of each item or system shall match.
    2. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with requirements in Section 01 25 00 - Substitution Procedures for selection of a matching product in another product category, or for noncompliance with specified requirements.
D. Visual Selection Specification:
    1. Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, submit product that complies with all specified requirements to Architect with finish samples from manufacturer's complete product line that includes both standard and premium items for Architect's selection of finish including color, gloss, pattern, density, and texture.
        a. Include manufacturer's name and pertinent data which will facilitate completion of color schedule until submittals and required samples have been submitted to and reviewed by Architect.
        b. Include items which may come in only one or a limited number of colors.
        c. Include items which are specified without any reference to color, but which come in a color, and require selection by Architect.

d. In no case shall a color for materials, products or equipment for which colors are available be selected or submitted without first consulting Architect.

2. The sentence “Custom color selected by Architect.", “Match existing color." or “Match Architect's approved sample." shall mean that color, texture or pattern has been selected or that it will be selected by Architect and that Contractor shall provide color, texture or pattern conforming to that selection.
3. When, due to the nature of the material, the material is available in a range of colors, i.e., natural stone, brick, and tile, Contractor shall submit the full available range of colors for that material for Architect's review. When material is available with varying characteristics, Contractor shall submit a multiple set of samples depicting the applicable range proposed for this project. Materials not conforming to the approved color range will be rejected and Contractor shall remove nonconforming materials from the site and replace them with materials in the approved color range at Contractor's expense.

E. Custom: Where Specifications require "custom", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches. Custom items shall not be restricted by manufacturer's standard finishes or colors.

2.3 COMPARABLE PRODUCTS

A. General: Any proposed Comparable Product Request must maintain the quality standards established by the Contract Documents for the specified product without any detrimental effect to Owner. Comparable products shall be in compliance with Contract Document requirements. Deviation in compliance shall be expressly noted. Contractor shall be required to provide all documentation and information necessary to prove that the Comparable Product is “equal" to the listed product.

B. If Contractor submits a product other than the product specified as the “Basis of Design", and the submitted alternate manufacturer is named in the relevant specification Section, that submittal shall be processed in accordance with requirements in Section 01 33 00 - Submittal Procedures.

1. Contractor shall submit all required evidence to show alternate product's compliance with technical requirements and equivalency with the “Basis of Design" product. Contractor is responsible for providing documentation that proves that product of manufacturer meets the requirements of the Contract Documents.
2. If changes are required in the related work, Contractor shall note such in submittal.
3. Architect may directly approve or disapprove this product as reviewed in the submittal.
4. Finish and color or alternate manufacturer or product shall match Architect's control sample or scheduled “Basis of Design" product.
    a. Where finish or color does not match as determined by Architect, provide custom color and finish to match Basis of Design product scheduled.

C. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
    a. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Include annotated copy of applicable Specification Section addressing each item in section in left hand margin stating whether proposed substitution complies with requirement or deviates. Specifically indicate deviations and impact on Work.

1) Significant qualities may include attributes such as performance, weight, deflection, tolerances, size, durability, visual effect, warranties, and specific features and requirements indicated.

2. Evidence that proposed product provides specified warranty.
3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
4. Samples showing full range of colors including submission for specific finish to match Architect's control sample or selected product.
   a. Where color or finish does not match Architect's control sample or selected product, provide custom color or finish.
   b. Submit range samples for materials available in a range of colors.
   c. Submit a multiple set of samples depicting the applicable range proposed for this project.
   d. Provide photographs of quarried materials showing proposed selection.
5. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
6. Research/evaluation reports evidencing compliance with building code in effect for Project, from model code organization acceptable to authorities having jurisdiction.
7. Contractor's certification that proposed Comparable Product complies with requirements in Contract Documents, is compatible with related materials, appropriate for applications indicated, and has no impact on Construction Cost or Schedule.
8. Other information as necessary to assist evaluation.

D. Architect will review submittals for comparable products as part of the submittal process per Section 01 33 00 - Submittal Procedures. Architect will review information provided and whether the following conditions are satisfied.
   1. Comparable Product does not require unacceptable revisions to Contract Documents.
   2. Comparable Product is consistent with Contract Documents and will produce desired results.
   3. Comparable Product is fully documented and properly submitted.
   4. Comparable Product will not unnecessarily adversely affect Contractor's Construction Schedule.
   5. Comparable Product has received necessary approvals of authorities having jurisdiction.
   6. Comparable Product has been coordinated, and is compatible, with other portions of the Work.
   7. Comparable Product provides specified warranty.
   8. If Comparable Product involves more than one contractor, Comparable Product has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

E. Architect will return submittals with action noted. If necessary, Architect will request additional information or documentation for evaluation with returned submittal.

2.4 PROOF OF COMPLIANCE

A. Materials specified on the Contract Documents by reference to title, symbol, or number of a Commercial or Industry Standard, Federal Specification, ASTM designation, ANSI designation, Manufacturer's data, or other similar reference standard are identified hereby as the minimum requirement for the quality of materials required hereunder.
   1. References are to the latest editions of same, except as indicated otherwise.
   2. If not in contradiction to the building code or regulations of other governmental agencies as may have jurisdiction, such reference documents shall be considered as an integral part of these specifications as if repeated word for word herein.

B. Whenever the Contract Documents require that a product complies with Federal Specifications, ASTM Designations, ANSI Specifications or other association standard, Contractor shall

present an affidavit from the manufacturer certifying that the product complies therewith. Where requested or specified, submit supporting test data to substantiate compliance.

PART 3 EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Products shall be applied, installed, connected, erected, used, adjusted, cleaned and conditioned in accordance with respective manufacturer's instructions and recommendations unless more stringent requirements are specified.
   1. In case of any differences or conflicts between requirements of a manufacturer's written instructions and the technical sections of the specifications, the instructions of specifications having the more detailed and precise requirements which are specifically applicable to the Work in question, as determined by Architect shall govern.

B. Verify and coordinate clearances, dimensions and installation of adjoining construction, equipment, piping, ducts, conduits, or other mechanical or electrical items or apparatus.

C. Prior to fabrication, field measure actual existing conditions as applicable to ensure proper fit.

D. Inspect each item of material or equipment immediately prior to installation. Reject damaged and defective items.

E. Recheck measurements and dimensions of Work, as an integral step of starting each installation. Whenever stock manufactured products are specified, verify actual space requirements for setting or placing into allotted space.

F. Anchor each product securely in place with positive anchorage devices designed and sized to withstand expected loads. Anchors shall be accurately located and aligned with other Work.

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

H. Allow for expansion of materials and building movement.

I. Damaged products shall be not installed as part of the Work. At Owner's sole discretion, Owner may approve the use of repaired items in the Work. Contractor shall bear all costs related to replacing or repairing and refurbishing damaged products.

3.2 PROTECTION OF INSTALLED WORK

A. Clean, protect, adjust and perform maintenance on installed Work as necessary to ensure freedom from damage and deterioration at time of Substantial Completion. Remove protective devices when no longer needed.
   1. Provide special protection where specified in individual Specification Sections.
   2. Provide temporary and removable materials for protection of installed products. Control activity in immediate work area to minimize damage.
   3. Protect finished Work from damage, defacements, stains, scratches, and wear.
   4. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
   5. Protect finished floors, stairs, and other surfaces from traffic dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

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 general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Installation of the Work.
   3. Cutting and patching.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. Related Requirements:
   1. Section 01 10 00 - Summary for limits on use of Project site.
   2. Section 01 33 00 - Submittal Procedures for submitting surveys.
   3. Section 01 77 00 - Closeout Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
   4. Section 07 81 00 - Applied Fireproofing for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor/professional engineer.

B. Certificates: Submit certificate signed by land surveyor/professional engineer certifying that location and elevation of improvements comply with requirements.

C. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
   1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
   2. Procedures: Specifically describe how cutting and patching will be performed.
   3. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
   4. Products: List products to be used for patching and firms or entities that will perform patching work.
   5. Trades: Indicate the firms or entities that will perform the cutting and patching.
   6. Dates: Indicate when cutting and patching will be performed.
   7. Structural Elements: Where cutting and patching involve modifying structural elements, including precast concrete, submit details and engineering calculations, generated by a professional engineer licensed to practice in the jurisdiction where the project is located, indicating structural integrity of proposed modification.
   8. Effect on weatherproof integrity of the Work.
   9. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted. Indicate utilities that will need to be relocated.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

10. Cost proposal when applicable.
11. Architect's Approval: Obtain Architect's approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
12. Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void or diminish required or existing warranties.

1.5 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
   2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
      a. Primary operational systems and equipment.
      b. Fire separation assemblies.
      c. Air or smoke barriers.
      d. Fire-suppression systems.
      e. Mechanical systems piping and ducts.
      f. Control systems.
      g. Communication systems.
      h. Fire-detection and -alarm systems.
      i. Conveying systems.
      j. Electrical wiring systems.
      k. Operating systems of special construction.
   3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
      a. Water, moisture, or vapor barriers.
      b. Membranes and flashings.
      c. Exterior curtain-wall construction.
      d. Sprayed fire-resistive material.
      e. Equipment supports.
      f. Piping, ductwork, vessels, and equipment.
      g. Noise- and vibration-control elements and systems.
   4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
   5. Fire-Rated Assemblies: At penetrations of fire-rated assemblies, completely seal penetration with firestop in accordance with Division 7 Sections.
B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential

interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Require compliance with manufacturer's printed installation instructions, including each step in sequence. Do not omit preparatory steps or installation procedures unless specifically modified or exempted by Contract Documents
D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 31 00 - Project Management and Coordination.

3.3 FIELD ENGINEERING AND LAYOUT

A. Provide all field engineering services required to lay out the Work.
B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
    1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
    2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
    3. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
    4. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
    5. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
C. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
D. General:
    1. Establish/use benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
    2. Establish limits on use of Project site.
    3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
    4. Inform installers of lines and levels to which they must comply.
    5. Check the location, level and plumb, of every major element as the Work progresses.
    6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
    7. Protect and maintain all benchmarks, control points and reference points. If survey control points are damaged, moved, or destroyed, re-establish the control points.
E. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels.
F. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 INSTALLATION

A. Refer to Section 01 60 00 - Product Requirements for product Installation requirements.
B. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
    1. Make vertical work plumb and make horizontal work level.

2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
F. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
G. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
H. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
J. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

A. Refer to Drawings and Section 02 41 19 - Selective Demolition for more information.
B. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.
C. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
D. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
E. Temporary Support: Provide temporary support of work to be cut.

F. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
    1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
    2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
    3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. Do not damage or cut any steel reinforcing unless specifically allowed by the approved cutting and patching proposal.
    4. Structure: Do not damage or cut any structural framing unless specifically allowed by the approved cutting and patching proposal
    5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
    6. Proceed with patching after construction operations requiring cutting are complete.
H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
    1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
    2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
        a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
        b. Restore damaged pipe covering to its original condition.
    3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
        a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
    4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
    5. Exterior Building Enclosure: Maintain exterior enclosure in a weathertight condition and ensures thermal and moisture integrity of building enclosure.
I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
J. Painting: Where patching occurs in previously painted surface, provide appropriate prime coat followed by first finish coat of paint. Provide final finish coat over entire area containing patch; for continuous surface extend to nearest vertical break or intersection, for an assembly refinish entire unit. Except where indicated otherwise, finish in sheen and color to match existing.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Use containers intended for holding waste materials of type to be stored.
   4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
B. Site: Maintain Project site free of waste materials and debris.
C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 74 19 - Construction Waste Management and Disposal.
H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field assembled components and equipment installation, comply with qualification requirements in Section 01 40 00 - Quality Requirements.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Refer to Section 01 60 00 - Product Requirements for product protection requirements.
B. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

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

END OF SECTION 01 73 00

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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 administrative and procedural requirements for the following:
   1. Salvaging nonhazardous waste.
   2. Recycling nonhazardous waste.
   3. Disposing of nonhazardous waste.

1.3 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

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

B. 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 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Forms approved by Architect. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
G. Qualification Data: For waste management coordinator and refrigerant recovery technician.
H. 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.
I. Refrigerant Recovery: Comply with requirements in Section 02 41 19 - Selective Demolition for refrigerant recovery submittals.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
B. Refrigerant Recovery Technician Qualifications: Comply with requirements in Section 02 41 19 - Selective Demolition.
C. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.
D. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to waste management including, but not limited to, the following:
    1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
    2. Review requirements for documenting quantities of each type of waste and its disposition.
    3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
    4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
    5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Use Forms approved by Architect. Include estimated quantities and assumptions for estimates.
C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Forms approved by Architect. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
    1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work in compliance with Section 02 41 19 - Selective Demolition.
    2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.

3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there were no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Use Forms approved by Architect. Include the following:
1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include transportation and tipping fees and cost of collection containers and handling for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
6. Savings in transportation and tipping fees by donating materials.
7. Savings in transportation and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
1. Demolition Waste:
a. Asphalt paving.
b. Concrete.
c. Concrete reinforcing steel.
d. Brick.
e. Concrete masonry units.
f. Wood studs.
g. Wood joists.
h. Plywood and oriented strand board.
i. Wood paneling.
j. Wood trim.
k. Structural and miscellaneous steel.
l. Rough hardware.
m. Roofing.
n. Insulation.
o. Doors and frames.
p. Door hardware.
q. Windows.
r. Glazing.
s. Metal studs.
t. Gypsum board.

u. Acoustical tile and panels.
v. Carpet.
w. Carpet pad.
x. Demountable partitions.
y. Equipment.
z. Cabinets.
aa. Plumbing fixtures.
bb. Piping.
cc. Supports and hangers.
dd. Valves.
ee. Sprinklers.
ff. Mechanical equipment.
gg. Refrigerants.
hh. Electrical conduit.
ii. Copper wiring.
jj. Lighting fixtures.
kk. Lamps.
ll. Ballasts.
mm. Electrical devices.
nn. Switchgear and panelboards.
oo. Transformers.

2. Construction Waste:
   a. Masonry and CMU.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Roofing.
   g. Insulation.
   h. Carpet and pad.
   i. Gypsum board.
   j. Piping.
   k. Electrical conduit.
   l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      6) Wood crates.
      7) Wood pallets.
      8) Plastic pails.
   m. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:
      1) Paper.
      2) Aluminum cans.
      3) Glass containers.

PART 3 EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
    1. Distribute waste management plan to everyone concerned within three days of submittal return.
    2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
    1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
E. Waste Management in Historic Zones or Areas: Transportation equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches (300 mm) or more.

3.2 SALVAGING DEMOLITION WASTE

A. Comply with requirements in Section 02 41 19 - Selective Demolition for salvaging demolition waste.
B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
    1. Clean salvaged items.
    2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
    3. Store items in a secure area until installation.
    4. Protect items from damage during transport and storage.
    5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
C. Salvaged Items for Sale and Donation: Not permitted on Project site.
D. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
    1. Clean salvaged items.
    2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
    3. Store items in a secure area until delivery to Owner.
    4. Transport items to Owner's storage area designated by Owner.
    5. Protect items from damage during transport and storage.
E. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
F. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
G. Plumbing Fixtures: Separate by type and size.
H. Lighting Fixtures: Separate lamps by type and protect from breakage.
I. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.
B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner**.**

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
    1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
        a. Inspect containers and bins for contamination and remove contaminated materials if found.
    2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
    3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
    4. Store components off the ground and protect from the weather.
    5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.4 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Grind asphalt to maximum 4 inch size.
B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
    1. Pulverize concrete to maximum 4 inch size.
D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
    1. Pulverize masonry to maximum 4 inch size.
    2. Clean and stack undamaged, whole masonry units on wood pallets.
E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
F. Metals: Separate metals by type.
    1. Structural Steel: Stack members according to size, type of member, and length.
    2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
J. Metal Suspension System: Separate metal members, including trim and other metals from acoustical panels and tile, and sort with other metals.
K. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
    1. Store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
L. Carpet Tile: Remove debris, trash, and adhesive.
    1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
M. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.
N. Conduit: Reduce conduit to straight lengths and store by material and size.
O. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:
   1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
   2. Polystyrene Packaging: Separate and bag materials.
   3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
   4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
   1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
   2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
   1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner’s property.

C. Burning: Do not burn waste materials.

END OF SECTION 01 74 19

SECTION 01 77 00 - CLOSEOUT PROCEDURES

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 administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.
   5. Repair of the Work.

B. Related Requirements:
   1. Section 01 78 39 - Project Record Documents for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
      a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's signature for receipt of submittals.
   5. Submit testing, adjusting, and balancing records.

6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Advise Owner of pending insurance changeover requirements.
   2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   3. Complete startup and testing of systems and equipment.
   4. Perform preventive maintenance on equipment used prior to Substantial Completion.
   5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
   6. Advise Owner of changeover in utility services.
   7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
   8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   9. Complete final cleaning requirements.
   10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment according to Section 01 29 00 - Payment Procedures.
   2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit pest-control final inspection report.
   5. Submit final completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect and Construction Manager.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the following format:
      a. MS Excel electronic file. Architect, through Construction Manager, will return annotated file.
      b. PDF electronic file. Architect, through Construction Manager, will return annotated file.
      c. Web-based project software upload. Utilize software feature for creating and updating list of incomplete items (punch list).
      d. Three paper copies. Architect, through Construction Manager, will return two copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
   1. Submit on digital media acceptable to Architect.
E. Warranties in Paper Form:
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 by 11 inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
    1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
        a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
        b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
        c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
        d. Remove tools, construction equipment, machinery, and surplus material from Project site.
        e. Remove snow and ice to provide safe access to building.
        f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
        g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
        h. Sweep concrete floors broom clean in unoccupied spaces.
        i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
        j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
        k. Remove labels that are not permanent.
        l. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
        m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
        n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
        o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
        p. Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
        q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
        r. Leave Project clean and ready for occupancy.
C. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19 - Construction Waste Management and Disposal.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired.

Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

3.3 MAINTENANCE AND UPKEEP

A. After all conditions are met following this section, it is understood that the Owner (Occupant/tenant) will bare sole responsibility for maintaining the specified finishes and assemblies beyond their warranty periods. All applicable codes will be met by the owner following manufacturer’s recommendations.

END OF SECTION 01 77 00

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

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 administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Requirements:
   1. Section 01 73 00 - Execution for final property survey.
   2. Section 01 77 00 - Closeout Procedures for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit one set(s) of marked-up record prints.
   2. Number of Copies: Submit copies of record Drawings as follows:
      a. Initial Submittal:
         1) Submit one paper-copy set(s) of marked-up record prints.
         2) Submit PDF electronic files of scanned record prints and one of file prints.
         3) Submit record digital data files and one set(s) of plots.
         4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal:
         1) Submit one paper-copy set(s) of marked-up record prints.
         2) Submit record digital data files and three set(s) of record digital data file plots.
         3) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an acceptable drawing technique.
      c. Record data as soon as possible after obtaining it.
      d. Record and check the markup before enclosing concealed installations.
      e. Cross-reference record prints to corresponding photographic documentation.
   2. Content: Types of items requiring marking include, but are not limited to, the following:
      a. Dimensional changes to Drawings.

b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to electrical circuitry.
g. Actual equipment locations.
h. Duct size and routing.
i. Locations of concealed internal utilities.
j. Changes made by Change Order or Construction Change Directive.
k. Changes made following Architect's written orders.
l. Details not on the original Contract Drawings.
m. Field records for variable and concealed conditions.
n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect and Construction Manager. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
2. Format: Annotated PDF electronic file with comment function enabled .
3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
4. Refer instances of uncertainty to Architect through Construction Manager for resolution.
5. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
   a. See Section 01 31 00 - Project Management and Coordination for requirements related to use of Architect's digital data files.
   b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Architect and Construction Manager.
   e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
   5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as annotated PDF electronic file.
   1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect [and Construction Manager's] reference during normal working hours.

PART 2 PRODUCTS

PART 3 EXECUTION

END OF SECTION 01 78 39

SECTION 05 70 00 - DECORATIVE METAL

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. Exterior Metal Wall Trellis

1.3 COORDINATION

A. Coordinate installation of anchorages for decorative metal items. 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 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product, including finishing materials.
B. Shop Drawings: Show fabrication and installation details for decorative metal.
   1. Include plans, elevations, component details, and attachment details.
   2. Indicate materials and profiles of each decorative metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
C. Samples for Initial Selection: For products involving selection of color, texture, or design including mechanical finishes.
D. Samples for Verification: For each type of exposed finish.
   1. Sections of linear shapes.
   2. Samples of welded and brazed joints showing quality of workmanship and color matching of materials.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.
B. Welding certificates.

1.7 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing decorative metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
B. Installer Qualifications: An experienced installer with a minimum of 2 years documented experience with installations of similar size and complexity. Or Fabricator of products.
C. Organic-Coating Applicator Qualifications: A firm experienced in successfully applying organic coatings, of type indicated, to aluminum extrusions and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
D. Anodic Finisher Qualifications: A firm experienced in successfully applying anodic finishes of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
E. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
F. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
G. 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 for the following types of decorative metal:

a. Exterior Metal Wall Trellis
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. Store decorative metal in a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

1.9 FIELD CONDITIONS

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

PART 2 PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Use materials with smooth, flat surfaces unless otherwise indicated. Use materials without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
B. Metal Trellis: (MTL-3) as indicated in Finish Schedule in the Drawings.

2.2 ALUMINUM

A. Fabricate products from alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
B. Bars and Shapes: ASTM B221, (ASTM B221M) Alloy 6063-T5/T52.
C. Pipe: ASTM B429/B429M, Alloy 6063-T6.
D. Tubing: ASTM B210/B210M, Alloy 6063-T832.
E. Plate and Sheet: ASTM B209, (ASTM B209M) Alloy 3003-H14.

2.3 FASTENERS

A. Fastener Materials: Unless otherwise indicated, provide the following:
1. Aluminum Items: Aluminum fasteners.
2. Dissimilar Metals: Type 304 stainless steel fasteners.
B. Fasteners for Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.
C. Provide concealed fasteners for interconnecting components and for attaching decorative metal items to other work unless otherwise indicated.
1. Provide Phillips flat-head machine screws for exposed fasteners unless otherwise indicated.
D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 ICC-ES AC308.
1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5 unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
B. Shop Primers: Provide primers that comply with Section 09 91 13 - Exterior Painting
C. Universal Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

2.5 FABRICATION, GENERAL

A. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly.
   1. Disassemble units only as necessary for shipping and handling limitations.
   2. Clearly mark units for reassembly and coordinated installation.
   3. Use connections that maintain structural value of joined pieces.

B. Form decorative metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.

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

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

E. 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.

F. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.

G. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.

H. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Cut, reinforce, drill, and tap as needed to receive finish hardware, screws, and similar items unless otherwise indicated.

I. Comply with AWS for recommended practices in shop welding. Weld behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.
   1. Where welding cannot be concealed behind finished surfaces, finish joints to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 Welds: no evidence of a welded joint.

2.6 FABRICATION OF EXTERIOR METAL WALL TRELLIS

A. Fabricate trellis to designs indicated from aluminum shapes of sizes and profiles indicated. Form aluminum by bending, forging, coping, mitering, and welding.

B. Welding: Interconnect frames and trims with full-length, full-penetration welds unless otherwise indicated. Use welding method that is appropriate for metal and finish indicated and that develops full strength of members joined. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces.

C. Brackets, Fittings, and Anchors: Provide brackets, fittings, and anchors to connect trellis to other work unless otherwise indicated.
   1. Furnish inserts and other anchorage devices to connect trellis to concrete and masonry work. Coordinate anchorage devices with supporting structure.
   2. Fabricate anchorage devices that are capable of withstanding loads indicated.

2.7 FINISHES, GENERAL

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

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.8 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

C. Color Anodic Finish: AAMA 611 AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
   1. Color: Champagne.
   2. Color: Match Architect's sample.
D. 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 indicated by manufacturer's designations.
E. Siliconized Polyester Finish: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
   1. Color and Gloss: As indicated by manufacturer's designations.
F. High-Performance Organic Two-Coat Fluoropolymer Finish: AAMA 2604 and containing not less than 50 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.
   1. Color and Gloss: As indicated by manufacturer's designations.
G. High-Performance Organic Three-Coat Fluoropolymer Finish: AAMA 2605 and containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions for seacoast and severe environments.
   1. Color and Gloss: As indicated by manufacturer's designations.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of decorative metal.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Provide anchorage devices and fasteners where needed to secure decorative metal to in-place construction.
B. Perform cutting, drilling, and fitting required to install decorative metal. Set products accurately in location, alignment, and elevation, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items to be built into concrete, masonry, or similar construction.
C. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of decorative metal, restore finishes to eliminate evidence of such corrective work.
D. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
E. Install concealed gaskets, joint fillers, insulation, and flashings as work progresses.
F. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.
   1. Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude nonuniform oxidation and discoloration.
G. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding and requirements for welding and for finishing welded connections in "Fabrication, General" Article. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
   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. Field Brazing: Comply with requirements for brazing and for finishing brazed connections in "Fabrication, General" Article. Braze connections that are not to be left as exposed joints but cannot be shop brazed because of shipping size limitations.

I. 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.

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

K. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
a. Cast Aluminum: Heavy coat of bituminous paint.
b. Extruded Aluminum: Two coats of clear lacquer.

3.3 INSTALLATION OF OF EXTERIOR METAL WALL TRELLIS

A. Mount exterior metal wall trellis at heights and in positions indicated on Drawings.
1. Secure to framing and blocking with specified fasteners.

3.4 CLEANING AND PROTECTION

A. Unless otherwise indicated, clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
1. Apply by brush or spray to provide a minimum 2.0 mil dry film thickness.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 90 00 Painting and Coating.

D. Protect finishes of decorative metal from damage during construction period with temporary protective coverings approved by decorative metal fabricator. Remove protective covering at time of Substantial Completion.

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

END OF SECTION 05 70 00

SECTION 06 10 00 - 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. Wood blocking, cants, and nailers.
   2. Wood furring and grounds.
B. Related Requirements:
   1. Section 06 40 23 - Interior Architectural Woodwork

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
C. Exposed Framing: Framing not concealed by other construction.
D. OSB: Oriented strand board.

1.4 ACTION 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 D5664.
   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.

1.5 INFORMATIONAL SUBMITTALS

A. 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.
B. Evaluation Reports: For the following, from ICC-ES:
   1. Wood-preservative-treated wood.
   2. Fire-retardant-treated wood.
   3. Engineered wood products.
   4. Power-driven fasteners.
   5. Post-installed anchors.
   6. Metal framing anchors.

1.6 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.

1.7 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 American Lumber Standard Committee (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. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent for 2 inch nominal thickness or less, unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
   1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing 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, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
   1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
   2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

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.

D. Application: Treat items indicated on Drawings, and the following:
   1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
   2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
   3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
   4. Wood floor plates that are installed over concrete slabs-on-grade.

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 E84, 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 beyond the centerline of the burners at any time during the test.

1. Treatment shall 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 D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

2.4 DIMENSION LUMBER FRAMING

A. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade.

2.5 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 any species.
C. 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.
D. 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.
E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 PLYWOOD UNDERLAYMENT

A. Bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.
B. Subflooring: under finish wood flooring:
1. APA Rated sheathing, Exposure 1, panel grade CD.
2. Thickness: 0.75 inch.

2.7 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.
C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.
1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Grade A1 or A4).

2.8 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
B. Adhesive, Including Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AWC WCD1, "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 furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
C. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated.
F. 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.
G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
    1. Use inorganic boron for items that are continuously protected from liquid water.
    2. Use copper naphthenate for items not continuously protected from liquid water.
H. Securely attach rough carpentry work to substrate by anchoring and fastening, complying with the following:
    1. Table 2304.10.1, "Fastening Schedule," in ICC's International Building Code ICC (IBC).
    2. Table R602.3(1), "Fastener Schedule for Structural Members."
    3. 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.
J. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
    1. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 INSTALLATION OF WOOD FURRING

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 inch by 3 inch nominal- size furring horizontally at 24 inches o.c.
C. Furring to Receive Gypsum Board: Install 1 inch by 2 inch nominal size furring vertically at 16 inches o.c.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

SECTION 06 16 00 - SHEATHING

PART 1 GENERAL

1.1 GENERAL PROVISIONS

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. Wall sheathing.
   2. Sheathing joint and penetration treatment.
   3. Subflooring and Underlayment.

B. Related Requirements:
   1. Section 06 10 00 Rough Carpentry for plywood backing panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review air-barrier and water-resistant glass-mat gypsum sheathing requirements and installation, special details, transitions, mockups, protection, and work scheduling that covers air-barrier and water-resistant glass-mat gypsum sheathing.

1.4 ACTION 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 plywood complies 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 plywood complies with requirements. Include physical properties of treated materials.
   3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.
   4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Shop Drawings: For air-barrier and water-resistant glass-mat gypsum sheathing assemblies.
   1. Show locations and extent of sheathing, accessories, and assemblies specific to Project conditions.
   2. Include details for sheathing joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
   3. Include details of interfaces with other materials that form part of air barrier.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer. including list of ABAA-certified installers and supervisors employed by Installer, who work on Project and testing and inspecting agency.

B. Evaluation Reports: For the following, from ICC-ES:
   1. Wood-preservative-treated plywood.
   2. Fire-retardant-treated plywood.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

B. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.
   1. Build integrated mockups of exterior wall assembly as indicated on Drawings, or 150 sq. ft. (14 sq. m), incorporating backup wall construction, window, storefront, door frame and

sill, ties and other penetrations, and flashing to demonstrate crack and joint treatment and sealing of gaps, terminations, and penetrations of air-barrier sheathing assembly.
a. Coordinate construction of mockups to permit inspection and testing of sheathing before external insulation and cladding are installed.
b. Include junction with roofing membrane, building corner condition,.
c. If Architect determines mockups do not comply with requirements, reconstruct mockups until mockups are approved.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Testing Agency Qualifications:
1. 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.
2. For testing and inspecting agency providing tests and inspections related to air-barrier and water-resistant glass-mat gypsum sheathing: an independent agency, qualified according to ASTM E329 for testing indicated, and certified by Air Barrier Association of America, Inc.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on field mockups.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E119 ; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 WOOD PANEL PRODUCTS

A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
B. Factory mark panels to indicate compliance with applicable standard.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

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

test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, 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. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
   3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
   4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305 . Span ratings after treatment shall be not less than span ratings specified. For roof sheathing and where high-temperature fire-retardant treatment is indicated, span ratings for temperatures up to 170 deg F (76 deg C) shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

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

E. Application: Treat plywood indicated on Drawings, and the following:
   1. Roof and wall sheathing within 48 inches (1220 mm) of fire walls.
   2. Floor sheathing.

2.5 WALL SHEATHING

A. Plywood Sheathing: DOC PS 1, Exterior, Structural I sheathing.
   1. Span Rating: Not less than 24/0.
   2. Nominal Thickness: Not less than 11/32 inch (8.7 mm).

B. Oriented-Strand-Board Sheathing, Walls: DOC PS 2, Exposure 1 sheathing.
   1. Span Rating: Not less than 16/0.

C. Paper-Surfaced Gypsum Sheathing: ASTM C1396/C1396M, gypsum sheathing; with water-resistant-treated core and with water-repellent paper bonded to core's face, back, and long edges.
   1. Type and Thickness: Regular, 1/2 inch (13 mm) or Type X, 5/8 inch (15.9 mm) thick as indicated.
   2. Edge and End Configuration: Square.
   3. Size: 48 by 96 inches (1219 by 2438 mm) for vertical installation.

D. Cementitious Backer Units: ASTM C1325, Type A.
   1. Thickness: 5/8 inch (15.9 mm) or As indicated.

2.6 SUBFLOORING AND UNDERLAYMENT

A. Plywood Subflooring: DOC PS 1, Exposure 1, Structural I single-floor panels or sheathing.
   1. Span Rating: Not less than 24.

B. Underlayment: Provide underlayment in nominal thicknesses indicated or, if not indicated, not less than 1/4 inch (6.4 mm) over smooth subfloors and not less than 3/8 inch (9.5 mm) over board or uneven subfloors.

2.7 FASTENERS

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

1. For wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
2. For wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117.

B. Nails, Brads, and Staples: ASTM F1667/F1667M.
C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.
E. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
F. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
1. For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C1002.
2. For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C954.

2.8 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Paper-Surfaced and Glass-Mat Gypsum Sheathing: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturer for application indicated and complying with requirements for elastomeric sealants specified in Section 07 92 00 - Joint Sealants.
B. Sheathing Tape for Foam-Plastic Sheathing: Pressure-sensitive plastic tape recommended by sheathing manufacturer for sealing joints and penetrations in sheathing.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
C. Securely attach to substrate by fastening as indicated, complying with the following:
1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
2. ICC-ES evaluation report for fastener.
D. Use common wire 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. Install fasteners without splitting wood.
E. Coordinate wall installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 INSTALLATION OF WOOD STRUCTURAL PANEL

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
B. Fastening Methods: Fasten panels as indicated below:
1. Wall Sheathing:

a. Nail or staple to wood framing. Apply a continuous bead of glue to framing members at edges of wall sheathing panels.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch (3 mm) apart at edges and ends.

3.3 INSTALLATION OF GYPSUM SHEATHING

A. Comply with GA-253 and with manufacturer's written instructions.
1. Fasten gypsum sheathing to wood framing with nails or screws.
2. Fasten gypsum sheathing to cold-formed metal framing with screws.
3. Install panels with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
4. Install panels with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of panels.

D. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of panels.

E. Seal sheathing joints according to sheathing manufacturer's written instructions.
1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

3.4 INSTALLATION OF CEMENTITIOUS BACKER UNIT

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.5 INSTALATION OF HARDBOARD UNDERLAYMENT

A. Comply with CPA's recommendations and hardboard manufacturer's written instructions for preparing and applying hardboard underlayment.
1. Fastening Method: Nail or staple underlayment to subflooring.

3.6 FIELD QUALITY CONTROL

A. ABAA Quality Assurance Program: Perform examinations, preparation, installation, testing, and inspections under ABAA's Quality Assurance Program.

B. Testing and Inspecting Agency: Engage a qualified testing agency to perform tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 06 16 00

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

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 standing and running trim.
   2. Interior frames and jambs.
   3. Wood furring, blocking, shims, and hanging strips for installing interior architectural woodwork items that are not concealed within other construction.
   4. Shop priming of interior architectural woodwork.
   5. Shop finishing of interior architectural woodwork.

B. Related Requirements:
   1. Section 06 10 00 - Rough Carpentry for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.

1.3 COORDINATION

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

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Anchors.
   2. Adhesives.
   3. Shop finishing materials.
   4. Wood-Preservative Treatment:
      a. Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
      b. Indicate type of preservative used and net amount of preservative retained.
      c. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.
   5. Fire-Retardant Treatment: Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
   6. Waterborne Treatments: 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. Shop Drawings:
   1. Include the following:
      a. Dimensioned plans, elevations, and sections.
      b. Attachment details.
   2. Show large-scale details.
   3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.
   4. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples for Verification: For the following:

1. Lumber and Panel Products with Shop-Applied Opaque Finish: 5 inches wide by 12 inches long for lumber and 12 inches by 12 inches for panels, for each finish system and color.
    a. Finish entire exposed surface.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For architectural woodwork manufacturer and Installer.
B. Product Certificates: For the following:
    1. Composite wood and agrifiber products.
    2. Adhesives.
C. Evaluation Reports: For preservative-treated and fire-retardant-treated wood materials, from ICC-ES.
D. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.8 QUALITY ASSURANCE

A. Manufacturer's Qualifications: 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.
    1. Manufacturer's Certification: Licensed participant in AWI Quality Certification Program.
    2. Installer Qualifications: Licensed participant in AWI Quality Certification Program
B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
    1. Build mockups of typical interior architectural woodwork as shown on Drawings.
    2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
    3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with the Architectural Woodwork Standards, Section 2.
B. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas.
C. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.
    1. Handle and store fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of the construction period.
B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
    1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.
C. Established Dimensions: Where interior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.11 COORDINATION

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

PART 2 PRODUCTS

2.1 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: Custom.
   1. Wood Species: Any closed-grain hardwood.
   2. Wood Moisture Content: 5 to 10 percent.

2.2 INTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: Custom.
B. Wood Species: Any closed-grain hardwood.
   1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
   2. Wood Moisture Content: 5 to 10 percent.

2.3 FIRE-RETARDANT-TREATED WOOD MATERIALS

A. Fire-Retardant-Treated Wood Materials: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.
   1. Use treated materials that comply with requirements of the Architectural Woodwork Standards. 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-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84, 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 beyond the centerline of the burners at any time during the test.
   1. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
   2. For items indicated to receive a stained, transparent, or natural finish, use organic resin chemical formulation.
   3. Mill lumber before treatment, and implement procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
C. Fire-Retardant Particleboard: Made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture, to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less according to ASTM E84.
D. Fire-Retardant Fiberboard: Medium-density 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 according to ASTM E84.

2.4 MISCELLANEOUS MATERIALS

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

B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.
C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
   1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
   2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

2.5 FABRICATION

A. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
B. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
C. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.
   1. Ease edges to radius indicated for the following:
      a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
      b. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.
D. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.
   1. Disassemble components only as necessary for shipment and installation.
   2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

2.6 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.
B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 09 91 23 - Interior Painting.
   1. Backpriming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.
C. Interior Architectural Woodwork for Transparent Finish: Shop-seal concealed surfaces with required pretreatments and first coat of finish as specified in Section 09 93 00 - Staining and Transparent Finishing.
   1. Backpriming: Apply one coat of sealer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

2.7 SHOP FINISHING

A. Finish interior architectural woodwork with transparent finish indicated on Drawings at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
B. Preparation for Finishing: Comply with Architectural Woodwork Standards, Section 5 for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of interior architectural woodwork. Apply two coats to end-grain surfaces.
C. Opaque Finish:
   1. Architectural Woodworking Standards Grade: Same as item to be finished.
   2. Finish: System - 5, Varnish, Conversion.
   3. Color: As selected by Architect from manufacturer's full range.

4. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter according to ASTM D523.

PART 3 EXECUTION

3.1 PREPARATION

A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.
B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.

3.2 INSTALLATION

A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.
B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
C. Install interior architectural woodwork level, plumb, true in line, and without distortion.
   1. Shim as required with concealed shims.
   2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
E. Preservative-Treated Wood: Where cut or drilled in field, treat cut ends and drilled holes according to AWPA M4.
F. Fire-Retardant-Treated Wood: Install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
G. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
   1. Secure with countersunk, concealed fasteners and blind nailing.
   2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.
   3. For shop-finished items, use filler matching finish of items being installed.
H. Standing and Running Trim:
   1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
   2. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.
   3. Scarf running joints and stagger in adjacent and related members.
   4. Fill gaps, if any, between top of base and wall with plastic wood filler; sand smooth; and finish same as wood base if finished.
   5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

3.3 REPAIR

A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects and to result in interior architectural woodwork being in compliance with requirements of Architectural Woodwork Standards for the specified grade.
B. Where not possible to repair, replace defective woodwork.
C. Shop Finish: Touch up finishing work specified in this Section after installation of interior architectural woodwork.
   1. Fill nail holes with matching filler where exposed.
   2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.
D. Field Finish: See Section 09 91 23 - Interior Painting for final finishing of installed interior architectural woodwork not indicated to be shop finished.

3.4 CLEANING

A. Clean interior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 06 40 23

SECTION 06 64 00 - PLASTIC PANELING

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 sheet paneling.
B. Related Requirements:
   1. Section 06 10 00 - Rough Carpentry for wood furring for installing plastic paneling.
   2. Section 10 26 00 - Wall and Door Protection for corner guards installed over plastic paneling.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Samples: For plastic paneling and trim accessories, in manufacturer's standard sizes.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.
B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (range of 60 to 75°F) for 48 hours prior to installation.

1.5 PROJECT CONDITIONS

A. 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.

PART 2 PRODUCTS

2.1 PLASTIC SHEET PANELING

A. Basis-of-Design Products: Refer to the Finish Schedule on the Drawings.
B. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.
   1. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
      a. Flame-Spread Index: 25 or less.
      b. Smoke-Developed Index: 450 or less.
   2. Nominal Thickness: Not less than 0.075 inch (1.9 mm).
   3. Surface Finish: As selected by Architect from manufacturer's full range.
   4. Color: As selected by Architect from manufacturer's full range.

2.2 ACCESSORIES

A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.
   1. Color: Match panels.
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: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 07 92 00 - Joint Sealants.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, 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 PREPARATION

A. Remove wallpaper, vinyl wall covering, loose or soluble paint, and other materials that might interfere with adhesive bond.
B. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.
C. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
D. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
E. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels and so that trimmed panels at corners are not less than 12 inches (300 mm) wide.
    1. Mark plumb lines on substrate at panel joint locations for accurate installation.
    2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

A. Install plastic paneling according to manufacturer's written instructions.
B. Install panels in a full spread of adhesive.
C. Install trim accessories with adhesive.
D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 64 00

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 standard steel doors and frames.
B. Related Requirements:
   1. Section 08 71 00 - Door Hardware for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM HMMA 803 or ANSI 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.
B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, core descriptions, fire-resistance 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 electrical raceway and preparation for electrified hardware, access control systems, and security systems.
   7. Details of anchorages, joints, field splices, and connections.
   8. Details of accessories.
   9. Details of moldings, removable stops, and glazing.
C. Samples for Verification:
   1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 inches by 5 inches.
D. Product Schedule: For hollow-metal doors and frames, 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.

1.7 INFORMATIONAL SUBMITTALS

A. Field quality control reports.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented 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 doors and frames 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 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Ceco Door Products; an ASSA ABLOY Group Company.
   2. CURRIES Company; an ASSA ABLOY Group Company.
   3. de LaFontaine.
   4. Mesker Door Inc.
   5. Pioneer Industries, Inc.; an ASSA Abloy Group Company.
   6. Philipp Manufacturing Company.
   7. Republic Doors and Frames; An Allegion Company.
   8. Steelcraft; an Allegion (formerly Ingersoll-Rand) company.

2.2 PERFORMANCE REQUIREMENTS

2.3 STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Standard-Duty Doors and Frames: ANSI A250.8, Level 1; ANSI A250.4, Level C. At locations indicated in the Door and Frame Schedule.
   1. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches.
      c. Face: Uncoated steel sheet, minimum thickness of 0.032 inch.
      d. Edge Construction: Model 2, Seamless.
      e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
      f. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
   2. Frames:
      a. Materials: Uncoated steel sheet, minimum thickness of 0.042 inch.
      b. Construction: Full profile welded.
   3. Exposed Finish: Prime.

C. Heavy-Duty Doors and Frames: ANSI A250.8, Level 2; ANSI A250.4, Level B. At locations indicated in the Door and Frame Schedule.
   1. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches.
      c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch.
      d. Edge Construction: Model 2, Seamless.
      e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
      f. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
   2. Frames:
      a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
      b. Construction: Full profile welded.
   3. Exposed Finish: Prime.

D. Extra-Heavy-Duty Doors and Frames: ANSI A250.8, Level 3; ANSI A250.4, Level A. At locations indicated in the Door and Frame Schedule.
   1. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches.
      c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
      d. Edge Construction: Model 2, Seamless.
      e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
      f. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
   2. Frames:
      a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
      b. Construction: Full profile welded.
   3. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:
   1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
   2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
   3. Postinstalled Expansion Anchor: Minimum 3/8 inch- diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2 inch height adjustment. Terminate bottom of frames at top of underlayment.
D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
   1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.5 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
B. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
C. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
D. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
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. Mineral-Fiber Insulation: ASTM C665, 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 E136 for combustion characteristics.

2.6 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. 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.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI A250.6, the Door Hardware Schedule, and templates.
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
3. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 - Electrical.

2.7 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 ANSI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
2. Refer to Section 09 91 23 - Interior Painting for field-applied coating.

PART 3 EXECUTION

3.1 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. Touch up factory-applied finishes where spreaders are removed.
B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
B. Hollow-Metal Frames: Comply with ANSI A250.11.
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.
2. Floor Anchors: Secure with postinstalled expansion anchors.
    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with insulation or grout.
5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
6. Installation Tolerances: Adjust hollow-metal frames 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 and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Non-Fire-Rated Steel Doors: Comply with ANSI A250.8.
a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.3 REPAIR

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. 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.
C. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
D. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.
E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 08 11 13

SECTION 08 87 17 - GLAZING FILMS

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: Film products applied to glass surfaces.

1.3 ACTION SUBMITTALS

A. Product Data: For each film product indicated.
B. Samples for Verification: 12-inch square samples of each type of glazing film specified, in color specified.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installers.
B. Product Certificates: For film, from manufacturer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data and Replacement Instructions: For each type of film overlay to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Engage a firm experienced in manufacturing systems similar to those indicated for this Project.
B. Installer Qualifications: Engage an experienced installer certified, licensed, or otherwise qualified by film manufacturer as having the necessary experience, staff, and training to install manufacturer's products according to specified requirements.
C. Minimum Peel Strength: 2,000 grams per inch, average of two specimens when tested in accordance with ASTM D3330/D3330M.
D. Source Limitations: Obtain each type of film overlay through one source from a single manufacturer to provide products of consistent quality in appearance and physical properties.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.
B. Store and protect glazing films according to manufacturer's written instructions and as needed to prevent damage, condensation, temperature changes, direct exposure to sun, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with film installation when ambient and substrate temperature conditions are outside limits permitted by manufacturer and when glass substrates are wet from frost, condensation, or other causes.

PART 2 PRODUCTS

2.1 GLAZING SURFACE FILMS

A. Manufacturer and Product: Subject to compliance with requirements, provide products as indicated.
B. Film Overlay: Single-layered applied glazing film products, 2-mil- minimum thickness, applied to interior glass surfaces, consisting of the following (from outboard surface to inboard surface), as applicable to each type of film indicated:
    1. Removable release liner.
    2. Pressure sensitive adhesive with integral ultraviolet absorbers.
    3. Clear, dyed, or printed pattern layer of polyester film.
    4. Possible layer of metallized or sputtered polyester film.
    5. Possible scratch resistant coating.
C. Colors: As indicated in Finish Legend on Drawings.

2.2 GLAZING FILM ACCESSORIES

A. General: Provide products complying with requirements of glazing film manufacturer for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
B. Adhesive: Pressure Sensitive acrylic adhesive system.
C. Cleaners, Primers, and Sealers: Types recommended by glazing film manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine glass and surrounding adjacent surfaces for conditions affecting installation.
    1. Report conditions that may adversely affect installation. In report, include description of any glass that is broken, chipped, cracked, abraded, or damaged in any way.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.
B. Immediately before beginning installation of films, clean glass surfaces of substances that could impair glazing film's bond, including mold, mildew, oil, grease, dirt and other foreign materials.
C. Blade the inside surface of window glass with industrial razors to ensure removal of foreign contaminants.
D. Protect window frames and surrounding surfaces and materials from damage during installation.

3.3 INSTALLATION

A. General: Comply with glazing film manufacturers' written installation instructions applicable to products and applications indicated, except where more stringent requirements are indicated.
B. Install film continuously, but not necessarily in one continuous length. Install with no gaps or overlaps.
C. If seamed, install with no gaps or overlaps. Install seams vertical and plumb. No horizontal seams allowed.
D. Do not remove release liner from film until just before each piece of film is cut and ready for installation.
E. Install film with mounting solution and custom cut to the glass with neat, square comers and edges to within 1/8 inch of the window frame.
F. Remove air bubbles, wrinkles, blisters, and other defects.
G. After installation, view film from a distance of 10 feet against a bright uniform sky or background. Film shall appear uniform in appearance with no visible streaks, banding, thin spots or pinholes.
    1. If installed film does not meet this criteria, remove and replace with new film.

3.4 CLEANING

A. Remove excess mounting solution at finished seams, perimeter edges, and adjacent surfaces.
B. After application of film, wash film using cleaning methods recommended by glazing film manufacturer. Do not use abrasive-type cleaning agents or bristle brushes.
C. Replace films that cannot be cleaned.

END OF SECTION 08 87 17

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. Suspension systems for interior ceilings and soffits.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Substitution Procedures: Substitutions for assemblies specified in this section will be considered only after all substitution procedures following section 01 25 00 - Substitution Procedures and conditions listed in drawing notes are fully met. Requests are to include stamped documentation by a qualified engineer licensed to practice within the project jurisdiction which show the proposed substitution is equal and meets all performance properties specified.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.
B. Evaluation Reports: From ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction. For the following:
   1. Embossed, high-strength steel studs and tracks.
   2. Post-installed anchors.
   3. Power-actuated fasteners.

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 Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.
B. Where used, EQ products need to be Code Compliant. EQ stud manufacturer must be certified under ICC-ES AC86 (See AISI S220/F1 Commentary).

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
B. Horizontal Deflection: For gypsum board assemblies without applied rigid finishes L/240; for gypsum board assemblies with applied rigid finishes such as tile, stone, wood paneling L/360.
C. Design of light gauge non-structural members shall be in accordance with AISI S220 and AISI S240.
D. Load Limitations: (AISI S220/A.1)
   1. Out-of-plane load not greater than 5 psf (15psf for pressurized air plenums, ceilings, and elevator shaft enclosures).
   2. Axial live load not greater than 100 plf (excluding sheathing materials).
   3. Superimposed axial load no greater than 200 lbs.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ICC (IBC) for conditions indicated.
   1. Steel Sheet Components: Comply with ICC (IBC) requirements for steel unless otherwise indicated.ASTM A653/A653M
   2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A653/A653M, G40 (Z120), hot-dip galvanized unless otherwise indicated per AISI S220/A.5.1.

B. Studs and Tracks: ICC (IBC)ICC (IBC)-2018
   1. Steel Studs and Tracks:
      a. Minimum Base-Steel Thickness: Manufacturer's standard thicknesses that comply with structural performance requirements for stud depth indicated, unless otherwise indicated.
      b. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, install to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above. Provide deflection gap from top of stud to track minimum 3/4-inches or more. Provide one of the following:
   1. Single Long-Leg Track System: ICC (IBC) top track with min. 2-1/2 inch (51 mm)- deep legs (with min. 3/4-inch gap) in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
   2. Double-Track System: ICC (IBC) top outer tracks, inside track with min. 2-1/2 inch (51 mm)- Leg Top Track and 3-1/2 inch Leg Bottom Track (with min. 3/4 inch gap) in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
   3. Slotted Deflection Track: Steel sheet top track manufactured with min. 3-inch deep legs (with min. 3/4-inch gap); in thickness not less than indicated for studs and in width to accommodate depth of studs. Install with studs to fit into top track secured with slip screws.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
   1. Minimum Base-Steel Thickness: 0.0329 inch, unless otherwise indicated.

E. Cold-Rolled Channel Bridging: Steel, 0.0538 inch minimum base-steel thickness, with minimum 1/2 inch- wide flanges.
   1. Depth: 1-1/2 inches.
   2. Clip Angle: Not less than 1-1/2 inches by 1-1/2 inches, 0.068 inch- thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ICC (IBC).
   1. Minimum Base-Steel Thickness: 0.0329 inch.
   2. Depth: 1-1/2 inches.

G. Resilient Furring Channels: 1/2 inch- deep, steel sheet members designed to reduce sound transmission.
   1. Configuration: Asymmetrical.

H. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

I. Isolation Strip at Exterior Walls: 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.

J. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates. EQ products shall have data published for fastener test requirements (Screw Penetration Test) per AISI S220/F.3).

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062 inch- diameter wire, or double strand of 0.048 inch- diameter wire.

B. Hanger Attachments to Concrete:
   1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58, or ICC-ES AC308 as appropriate for the substrate.
      a. Uses: Securing hangers to structure.
      b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2 inch- wide flanges with depth as required for span and loading and indicated on Drawings.
E. Furring Channels (Furring Members): 0.0538 inch uncoated-steel thickness, with minimum 1/2 inch- wide flanges, 3/4 inch deep.

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.
B. Coordination with Sprayed Fire-Resistive Materials:
    1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling tracks to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
    2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that are required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ICC (IBC).
    1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 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, toilet accessories, 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.

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.
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 at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate above or at suspended ceilings. At partitions scheduled to terminate at suspended ceilings and partitions where framing is not full height, brace to structure. Continue framing around ducts that penetrate partitions above ceiling. Refer to Drawings.

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 track section (for cripple studs) at head and secure to jamb studs.
    a. Install minimum 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 full height 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. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

E. Direct Furring:
1. Screw to wood framing.
2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

F. Z-Shaped Furring Members:
1. Erect insulation vertically and hold in place with Z-shaped furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

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 steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. 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 09 22 16

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. Sound-attenuation insulation.
   3. Tile backing panels.

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 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For the following products:
   1. Trim Accessories: Full-size Sample in 12 inch- long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.
   1. Build mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. 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. 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.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 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 E119 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 E90 and classified according to ASTM E413 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.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C1396/C1396M.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.
B. Gypsum Board, Type X: ASTM C1396/C1396M.
   1. Thickness: 5/8 inch.
   2. Long Edges: Tapered.
C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch, Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
   1. Thickness: As indicated in Drawings.
   2. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.
   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. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      e. Expansion (control) joint.
B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
   1. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221 (ASTM B221M), Alloy 6063-T5.
   2. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.
B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Tile Backing Panels: As recommended by panel manufacturer.
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.
   3. Fill Coat: For second coat, use setting-type, sandable topping compound.
   4. Finish Coat: For third coat, use setting-type, sandable topping compound.
   5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
D. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 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.
C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
    1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 inch 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 C665, 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.
E. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.

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 C840.
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 C919 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. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels to minimize end joints.
   3. On Z-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.

B. Multilayer Application:
   1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 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 and face layers separately to supports with screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 APPLYING TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.

B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 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 C840 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. U-Bead: Use where indicated.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.6 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 C840:
    1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
    2. Level 2: Panels that are substrate for tile.
    3. Level 3: Where indicated on Drawings.
    4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    5. Level 5: Where indicated on Drawings.
E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.7 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 09 29 00

SECTION 09 64 00 - WOOD 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. Factory-finished wood flooring.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Shop Drawings: For each type of floor assembly and accessory. Include plans, sections, and attachment details. Include expansion provisions and trim details.
C. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches (300 mm) long and of same thickness and material indicated for the Work and showing the full range of normal color and texture variations expected.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type of product: Certification shall include statement that products to be used on projects are appropriate for intended use, meet or exceed reference standards and the requirements of this specificaitons, noting DCOF value for each products to be used.

1.5 QUALITY ASSURANCE

A. Source Limitations: For field-finished wood flooring, obtain each species, grade, and cut of wood from one source with resources to provide materials and products of consistent quality in appearance and physical properties.
B. Oak Flooring: Comply with applicable National Wood Flooring Association (NWFA, formerly NOFMA) grading rules for species, grade, and cut.
C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
   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.
      a. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver wood flooring materials in unopened cartons or bundles.
B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet-work is complete and dry.
C. Store wood flooring materials in a dry, warm, ventilated, weathertight location.

1.7 FIELD CONDITIONS

A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
   1. Environmental Conditioning: Maintain ambient temperature between 65 and 75 deg F (18 and 24 deg C) and relative humidity planned for building occupants in spaces to receive wood flooring during the conditioning period.
   2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.

a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.

B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.
C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dynamic Coefficient of Friction (DCOF): Provide products with DCOF complying with one of the following:
1. A value greater than 0.42 as determined by testing identical products by DCOF AcuTest Method per ANSI A326.3, 2017 edition.
2. Treated Slip Resistance achieving a "High Traction Range" readings when tested in accordance with ANSI/NFSI B101.3. High Traction Range is a wet DCOF value of 0.45 or higher.
3. Substitution: Where product substitution is requested, Contractor to provide an institute test result meeting compliance with DCOF in accordance with Article 2.1.A.1 or 2.1.A.2 of this Specifications Section.

2.2 FACTORY-FINISHED WOOD FLOORING

A. Basis-of-Design Products: Refer to the Finish Schedule on the Drawings.
B. Solid-Wood Flooring: Kiln dried to 6 to 9 percent maximum moisture content; tongue and groove and end matched; with backs channeled.
C. Engineered-Wood Flooring: HPVA EF, complying with requirements for composite wood products.

2.3 ACCESSORY MATERIALS

A. Vapor Retarder: ASTM E96, Class I.
B. Asphalt-Saturated Felt: ASTM D4869/D4869M, Type II.
C. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood flooring manufacturer.
D. Fasteners: As recommended by manufacturer, but not less than that recommended in NWFA's "Installation Guidelines."
E. Thresholds and Saddles: To match wood flooring. Tapered on each side.
F. Reducer Strips: To match wood flooring. 2 inches (51 mm) wide, tapered, and in thickness required to match height of flooring.
G. Cork Expansion Strip: Composition cork strip.
H. Cleaning Materials: Provide low-emitting cleaning solutions as recommended by NOFMA.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of wood flooring.
1. Verify that substrates comply with tolerances and other requirements specified in other Sections.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. Concrete Slabs: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), 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 F1869. 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 F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
c. Perform additional moisture tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

A. Concrete Slabs:
1. Grind high spots and fill low spots to produce a maximum 1/8-inch (3-mm) deviation in any direction when checked with a 10-foot (3-m) straight edge.
2. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
3. Remove coatings, including curing compounds, and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

B. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Comply with flooring manufacturer's written installation instructions, but not less than applicable recommendations in NWFA's "Installation Guidelines."
B. Wood Subfloor: Install according to requirements in Section 06 10 00 - Rough Carpentry.
C. Wood Underlayment: Install according to requirements in Section 06 10 00 - Rough Carpentry.
D. Provide expansion space at walls and other obstructions and terminations of flooring of not less than 3/4 inch (19 mm).
E. Vapor Retarder: Comply with the following for vapor retarder installation:
1. Wood Flooring Installed Directly on Concrete: Install a layer of polyethylene sheet according to flooring manufacturer's written instructions.
F. Engineered-Wood Flooring: Install per manufacturer's written instructions.

3.4 PROTECTION

A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.
1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 64 00

SECTION 09 90 00 - PAINTING AND COATING

PART 1 GENERAL

1.1 GENERAL PROVISIONS

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

1.2 SUMMARY

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Field painting of exposed interior and exterior items and surfaces.
   2. Repainting of existing surfaces, including items visible at open ceilings.
   3. Surface preparation for painting.

B. Section includes:
   1. Surface preparation and application of paint systems on exposed interior items and substrates.
   2. Surface preparation and the application of paint systems on exterior substrates.

C. Paint exposed surfaces, except where surface or material is indicated as not to be painted. 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. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
      a. Prefinished items include the following factory-finished components, including but not limited to:
         1) Architectural woodwork.
         2) Finished mechanical and electrical equipment.
         3) Light fixtures.
      b. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
         1) Furred areas.
         2) Ceiling plenums.
         3) Pipe spaces.
         4) Duct shafts.
      c. Finished metal surfaces include the following, unless otherwise indicated:
         1) Anodized aluminum.
         2) Stainless steel.
         3) Chromium plate.
      d. Operating parts include moving parts of operating equipment and the following:
         1) Valve and damper operators.
         2) Linkages.
         3) Sensing devices.
         4) Motor and fan shafts.
      e. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Requirements:
   1. Section 08 11 13 - Hollow Metal Doors and Frames for field finishing steel doors and frames.
   2. Section 09 29 00 - Gypsum Board for surface preparation of gypsum board.

1.3 DEFINITIONS

A. General: Standard coating terms defined in ASTM D16 apply to this Section.
   1. Flat refers to a lusterless or matte finish with a gloss range below 5 when measured at an 60-degree meter.

2. Eggshell refers to low-sheen finish with a gloss range between 5 and 10 when measured at a 60-degree meter.
3. Satin refers to low sheen finish with a gloss range between 10 and 20 when measured at a 60-degree meter.
4. Semi-gloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
5. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site. Review installation procedures and coordination with other Work

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions. Include block fillers and primers. Indicate VOC content.
   1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
   2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
B. Samples for Verification: For each type of paint system, each color and gloss of topcoat, and substrate material, with texture to simulate actual conditions.
   1. Submit stepped Samples on actual substrates, 8 inches square. Paint samples on paper or hardboard are not acceptable. For paint sample on gypsum board, provide a sample of gypsum board with applied paint in required number of coats.
      a. Apply coats on Samples in steps to show each coat, including primers, required for system.
      b. Label each coat of each Sample.
      c. Label each Sample for location and application area.
      d. Resubmit until required sheen, color, and texture are achieved.
      e. Provide a list of materials and applications for each coat of each Sample
C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.6 INFORMATIONAL SUBMITTALS

A. Certificates: Where shop prime materials are by different manufacturer than finish coat materials, submit certificate signed by both prime and finish coat manufacturers verifying compatibility.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged for storage and identified with labels describing contents.
B. Deliver one unopened 1 gallon container of paint for each top coat installed for each paint material, sheen and color.
C. Store at Project site where directed. Ensure containers are identified by manufacturer, product, sheen and color.

1.8 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

C. Mockups: Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample Submittals.
   1. Build first installation mockup of typical wall area in size and location acceptable to Architect depicting all transitions and installation components to be installed per the Contract Documents and final Architect approved Shop Drawings. Simulate finished lighting conditions for review of mockups.
      a. Materials: Provide complete installation with scheduled system materials and number of coats.
   2. Notify Architect 7 days in advance of the dates and times when first installation mockups will be constructed.
   3. Obtain Architect's approval of mockups before start of final unit of Work.
   4. Approval of first installation mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   5. Retain and maintain first installation mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   6. Subject to compliance with requirements, approved first installation mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

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

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
   1. Maintain containers in clean condition, free of foreign materials and residue.
   2. Remove rags and waste from storage areas daily.
   3. Keep storage area neat and orderly.
   4. Protect storage area surfaces from paint spillage.
   5. Protect from freezing.

1.10 FIELD CONDITIONS

A. Environmental Requirements:
   1. Apply paint to surfaces which are free of moisture.
   2. During periods of inclement weather, painting may be continued if areas and surfaces to be painted are enclosed and artificial heat is supplied, provided temperature and humidity conditions prescribed are maintained.
   3. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
   4. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
   5. Do not start interior painting until exterior building openings are closed.

6. Where paint manufacturer's specifications or instructions differ from these environmental conditions, the more stringent requirements apply to this Work.
7. Paint fumes:
   a. Take every precaution against potential hazards of paint fumes as necessary and as required by regulations, codes and laws.
   b. Provide additional ventilation and protective equipment if necessary.

1.11 EXTRA MATERIALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Paint: Furnish one unopened gallon of each type of paint and coating work, in color and gloss as used for the Project.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Products and Manufacturers :Subject to compliance with the requirements, provide paints as scheduled in coats and thicknesses per manufacturer's recommendations for coverage, durability and performance. Comparable products by other manufacturers listed below shall be provided as a substitution per requirements in Section 01 25 00 - Substitution Procedures including color samples and product data.
   1. Benjamin Moore & Co.
   2. PPG Paints.
   3. Sherwin-Williams Co.

B. Basis-of-Design Products: Refer to the Drawings.

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
   1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Refer to the Finish Schedule.

D. Regulatory Requirements:
   1. Comply with local, state and federal codes, laws and regulations for VOC content.
   2. Such codes, laws and regulations take precedence over paints specified in this Section.

E. Interface with Other Work:
   1. Shop primed items: Certain items of Work are specified under other Sections to be shop primed for field painting specified in this Section. Such items include, but are not limited to, the following:
      a. Metal fabrications.
      b. Architectural woodwork (paint finish).
      c. Steel doors and frames.
      d. Access panels.
      e. Fire protection cabinets.
      f. Mechanical and electrical equipment and accessories.

2. Shop finished items: Certain items of Work are specified under other Sections to be shop finished and do not require finish painting in field. Such items include, but are not limited to, the following:
    a. Architectural woodwork (transparent finish).
    b. Prefabricated specialties and accessories.
    c. Equipment including mechanical and electrical equipment.

F. Colors: Provide custom colors, as indicated in Finish Schedule, of the finished paint systems to match Architect's control samples.

G. Thinners:
1. Water-thinned systems: Clean, potable water.
2. Solvent-thinned systems: Pure linseed oil, turpentine, shellac and other materials of highest quality with identifying labels intact and seals unbroken, as recommended by paint manufacturer as suitable for each type of paint.

H. Primers and Undercoats: As recommended by paint manufacturer, suitable for substrate and compatible with finish coat requirements.

I. Galvanizing Repair Paint: High zinc-dust content paint with dry film containing not less than 94 percent zinc dust by weight, complying with SSPC-Paint 20.

J. Interior Paint: Withstand washing with mild detergent solution, without loss of color, sheen or pigments.

2.3 COLOR SCHEDULE

A. Reference to a particular manufacturer's number or color name is used only as a convenience for Architect in order to establish Project color requirements. These references are not intended to describe required generic paint systems. For generic paint systems requirements, refer to “Interior Painting Schedule" as applicable to the respective conditions of use.
1. Furnish the same lots, batches, etc. within the same contiguous areas of the building (i.e. corridors on the same floors, common rooms which adjoin each other, etc.).

B. Color Schedule: The color schedule shall be considered as a guide only to color requirements; subject to Architect's modification or acceptance.

C. Colors are indicated in the Finish Schedule on the Drawings by manufacturer and color type.

2.4 PREPARATORY COATS

A. Exterior Primers: Exterior primer recommended in writing by manufacturer for use with finish coat and on substrate indicated.
1. Exterior, Latex Wood Primer: White, waterborne-emulsion primer formulated for resistance to extractive bleeding, mold, and microbials; for hiding stains; and for use on exterior wood subject to extractive bleeding.
2. Quick-Drying Aluminum Primer: Corrosion-resistant, solvent-based, alkyd or modified-alkyd primer formulated for quick-drying capabilities and for use on prepared exterior aluminum.
3. Water-Based, Galvanized-Metal Primer: Corrosion-resistant, pigmented, acrylic primer; formulated for use on cleaned/etched, exterior, galvanized metal to prepare it for subsequent water-based coatings.
4. Exterior, Alkali-Resistant, Water-Based Primer: Pigmented, water-based primer formulated for use on alkaline surfaces, such as exterior plaster, vertical concrete, and masonry.
5. Water-Based Bonding Primer: Pigmented, water-based-emulsion primer formulated for exterior use and to promote adhesion of subsequent specified coatings.

B. Interior Primers: Interior latex-based 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. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.

3. Interior Wood Primer: Factory-formulated acrylic-latex-based interior wood primer.
4. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

2.5 FINISH COATINGS

A. Exterior Finish Coats:
   1. Exterior Satin Acrylic Paint: Factory-formulated low-sheen acrylic-latex paint for exterior application.
B. Interior Finish Coats:
   1. Interior Eggshell Acrylic Paint: Factory-formulated eggshell acrylic-latex interior paint.
   2. Interior Semigloss Acrylic Paint: Factory-formulated semigloss acrylic-latex paint for interior application.
   3. Satin Water-Based Metallic Paint: Water-based satin metallic paint for interior application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Comply with procedures specified in PDCA P4.
   1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
      a. Concrete: 12 percent.
      b. Wood: 15 percent.
      c. Gypsum Board: 12 percent.
   2. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
   3. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
B. Proceed with coating application only after unsatisfactory conditions have been corrected. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
B. Do not apply final coats until other trades, whose operations would be detrimental to finish painting, have completed their Work in areas to be painted .
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. Cleaning: Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
   1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
E. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions and technical bulletins for each particular substrate condition and as specified.
   1. Existing Coatings to Be Painted: Provide barrier coats over existing primers and existing coatings indicated to be painted.
   2. Provide barrier coats over incompatible primers or remove and reprime.

3. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
    a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
    b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
    c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
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. Touch up bare areas, heads of bolts, welded surfaces which are unpainted, 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.
    b. Surfaces requiring touch up painting shall be cleaned and primed as soon as practicable after erection and before excessive rusting or other damage occurs to such surfaces from weather or other exposure.
    c. Exterior Exposed Steel: Clean steel surfaces in accordance with SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning. Abrasive blast cleaned surfaces shall exhibit a uniform, angular profile of 1.5-3.0 mils. Prime cleaned surfaces within 8 hours and prior to surface rusting.
    d. Interior Exposed Steel, in Humid Environments: Clean steel surfaces in accordance with SSPC-SP 6/NACE No. 3 Commercial Blast Cleaning. Abrasive blast cleaned surfaces shall exhibit a uniform, angular profile of 1.5-3.0 mils. Prime cleaned surfaces within 8 hours and prior to surface rusting.
    e. Interior Exposed Steel, in Dry Environments: Clean steel surfaces in accordance with SSPC-SP 2 or SSPC-SP 3 Hand or Power Tool Cleaning.
5. Galvanized Surfaces:
    a. General: Prepare surfaces of galvanized steel for painting in accordance with ASTM D6386.
    b. Clean galvanized surfaces with nonpetroleum-based solvents in accordance with SSPC-SP 1 for "Solvent Cleaning", and pretreat in accordance with the recommendations of SSPC Good Painting Practice, Vol. 1, Chapter 22.
    c. Remove passivation film and grease and oil residue from galvanized steel by chemical cleaning and etching, and mechanical methods, to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.
        1) Chemically clean and etch using diluted solution of water-reducible phosphoric acid and detergent blend, and water. Dilute, apply, rinse with hot water, and force dry, in accordance with manufacturer's written instructions.
        2) Acceptable product and manufacturer: Equivalent to Clean n Etch by Great Lakes Laboratories.
        3) Mechanically abrade surface in accordance with SSPC-SP 3 “Power Tool Cleaning".
6. Aluminum Substrates: Remove loose surface oxidation.
7. 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. Sand wood surfaces and edges smooth and even, before finishing or painting and between coats. Remove dust after each sanding.
b. Remove residue from knots, pitch streaks, cracks, open joints and sappy spots. On wood surfaces to be painted, apply shellac to knots, pitch and resinous sapwood before applying prime coat.
c. Countersink fasteners and fill fastener holes, cracks, open joints and other defects with tinted putty or wood filler after primer is dry and before second coat. Sand putty or wood filler smooth before painting.
d. Allow pressure-treated wood to weather for length of time recommended by paint manufacturer, before paint application.
e. Prime edges, ends, faces, undersides, and backsides of wood.
f. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
g. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

8. Gypsum Wallboard: Repair surface defects including cracks, depressions and holes in gypsum wallboard with wallboard joint finishing compound or spackling compound per Section 09 29 00 - Gypsum Board. Fill out flush and sand smooth. Clean surfaces and taped joints of dust, dirt and other contaminants and be sure they are thoroughly dry before applying paint.

F. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.
4. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Follow paint manufacturer's instructions; do not exceed manufacturer's recommended application rate.
2. Do not paint over mildew, dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Use thinners only if recommended by paint manufacturer.
4. Surfaces:
a. Paint exposed surfaces including 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.
b. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces.
c. Paint interior surfaces of ducts with a flat, non-specular black paint where visible through registers or grilles.
d. Paint back sides of access panels and removable or hinged covers to match exposed surfaces. Access panels, electrical panels, air diffusing outlets, supply and exhaust grilles, louvers, exposed conduit, primed hardware items, primed outlet covers,

primed wall and ceiling plates and other items in painted areas shall be painted to match the areas in which they occur unless otherwise directed by Architect.
e. Finish doors on tops, bottoms, and side edges the same as faces.
f. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
g. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
h. Paint underside of soffits (where occurs) to receive a finish to match adjacent vertical finish, unless otherwise noted.

5. Painting Fireproofing, Fire Suppression, Plumbing, HVAC, Electrical, Communication, Electronic Safety and Security Work:
   a. Paint the following work where exposed in occupied spaces:
      1) Equipment, including panelboards.
      2) Uninsulated metal piping.
      3) Uninsulated plastic piping.
      4) Pipe hangers and supports.
      5) Metal conduit.
      6) Plastic conduit.
      7) Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
      8) Fireproofing.
      9) Other items as directed by Architect.
   b. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
   c. Do not paint sprinkler heads or caps.
   d. Do not paint detectors, sensors or operable items.
6. Painting Mechanical and Electrical Items:
   a. When covered and uncovered pipes, conduits, hangers and rods pass through finished room or space, paint with type of undercoat materials consistent with material to be painted and with same type and color of finish coat as used on immediately adjacent walls or ceiling surfaces, whichever surface is most appropriate to be matched, or color code as specified in Division 23.
   b. Give pumps, fans, heating and cooling units two coats of paint unless factory finished (or unless painting is specified under other Sections).
   c. Paint interior of ducts black behind grilles or registers exposed to view or which reflect light.
   d. Do not paint name plates or polished surfaces of equipment. Leave clean and free of paint.
7. Painting Miscellaneous Items and Areas:
   a. Paint shop-primed door hinges same color as door frames to which attached, unless a different color is selected. Do not paint door hardware which have plated finishes.
   b. Finish tops, bottoms and edges of doors same as faces of doors.
   c. Finish closets same as adjoining rooms, unless otherwise specified.
   d. Finish other surfaces not specifically mentioned same as adjoining surfaces.
   e. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

B. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
C. Paint colors, surface treatments, and finishes are indicated in the paint schedules. Final colors shall match Architect approved samples.
   1. Make edges of paint adjoining other materials or colors sharp and clean, without overlapping.

2. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

D. 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. 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.
      a. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
      b. Omit primer over metal surfaces that have been shop primed and touchup painted.
   2. Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer for conditions of use.
      a. Number of coats specified are minimum number acceptable.
      b. Provide finish coats that are compatible with primers used.
      c. Use products of same manufacturer for succeeding coats.
         1) Where shop primed materials are field painted, or prime coat materials are by different manufacturer than finish coat materials, confirm compatibility of materials and submit required certification.
         2) If shop primer is not compatible with finish coats, apply barrier coat, as recommended by finish coat manufacturer, over incompatible shop primer.
      d. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
      e. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
      f. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
      g. Sand lightly between each succeeding enamel or varnish coat.
   3. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
      a. Brushes: Use brushes best suited for type of material applied.
      b. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
      c. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
   4. 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.
   5. 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.
      a. Provide satin finish for final coats.

6. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
7. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
   1. The Owner will engage a qualified independent testing agency to sample paint material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in the presence of Contractor.
   2. Testing agency will perform appropriate tests for the following characteristics as required by the Architect.
      a. Adhesion Testing: ASTM D3359 Method A for Adhesion Testing.
      b. Dry Film Thickness Testing: ASTM D6132-13 per SSPC-PA 2 criteria.
   3. The Architect may direct Contractor to stop painting if test results show material being used does not comply with specified requirements. Contractor shall remove noncomplying paint from Project site, pay for testing, and repaint surfaces previously coated with the noncomplying paint. If necessary, Contractor may be required to remove noncomplying paint from previously painted surfaces if, on repainting with specified paint, the two coatings are incompatible.

3.5 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
   1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.6 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
C. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.
D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
   1. If stain, dirt or undercoats show through final coat of paint, correct defects and cover with additional coats until coating or paint film is of uniform finish, color, appearance and coverage.
   2. If touch-up is visible, recoat entire surface.
   3. Give special attention to edges, corners, crevices, welds, exposed fasteners and similar items to be sure these areas receive dry film thickness equivalent to flat surfaces.

3.7 PAINT SCHEDULE

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.
B. Exterior Paint Schedule:
   1. Exterior Poly-Ash Siding, Pre-Primed, Painted Finish:
      a. Two Coats, Satin Finish:
         1) Benjamin Moore Aura Exterior
   2. Exposed Wood-Framing Substrates:

a. Latex over Latex Primer System _____:
1) Prime Coat: Exterior, latex wood primer.
2) Intermediate Coat: Matching topcoat.
3) Topcoat: Exterior latex paint, satin.

3. Aluminum Substrates:
a. Latex System _____:
1) Prime Coat: Quick-drying aluminum primer.
2) Intermediate Coat: Matching topcoat.
3) Topcoat: Exterior latex paint, flat.
b. Water-Based, Light Industrial Coating System _____:
1) Prime Coat: Quick-drying aluminum primer.
2) Intermediate Coat: Matching topcoat.
3) Topcoat: Exterior, water-based, light industrial coating, low sheen.

C. Interior Paint Schedule:
1. Interior Gypsum Wallboard, Paint Finish:
a. One Coat, Primer: As recommended by topcoat manufacturer
b. And Two Coats, Flat Finish: At ceilings, and elsewhere as indicated.
1) Benjamin Moore Aura
or
c. And Two Coats, Eggshell Finish: At walls, and elsewhere as indicated.
1) Benjamin Moore Aura
or
d. And Two Coats, Semi-Gloss Finish: At toilet rooms, other wet areas, and elsewhere as indicated.
1) Benjamin Moore Aura
2. Interior Architectural Woodwork, Finish Carpentry, and Wood Doors (softwoods, paint grade hardwoods, MDF, MDO, and hardwood veneers), Paint Finish:
a. One Coat, Primer: As recommended by topcoat manufacturer
b. And Two Coats, Semi-Gloss:
1) Benjamin Moore Aura
3. Interior Metals (Not specified to receive other coating systems/not shop finished), Painted Finish:
a. One Coat: Approved primer, in shop under other Sections (where specified). If not shop primed, provide primer recommended by finish coating manufacturer.
b. And Two Coats:
1) Benjamin Moore Aura
4. Interior Decorative Metals (Not specified to receive other coating systems/not shop finished), Metallic Painted Finish:
a. One Coat: Approved primer, in shop under other Sections (where specified). If not shop primed, provide primer recommended by finish coating manufacturer.
b. And Two Coats: Modern Masters Satin Metallic Paint
5. Interior Exposed Items at Ceilings, Dry-Fall or Dry-Fog Painted System:
a. One Coat: Benjamin Moore Latex Dry Fall Flat 395
6. Mechanical and Electrical Work: Paint all exposed items throughout the project except factory finished items with factory-applied baked enamel finishes which occur in mechanical rooms or areas, and excepting chrome or nickel plating, stainless steel, and aluminum other than mill finished. Paint all exposed ductwork and inner portion of all ductwork. Same as specified for other interior metals, herein above.

END OF SECTION 09 90 00

SECTION 10 26 00 - WALL AND DOOR 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.
B. Related Requirements:
   1. Section 08 71 00 - Door Hardware for metal protective trim units, according to BHMA A156.6, used for armor, kick, mop, and push plates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
   2. Include fire ratings of units recessed in fire-rated walls and listings for door-protection items attached to fire-rated doors.
B. Shop Drawings: For each type of wall and door protection showing locations and extent.
   1. Include plans, elevations, sections, and attachment details. Show handrail design and support spacing required to withstand structural loads.
C. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:
   1. Corner and End-Wall Guards: 12 inches long. Include example top caps.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type of exposed plastic material.
B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.
   1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

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.
   1. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two, 48 inch- long units.
   2. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store wall and door protection 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 materials out of direct sunlight.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-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 including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wall- and door-protection products from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. 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.
1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

B. Regulatory Requirements: 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.

2.3 CORNER GUARDS

A. Basis-of-Design Products: Refer to the Finish Schedule on the Drawings.

2.4 MATERIALS

A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
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 protection product manufacturer.

2.5 FABRICATION

A. Fabricate wall and door protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.
B. Factory Assembly: Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
C. Quality: Fabricate components with uniformly tight seams and joints and 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.

2.6 FINISHES

A. Protect 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.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of the Work.
B. Examine walls to which wall and door 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 wall and door protection attached with adhesive, 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 wall and door protection.
B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, 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.
B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.
C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
    1. Provide anchoring devices and suitable locations to withstand imposed loads.
    2. 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 apart.
    3. Adjust end and top caps as required to ensure tight seams.

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 10 26 00

SECTION 10 44 16 - FIRE EXTINGUISHERS

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 portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

B. Related Requirements:

1. Section 10 44 13 - Fire Protection Cabinets.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to fire extinguishers including, but not limited to, the following:
   a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.7 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
   b. Faulty operation of valves or release levers.
2. Warranty Period: Six years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. 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.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet indicated.

1. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
2. Valves: Manufacturer's standard.
3. Handles and Levers: Manufacturer's standard.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb (2.3-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   1. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.
   1. Remove and replace damaged, defective, or undercharged fire extinguishers.

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

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 10 44 16

SECTION 10 73 13 - AWNINGS (FABRIC ONLY)

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fixed awnings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Shop Drawings:
   1. Include plans, elevations, sections, mounting heights, and attachment details.
   2. Detail fabrication and assembly.
   3. Include diagrams for power, signal, and control wiring.
   4. Graphics: Show text , font, character sizes, and other graphic forms; character, word, and line spacing; margin widths; position of copy; and other information related to graphic design.
C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.
   1. Fabric Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
B. Fire-Test-Response Characteristics: Provide awning fabrics with the fire-test-response characteristics indicated, as determined by testing identical products according to test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Flame-Resistance Ratings: Passes NFPA 701.
   2. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency for Flame-Spread Index of 25 or less.
   3. Permanently attach label to each awning fabric indicating whether fabric is inherently and permanently flame resistant or is treated with flame-retardant chemicals, and whether it requires retreatment after designated time period or cleaning.

2.2 FABRIC

A. Manufacturer: Sunbrella® Shade: Awning Fabrics
B. Fabric:
   1. Fiber Content: 100% Sunbrella® Acrylic-coated polyester.
   2. Weight: 8.00 oz. sq.yd.
   3. Width: 54 in.
   4. Mildew Resistance: Showing no growth when tested according to ASTM G21.
   5. Applied Treatment: Mildew resistant, Water repellent, UV and fade resistant.
   6. Pattern and Color: As selected by Architect from manufacturer's full range. Refer to Finish Schedule in the Drawings.

PART 3 EXECUTION

3.1 INSTALLATION

A. General: Install awnings at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.
B. Weld frame connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
C. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.

END OF SECTION 10 73 13

SECTION 12 48 16 - ENTRANCE GRILLES

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. Section includes recessed floor grilles and frames.

1.3 REFERENCES

A. ASTM B221/ASTM B221M Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
B. ASTM A276/A276M Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
C. AAMA 606.1 Voluntary Guide Specifications and Inspection Methods for Integral Color Anodic Finishes for Architectural Aluminum
D. AAMA 607.1 Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.

1.4 COORDINATION

A. Coordinate size and location of recesses in concrete to receive floor grilles and frames.

1.5 ACTION SUBMITTALS

A. Product Data: Manufacturers product specifications, installation and maintenance instructions.
B. Shop Drawings:
C. Samples: For the following products, in manufacturer's standard sizes
D. Floor Grille: Assembled section of floor grille.
E. Frame Members: Sample of each type and color
F. LEED Submittals:
G. Product Data for Credit IEQ 5: Indoor Chemical and Pollutant Source Control: Employ permanent entryway systems at least 10 feet long in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrance.

1.6 CLOSEOUT SUBMITTALS

A. Installation, Operations and Maintenance data.

1.7 FIELD CONDITIONS

A. Field Measurements: Indicate measurements on Shop Drawings.

1.8 WARRANTY

A. Provide manufacturer's written warranty.
B. Warrant materials and fabrication against defects after completion and final acceptance of Work.
C. Repair defects, or replace with new materials, faulty materials or fabrication developed during the warranty period at no expense to Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Approved manufacturers include, but are not limited to:
   1. Nystrom
   2. Amarco

2.2 ENTRANCE GRILLES

A. Rigid Floor Grille: 100 percent recycled, nylon-reinforced, buffed-rubber tread strips, alternating with aluminum divider-bars, assembled, and galvanized steel wire, 1.5 inches (38.1 mm) on-center, 11/16-inch (17.5 mm) high.
   1. Basis-of-Design Product: Nystrom; EnvIRONtread II
   2. Rolling Load: 1000 lb (453 kg) per wheel.

3. Tread Inserts: 100 percent recycled, nylon-reinforced buffed rubber with minimum 59 percent postconsumer and 22 percent preconsumer recycled content, mechanically secured to tread rails.
4. Model: Single tread insert, closed construction, 11/16 inch (17.5 mm) overall depth.
5. Colors, Textures, and Patterns of Inserts: Grey.
6. Rail Color: Mill finish.
7. Frame:
    a. Level Bed (LBC): Cast-in-place aluminum frame.

B. Accessibility Standard: Comply with applicable provisions in the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.3 DRAIN PANS

A. Provide manufacturer's standard 0.060-inch- (1.52-mm-) thick, stainless-steel sheet drain pan with NPS 2 (DN 50) drain outlet for each floor-grille unit. Coat bottom of pan with protective coating recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Products must be placed on a flat and level substrate. Substrate shall meet tolerance of 1/8" over 10 feet in accordance with ACI 302.
B. Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.
C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install products in accordance with manufacturer’s instructions, at locations shown and with top of products level with adjoining finished flooring where applicable.
B. Coordinate top of product surfaces with swinging doors to provide under-door clearance.
    1. Provide necessary shims, spacers, and anchorages for proper location and secure attachment of frames to concrete.
    2. For installation in terrazzo flooring, contact manufacturer.

3.3 ADJUSTING AND CLEANING

A. Adjust top surface of assembly to be flush with adjacent finishes.
B. Coordinate top of surfaces with doors that swing across surface to provide adequate under door clearance.
C. Clean dirt and debris from frame recess before installing floor system.

3.4 PROTECTION

A. Upon completion of frame installations, provide temporary filler of plywood or fiberboard in grille recesses, and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near time of Substantial Completion.
B. Install product when no further wheeled construction traffic will occur and wet type operations including painting and decorating are complete.

END OF SECTION 12 48 16