

PROJECT MANUAL

The Woodlands Township Office Renovation The Woodlands, Texas

Prepared by

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Issue for Permit, Pricing and Construction - September 8, 2023
Project Number 002.9171.000

Gensler
002.9171.000

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The Woodlands Township
Office Renovation
The Woodlands, Texas

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Sealing Architect's Name: Robert Tai
Texas License No.: 20891
Issue Date: September 8, 2023

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PART 1 - GENERAL

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

- A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:
 - 1. AIA Document A101, "Standard Form of Agreement between Owner and Contractor, Stipulated Sum."
 - a. The General Conditions for Project are specified in Document 00 72 00.
 - b. Supplementary Conditions are specified in Document 00 73 00.

1.2 ADMINISTRATIVE FORMS

- A. Copies of AIA standard forms may be obtained from the American Institute of Architects; <http://www.aia.org/contractdocs/purchase/index.htm>; docspurchases@aia.org; (800) 942-7732.
- B. Pre-Construction Forms:
 - 1. Form of Performance Bond and Labor and Material Bond: AIA Document A312, "Performance Bond and Payment Bond."
 - 2. Form of Certificate of Insurance: AIA Document G715, "Supplemental Attachment for ACORD Certificate of Insurance 25-S."
- C. Information and Modification Forms: Attached at the end of this Section. Construction Management software generated forms may be substituted for those below provided the forms contain substantially the same information.
 - 1. Subcontractors and Major Material Suppliers List. (Referenced in Section 01 33 00)
 - 2. Requests for Interpretation (RFI). (Referenced in Section 01 26 13)
 - 3. Substitution Request. (Referenced in Section 01 25 00)
 - 4. Bulletin. (Referenced in Section 01 26 00)
 - 5. Change Order Form. (Referenced in Section 01 26 00)
 - 6. Punch List. (Referenced in Section 01 77 00)
 - 7. Certificate of Substantial Completion. (Referenced in Section 01 77 00)
 - 8. Standard Products Submittal Form (Referenced in Section 01 33 00)
- D. Payment Forms:
 - 1. Schedule of Values Form: AIA Document G703, "Continuation Sheet."
 - 2. Payment Application: AIA Document G702/703, "Application and Certificate for Payment and Continuation Sheet."

3. Form of Contractor's Affidavit: AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
4. Form of Affidavit of Release of Liens: AIA Document G706A, "Contractor's Affidavit of Payment of Release of Liens."

E. Embodied Carbon and Sustainable Design Forms:

1. Environmental Product Declaration (EPD) Reporting Form. (Reference in Section 01 81 33)

END OF DOCUMENT 00 60 00



Advancement
of Construction
Technology

SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST

Project: _____ From (Contractor): _____

Date: _____
To (A/E): _____ A/E Project Number: _____

Contract For: _____

List Subcontractors and Major Material Suppliers proposed for use on this Project as required by the Construction Documents. Attach supplemental sheets if necessary.

Section Number	Section Title	Firm	Address	Phone Number (Fax Number)	Contact
-------------------	------------------	------	---------	------------------------------	---------

☐ Attachments

Signed by: _____

Date: _____

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

Project	RFI Number	
To	Date	
Attention	Project Number	
From	File	6RFI
Issued By	Drawing Sheet / Location	
Subject	Detail	
Distribution	Specifications Page Number	
	This is page	1 of

Problem, Cause and Proposed Solution (attach sketches as necessary)

Effect on Schedule

Effect on Cost

Reply

Reply Needed by

Signature

Date

Substitution Request

Gensler

Project	Date
Project Location	Project Number
General Contractor	File 6S
Prepared by	This is page 1 of

We certify that the following product is equal or superior to the specified product in appearance, durability, performance, and in every other respect, and we hereby submit it for your consideration as a substitute for the specified item for the above-mentioned project:

1. Specified Item	Section
2. Proposed Substitution	
3. Reason for Substitution	
4. Costs (Provide a complete breakdown of costs, including the cost amount to be DEDUCTED from the Contract Sum if the proposed substitution is accepted. Include documentation for both materials and labor.)	
5. Schedule (Describe substitution's affect on construction schedule)	
6. Supporting Data <ul style="list-style-type: none">Cutsheets: Attach complete technical data, including laboratory tests, if applicable.Installation: Include complete information on changes to Drawings and/or Specifications describing the steps that the proposed substitution will require for its proper installation.Samples: Submit with request all necessary samples and substantiating data clearly marked to prove equal quality and performance to that which is specified.	
7. List ways in which the substitution affects dimensions shown on Drawings	
8. List affects of proposed substitution on other trades	
9. List ways in which proposed substitution will be affected by applicable code requirements and agency approval	
10. List differences between proposed substitution and specified item	
11. Manufacturer's warranties of the proposed and specified items are:	<input type="checkbox"/> Same <input type="checkbox"/> Different
Explain:	

12. List information on availability of maintenance service and source of replacement materials

13. Certification of, and Assumption of Liability for, Equivalent Performance

The undersigned certifies that the function, appearance and quality of the proposed substitution is equivalent or superior to the specified item and is in full compliance with the Contract Documents and applicable regulatory requirements.

Supplier	_____	Signature	_____
Telephone No.	_____	Date	_____

Signature must be by person authorized to legally bind his/her firm to the above terms. Failure to provide legally binding signature will result in retraction of approval.

General Contractor	_____	Signature	_____
Telephone No.	_____	Date	_____

Project			Date		
Project Location			Architect's Project Number		
Owner/Client			File 6BL This is page 1 of		
To			Attention		
Address					
City		State		Zip Code	
Delivered via:					
<input type="checkbox"/> Messenger		<input type="checkbox"/> Hand carried		<input type="checkbox"/> Facsimile	
<input type="checkbox"/> Express		<input type="checkbox"/> Pick-up		<input type="checkbox"/> E-mail Address	
<input type="checkbox"/> Mail		<input type="checkbox"/> UPS		<input type="checkbox"/> Website Address	
This Bulletin Conveys to Contractor (Check one of the following five choices.):					
<input type="checkbox"/> Architect's Authorization for Minor Changes Architect recommends modifications to the Work as described below.					
<input type="checkbox"/> Architect's Clarification / Supplemental Instructions (Use this Bulletin form in place of <i>Architect's Supplemental Instructions</i> form.) Contractor shall carry out the Work in accordance with the following supplemental instructions.					
<input type="checkbox"/> Architect's Confirmation of a Field Order (Use this Bulletin form in place of a <i>Field Order</i> form.) This confirms Architect's verbal instructions to (individual's name) _____ on (date) _____, as described below. Note: The above three choices are each subject to the following terms: The change(s), clarification(s) and/or confirmation(s) described below is/are issued in accordance with the Contract Documents, without change in Contract Sum and/or Time.					
<input type="checkbox"/> Architect's Request for Contractor's Proposal (Use this Bulletin form in place of an <i>Estimate Request</i> form.) Please submit an itemized proposal for changes in the Contract Sum and/or Time for proposed modifications to the Contract Documents described herein. Submit proposal within _____ days or notify the Architect in writing of the date on which you anticipate submitting your proposal. This is not a Change Order or a Construction Change Directive or a direction to proceed with the Work described in the proposed modifications.					
<input type="checkbox"/> Other: As described below.					
Attachments					
Requested by					
<input type="checkbox"/> Architect <input type="checkbox"/> Owner <input type="checkbox"/> Contractor <input type="checkbox"/> Other (specify): _____					
Issued by Gensler by			Date Signed		
Issued by Owner by			Date Signed		
<input type="checkbox"/> Required; Please return signed copy to Gensler			<input type="checkbox"/> Not Required		
Accepted by Contractor by			Date Signed		
<input type="checkbox"/> Required; Please return signed copy to Gensler			<input type="checkbox"/> Not Required		
Distribution					
Prepared by Gensler by			Date Signed		
Instructions / Description / References / Dates					

Begin text here...

Change Order Number

Gensler

Project		Date	
Project Location		Project Number	
Owner / Client	File	6CO	This is page 1 of
Contractor	Contractor's Request / Quotation Number / Date		
Change to Contract Sum:	Choose One:	Change to Contract Time:	
Original Contract Amount:	Choose One:	Revised Contract Amount:	Choose One:
<input type="checkbox"/> See Change Order Summary for Revised Total Contract Amount and Time			
Reason for Change		Requested by	
Recommended for Approval by Gensler: by	By	Por	Date Signed
Approved for Owner / Client	By		Date Signed
Approved for Contractor	By		Date Signed
Approved for Tenant (if applicable)	By		Date Signed
The above Change Order to the contract shall be effective upon signature by all applicable parties, in accordance with the Conditions of the Contract. The Contract Amount refers to the Contract Sum or guaranteed Maximum Cost in the Contract.			
Distribution			
Description / References / Costs / Dates			

Begin text here . . .

Punch List

Gensler

Project		Date of Observation	
Project Location		Project Number	
List Number	File	6PL	
This is page		1 of	
Present			
Field review by Gensler disclosed the item(s) listed below, which is/are not in accordance with the Contract Documents. Contractor shall, upon receipt of this list, and before Gensler issues the Certificate of Substantial Completion, proceed promptly to complete and correct the item(s) and shall then submit a request for another field review by Gensler to determine Substantial Completion. This list supplements Contractor's Punch List and, unless otherwise noted, supersedes Gensler's previous list(s). Gensler will rely on this list as the approved record of matters discussed and conclusions reached, unless Contractor's written notice to the contrary is received by Gensler within seven calendar days of the date this list was issued.			
Distribution			
Prepared by		Date Issued	
Space / Item Number / Descriptions / Observations			

Certificate of Substantial Completion

Gensler

Project	Project Number
Project Location	Date Issued
Owner / Client	File 6SC
Contract Date	This is Page 1of
Date of Substantial Completion	

Date of Substantial Completion is applicable to	<input type="checkbox"/> Entire Project	<input type="checkbox"/> Designated Portion of Project, as described below
Punch List	<input type="checkbox"/> Attached	<input type="checkbox"/> Transmitted Separately <input type="checkbox"/> None

The Work performed under the Contract for Construction has been reviewed and found, to Architect's best knowledge, information and belief, to be substantially complete as of the Date of Substantial Completion entered above. The Date of Substantial Completion is the date when the Work, or designated portion thereof, is sufficiently complete in accordance with the Contract Documents (including any approved change Orders) and all required final inspections and permits have been obtained so Owner can occupy or utilize the Work for its intended use, subject only to completion of minor items (Punch List).

The Work, or designated portion thereof shall include:

A list of items to be completed or corrected and the date(s) when such items are to be completed (Punch List) may be attached hereto or transmitted separately. This Certificate of Substantial Completion or omission of any item from the Punch List shall not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. The Architect shall not be responsible for any omission from, or other discrepancy on, the Punch List. Contractor agrees to complete or correct the items listed on the Punch List within days of the above date of Substantial Completion.

Warranties required under the Contract Documents shall commence on the Date of Substantial Completion, except for Punch List items and other incomplete work, warranties for which shall commence on the date such work is satisfactorily completed, unless otherwise agreed in writing by Owner and Contractor.

The Owner and Contractor shall fulfill and transfer responsibilities with regard to insurance, utilities, maintenance, damage, security, surety, and the like, in accordance with the Contract Documents or other written agreement between them.

The Architect has conducted no tests for, and made no determination of the presence or lack of asbestos or other hazardous or toxic substances or pollutants.

The Basic Services of the Architect shall end 30 days after the Date of Substantial Completion, unless otherwise stated in the Owner/Architect Agreement or agreed in writing.

Begin text here . . .

Architect	Gensler	By	Date Signed
Owner / Client		By	Date Signed

Project		Project Number
Project Location		2 of
Contractor	By	Date Signed

Project Name	This Standard Product Review Form is to be used to streamline the submittal of manufacturer's standard product data and samples for materials like ceiling tile, vinyl flooring, carpet or other systems for which manufacturer's product data is readily available. It is intended that this form is used only for materials that are commonly available in the marketplace and meet the specified requirements; or are the material used as the "basis of design". It is not to be used for any other purpose	Gensler Project Number	
General Contractor		Date Received	
Subcontractor(s) <small>List as needed</small>		Date Returned	
		Reviewed by:	

Item No	Specification Section Product Description	Name of Manufacturer	Meets or Exceeds Technical Requirements		Meets or Exceeds LEED Requirements		Environmental Product Declaration Available		Remarks If answered NO to any requirement provide an explanation or offer an alternative product
			Yes	No	Yes	No	Yes	No	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

Provide other Data or descriptions here...

Environmental Product Declaration Reporting Form

Gensler

Project Name	Project Location		
General Contractor	Date		
Subcontractor	File	6ER	This is page 1 of

The information below identifies the status of a Type III Environmental Product Declaration in accordance with ISO 14025 for the product(s) listed below.

Manufacturer	Product
---------------------	----------------

☐ The product listed above has available one of the following Type III Environmental Product Declarations:

- ☐ Product-Specific Type III Environmental Product Declaration. **See attached.**
- ☐ Industry-Wide (Generic) Type III Environmental Product Declaration. **See attached.**

☐ A Type III Environmental Product Declaration is IN DEVELOPMENT for the product listed above and will be published by the provided date:

Date:

☐ A Type III Environmental Product Declaration is NOT AVAILABLE for the product at this time.

We certify that the following information is accurate to the best of our knowledge at the time of submission.

Contractor Signature	Date
-----------------------------	-------------

DOCUMENT 00 72 00 - GENERAL CONDITIONS

PART 1 - GENERAL

- A. General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition, hereinafter referred to as General Conditions, are hereby made a part of the Contract Documents.
- B. The Contractor is hereby specifically directed, as a condition of the Contract, to become acquainted with the Articles contained therein, and to notify and apprise all Subcontractors and other parties to the Contract of, and bind them to, its conditions.
- C. No contractual adjustments shall be due as a result of failure on the part of the Contractor, Subcontractors or other parties to the Contract to be fully acquainted with the General Conditions.
- D. The General Conditions of the Contract may be amended by Supplementary Conditions.
- E. The provisions of the General and Supplementary Conditions, when included, and Division 01 "General Requirements," apply to the Work specified in each Section of the Specifications.
- F. Where conflicts occur concerning the Architect's duties and responsibilities between the General Conditions and the Agreement between the Owner and Architect, the Agreement shall take precedence.
- G. If not otherwise included in the Owner-Contractor Agreement or specifically included in the bidding documents, the Contractor shall obtain the Owner's insurance requirements prior to submitting a bid.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF DOCUMENT 00 72 00

DOCUMENT 00 73 00 - SUPPLEMENTARY CONDITIONS

AIA Document A201-2017, in its entirety, shall constitute the General Conditions of the Contract for Construction (the "General Conditions"). These Supplementary Conditions of the Contract for Construction ("Supplementary Conditions") are attached to, and made a part of, the Contract Documents and are intended to modify and/or supplement the General Conditions. Capitalized terms used herein but not defined herein shall have the same meanings as in the General Conditions.

ARTICLE 1 - GENERAL PROVISIONS

1. Subparagraph 1.2.2: Add the following new wording to the end of Subparagraph 1.2.2:

Documents prepared by entities other than Architect or its consultants may be included with documents prepared by Architect or its consultants for convenience in pricing, bidding, permit application, construction or other purposes. The inclusion of such documents not prepared by the Architect or its consultants within the Contract Documents shall not imply that Architect has reviewed, approved or is responsible for the accuracy or completeness of such documents.

2. Paragraph 1.5 - Ownership and Use of Drawings, Specifications and Other Instruments of Service: Add the following new subparagraph 1.5.3:

§1.5.3 In the event of any unauthorized use, reuse, transfer or modification of the Drawings, Specifications or other documents by Contractor, any lower tier contractor or material supplier, or other person or entity under Contractor's direct or indirect employ, Contractor agrees to indemnify, defend and hold Owner, Architect, their officers, directors, shareholders, employees, agents, and consultants harmless from and against any and all claims, liabilities, suits, demands, losses, damages, costs and expenses, including, but not limited to, reasonable attorneys' fees and all legal expenses and fees incurred through appeal, and all interest thereon, accruing to or resulting from any and all persons, firms, or any other legal entities on account of any damages or losses to property or persons, including, but not limited to, injuries or death or economic losses arising out of such unauthorized use, reuse, transfer or modification, except where Architect is found to be solely liable as between the parties hereto as well as between any other persons, firms or other legal entities for such damages or losses by a court or forum of competent jurisdiction.

3. Subparagraph 1.7 Digital Data Use and Transmission: Add the following sentence at the end of Subparagraph 1.7:

Any electronic transfer of Drawings, Specifications or other documents ("Data") by the Architect to the Contractor shall be subject to the terms of the Architect's standard Data Transfer Agreement, which shall be executed by the Contractor.

4. Subparagraph 1.8 Building Information Models Use and Reliance. Add the following sentence at the end of the section:

The parties' mutually agreed upon protocols for use of the model may be set forth in other forms or exhibits, in lieu of AIA Document E203 - 2013 Building Information Modeling and Digital Data Exhibit, and AIA Document G202 - 2013 Project Building Information Modeling Protocol Form.

ARTICLE 3 - CONTRACTOR

5. Subparagraph 3.2.1: Add the following new sentence to the end of Subparagraph 3.2.1:

Additionally, Contractor acknowledges and agrees that the information contained in the Contract Documents is adequate and sufficient for completion of the Work.

6. Subparagraph 3.2.4: Revise the second sentence of Subparagraph 3.2.4 to read as follows:

If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, or reasonably should have recognized any errors, inconsistencies, omissions or nonconformity and failed to do so, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations.

7. Subparagraph 3.7.3: Modify Subparagraph 3.7.3 as follows:

§3.7.3 If the Contractor performs Work ~~knowing it to be~~ which Contractor knows or should know is contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

8. Subparagraph 3.9.1: Add the following new text to the end of Subparagraph 3.9.1:

The superintendent shall be approved by Owner and shall not be replaced without Owner's prior approval. The superintendent shall be familiar with the job site, the Contract Documents, and all applicable rules, regulations and requirements of all authorities having jurisdiction over the Work or the site.

9. Subparagraph 3.11: Modify the first sentence of Subparagraph 3.11 as follows:

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples and similar required submittals, as well as one copy of the approved permit set.

10. Subparagraph 3.12.6: Add the following text to the end of Subparagraph 3.12.6:

Incomplete, uncoordinated or incorrect Shop Drawings and other submittals shall be returned to Contractor who shall be held responsible for all time delays and extra costs of review or handling by Architect or Owner, because of such submittals being incomplete, uncoordinated or incorrect.

11. Subparagraph 3.12.7: Modify Subparagraph 3.12.7 as follows:

§3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been ~~approved~~ reviewed and returned by the Architect.

12. Subparagraph 3.12.8: Modify Subparagraph 3.12.8 as follows:

3.12.8 The Work shall be in accordance with ~~approved Architect-reviewed~~ submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract

Documents by the Architect's ~~approval-review~~ of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically notified the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's ~~approval-review~~ thereof. If more than one submittal review stamp (Architect's and one or more of its consultants' stamp) appears on a submittal, the most stringent action and notations thereon shall apply. Signature on a submittal review stamp by the Architect or a consultant does not imply that it has reviewed Work not within its professional discipline or scope of services.

13. Subparagraph 3.12.10.1: Modify the last sentence of Subparagraph 3.12.10.1 as follows:

Pursuant to this Section 3.12.10, the Architect will review and ~~approve or take other~~ appropriate action on submittals only for the limited purpose of checking for conformance with ~~information given and the visual and aesthetic~~ design concept expressed in the Contract Documents.

14. Paragraph 3.19: Add the following new Paragraph 3.19:

§3.19 DESIGN/BUILD

§3.19.1 If Contractor provides and/or retains its subcontractors or others to provide Design/Build Work for specified portions of the Project, Contractor shall be responsible directly to Owner for those portions of the Project, including but not limited to: (1) preparing engineering and other drawings and specifications for all components of the Design/Build portion(s) of the Work, (2) complying with Project requirements and space limitations, (3) coordinating and interfacing with other trades and consultants, and (4) obtaining approvals from authorities having jurisdiction over the Project. Contractor, its subcontractor(s) or their design professional(s) shall be the Professional(s) of Record for their portion(s) of the Design/Build Work.

§3.19.2 Architect shall have no responsibility for the design, installation or performance of Design/Build portions of the Project including but not limited to reviewing such designs and/or Work and/or certifying the payment applications for the same. Architect's services in connection with any Design/Build work shall be limited to checking such designs for general conformance to major space limitations and the visual and aesthetic design concept as expressed in the Contract Documents. Such checking by Architect of more than two proposals for the same Design/Build portion of the Project shall be compensated as Additional Services.

§3.19.3 When the Contract Documents or authorities having jurisdiction over the Project require certificates or statements of performance characteristics of materials, systems or equipment, or professional seals, calculations, or other certificates or statements regarding such Design/Build portions of the Project, Owner will require Contractor to provide them, and Owner and Architect will be entitled to rely on them to establish that the designs, materials, systems, equipment and such Work will meet the performance criteria required by the Contract Documents.

ARTICLE 4 - ARCHITECT

15. Subparagraph 4.2.2: In the first sentence of this Subparagraph 4.2.2, replace the words "appropriate to the stage of the construction, or as otherwise agreed with the Owner," with the words "necessary in the judgment of Architect or as otherwise agreed by Owner and Architect in writing."

16. Subparagraph 4.2.3: Add the following text to the end of Subparagraph 4.2.3:

Architect's duties shall not extend to the receipt, inspection and acceptance on behalf of Owner or Contractor of materials, furniture, furnishings and equipment at the time of their delivery to the premises or installation. Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of Architect in Architect's administration of the Contract for Construction, or by tests, inspections or approvals required or performed by persons other than Contractor. If Architect recommends procedures, either directly or by reference to standards or manufacturers' recommendations, Contractor shall adopt such recommendations as its own, or inform Architect if exception is taken to such procedures, and may utilize or propose alternative procedures that Contractor will warrant as fulfilling the intent of the Contract Documents.

17. Subparagraph 4.2.5: Modify Subparagraph 4.2.5 as follows:

§4.2.5 Based on Architect's on-site evaluations and the data comprising ~~of~~ the Contractor's Applications for Payment, the Architect will review and certify, to the best of its knowledge, information and belief, that the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the amounts due the Contractor is entitled to payment of the amount certified and will issue Certificates for Payment in such amounts.

18. Subparagraph 4.2.7: Modify the first sentence of Subparagraph 4.2.7 as follows:

The Architect will review and ~~approve, or take other~~ appropriate action upon, the Contractor's submittals required by the Contract Documents, such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the visual and aesthetic design concept expressed in the Contract Documents.

ARTICLE 9 - PAYMENTS AND COMPLETION

19. Subparagraph 9.4.2: Add the following text to the end of Subparagraph 9.4.2:

Further, Architect shall not be obligated to issue any Certificate for Payment covering work by Design/Build contractors or subcontractors, work by Owner's Separate Contractors, or other work for which Architect is not providing full services.

20. Subparagraph 9.5.1.8: Add the following new Subparagraph 9.5.1.8:

.8 rejection or non-acceptance of Work by any governmental agency having jurisdiction.

21. Subparagraph 9.6.4: Add the following text to the end of Subparagraph 9.6.4:

At the Owner's sole discretion, payments may be made by check jointly payable to Contractor, its Subcontractor or supplier, and any applicable labor union trust fund.

22. Subparagraph 9.8.1: Modify this Subparagraph 9.8.1 as follows:

§9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents and all required final inspections and permits have been obtained so that the Owner can occupy or utilize the Work for its intended use, subject only to completion of minor items (punch list).

23. Subparagraph 9.8.3: Add the following text to the end of Subparagraph 9.8.3:

If upon this subsequent inspection, Contractor has not yet completed the Work, and further field reviews by Architect are required, Contractor shall be responsible to Owner for any additional cost to Owner of further reviews by Architect.

24. Subparagraph 9.8.4: Add the following text to the end of Subparagraph 9.8.4:

In the absence of such certificate, the date of Substantial Completion shall be in accordance with Subparagraph 9.8.1.

25. Subparagraph 9.9.3: Add the following text to the end of Subparagraph 9.9.3:

, nor shall it start the guarantee or warranty period.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

§10.3 Hazardous Materials and Substances

26. Subparagraph 10.3.1: Modify Subparagraph 10.3.1 as follows:

§10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances, including but not limited to asbestos or polychlorinated biphenyl (PCB), lead-based paints or any other potentially toxic or hazardous contaminants, materials, pollutants which for the purpose of this Article 10 means solid, liquid, gaseous, or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and wastes. Prior to commencement of the Work, Contractor shall require manufacturers of all materials and equipment for the Work to provide certifications, warranties or statements that such materials or equipment (1) are free of injurious amounts of hazardous materials or (2) contains specific amounts of hazardous materials, and provide recommendations regarding handling of such. Such certifications, warranties or statements shall be in writing in a form acceptable to Owner, and shall be forwarded by Contractor to Owner. If the manufacturer states that a material or equipment contains injurious amounts of hazardous materials, Owner shall be afforded adequate and timely opportunity to order that other materials be substituted without causing delay to the Project. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance; including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

27. Subparagraph 10.3.6: Modify Subparagraph 10.3.6 as follows:

§10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred, provided the Contractor has complied fully with its obligations under Subparagraph 10.3.1.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

28. Subparagraph 12.1.1: Modify Subparagraph 12.1.1 as follows:

§12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, or to requirements of any public authority having jurisdiction over the Work, it must, if requested in writing by the Architect or Owner, be uncovered for the Architect's or Owner's or public authority's examination and be replaced at the Contractor's expense and without change in the Contract Time.

END OF DOCUMENT 00 73 00

SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Project information.
 2. Work covered by Contract Documents.
 3. Specification and drawing conventions.
 4. Miscellaneous provisions.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to the Work of all Sections in the Specifications. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.
- B. Conflicts or discrepancies among the Contract Documents shall be resolved in the following order of priority:
1. Contract modifications (such as Change Orders and Bulletins) of later date take precedence over those of earlier date;
 2. the Agreement;
 3. Addenda of later date take precedence over those of earlier date;
 4. the Supplementary Conditions;
 5. The General Conditions;
 6. Drawings and Specifications; Drawings govern Specifications for quantity and location. Specifications govern Drawings for quality and performance. In the event of ambiguity or conflicts, the greater quantity and the better quality shall govern.

1.3 PROJECT INFORMATION

- A. Project Identification: The Woodlands Township - Office Renovation, project number 002.9171.000.
1. Project Location: 2801 Technology Forest Blvd., The Woodlands, TX 77381.
- B. Owner: The Woodlands Township.
- C. Architect: Gensler, 2 Houston Center, 909 Fannin., Suite 200, Houston, TX 77010; voice 713/844-0000.
1. Architect's Representative: Kimberly Anderson

- D. Project Web Site: A project Web site administered by Contractor will be used for purposes of managing communication and documents during the construction stage.
1. See Section 01 31 00 "Project Management and Coordination" for requirements for establishing and using the Project Web site.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of interior office space renovation, approximately 12,750 SF, in an existing municipal office building.
1. The Work includes demolition of existing interior partitions with new construction consisting of steel stud and gypsum board partitions, aluminum interior door frames with flush solid core wood doors, glazed sidelights and suspended ceiling systems.
- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.5 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.6 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. 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 scheduled on Drawings.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.7 MISCELLANEOUS PROVISIONS

- A. Special Insurance: Contractor's Commercial General Liability insurance shall contain no exclusion that would deny coverage for any claim arising out of or contributed to by any fungus, mildew, mold, or resulting allergens. If such exclusion exists and cannot be removed by endorsement, Contractor shall submit proof of coverage for fungus, mildew, mold, or resulting allergens under a Pollution Legal Liability or Contractor's Pollution Liability policy.
- B. Tax Exemption: The Owner states that it qualifies for exemption from certain State and Local Sales and Use Taxes pursuant to the provisions of the state of Texas Tax Code.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 13 00 - DELEGATED DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for portions of the Work the design of which is delegated to the Contractor.

1.2 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. AHJ: Authority Having Jurisdiction.
- B. Definitions:
 - 1. Delegated: Means transferred by the Architect to the Contractor.
 - 2. Design: Means the complete planning, arrangement, and coordination of a discrete portion of the work, along with its graphic and written communication, including determination and engineering of its organization and structure in response to aesthetic requirements, functional requirements, dimensional and geometric limits, and the arrangement, performance, and other criterion indicated in the Contract Documents.
 - 3. Engineering Services: Means structural engineering services performed for the design, fabrication, and installation of systems, assemblies, and components similar in material, design, complexity and extent to that indicated for the delegated design portion of the Work.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Portions of the Contract Documents may delegate the design of discrete portions of the Work to the Contractor, or may otherwise specify "delegated design requirements" in individual specification Sections.
- B. The Contractor is professionally liable for delegated design work, including design, engineering, and conformance to specified performance requirements.
- C. Drawings of delegated design portions of the Work are diagrammatic; they do not identify or imply solutions to engineering aspects of the portions of the Work that are required to be designed by the Contractor, and are intended to only indicate:
 - 1. The design intent of final profiles, shapes and forms of the specified materials;
 - 2. Relationships between adjacent components of the Work;
 - 3. Location, identification, dimension and size of components, assemblies, accessories, and other components of the Work; and

4. Schematic joining and attachment details and diagrams of fasteners and connections.
- D. Specifications for delegated design portions of the Work are performance based, and establish the minimum qualities and performance criteria for materials, fabrications, products, systems, assemblies, and methods of execution.
- E. The Architect reviews and determines whether or not the Contractor's proposed delegated designed work:
 1. Conform to the design intent of the delegated design portion of the Work being reviewed;
 2. Conform to the specified graphic and specification requirements, including subsequent modifications; and
 3. Is appropriately integrated into the adjacent components of the Work and, where applicable, the overall design of the project.
- F. In the event of a dispute regarding the Contractor's proposed delegated design solutions and the design intent of the Contract Documents, the decision of the Architect is final.

1.4 PROCEDURAL REQUIREMENTS

- A. Design Requirements: Proposed delegated design solutions shall demonstrate conformance to the original design intent of the Contract Documents, as determined by the Architect.
 1. Unless otherwise defined by the Contract Documents, the appearance of exposed elements, including member sizes, profiles, and alignment of components shall be within the dimensional limits and section profiles indicated, and consistent throughout the Project where the delegated design component of the Work is to be installed.
 2. Deviation from the profiles, layouts, dimensional locations, or arrangements indicated is not permitted without prior written consent from the Architect.
 3. Deviations from the specifications are not permitted without prior written consent from the Architect.
 4. Contractor-proposed delegated design solutions that exactly follow the details indicated on the Drawings do not relieve the Contractor from liability for the design, fabrication, and performance of the delegated design portions of the Work.
- B. Engineering Requirements: Engineer delegated design portions of the Work shall;
 1. Meet or exceed the specified performance and quality requirements;
 2. Conform to the dimensional and graphic requirements of the Drawings;
 3. Satisfy the requirements of the AHJ; and
 4. Provide structurally sound, leak-proof, non-corroding, and weather tight assemblies, as applicable, that accommodate, resist, distribute, or transfer, as applicable, the minimum specified in-service loads, and thermal, seismic, and wind sway, or other types of movement, without incipient or catastrophic failure.
- C. Regulatory Requirements: Delegated design items shall be engineered in conformance with the International Building Code.

1.5 SUBMITTALS

- A. General: Coordinate and process submittals for delegated design portions of Work in same manner as for other portions of Work.
- B. Professional Engineer's qualifications.
- C. Design Data: Submit structural engineering calculations demonstrating conformance to the requirements of the Contract Documents and of the AHJ.
 - 1. Calculations must be legible and incorporate sufficient cross-references to shop drawings to make calculations readily understandable and reviewable.
 - 2. At a minimum, structural calculations must contain:
 - a. An analysis of framing members;
 - b. Section property computations for framing members;
 - c. An analysis of anchors, including anchors embedded in concrete; and
 - d. The signature and seal of the professional structural engineer, licensed in the state of Texas, and responsible for their preparation.
 - 3. Test reports are not an acceptable substitute for calculations.

1.6 QUALITY ASSURANCE

- A. Professional Structural Engineer's Qualifications: Must be legally licensed or otherwise qualified to practice in the state of Texas. The engineer shall have not less than 10 consecutive years' experience providing engineering services for delegated design work similar in material, design, complexity, and extent to this Project, as determined by the Architect, and whose Work products have resulted in installations with a record of successful in-service performance.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials, fabrications, products, components, and accessories required for a complete installation, whether or not such items are indicated on the Drawings or in the Specifications.
- B. Provide anchors, attachments, inserts, fasteners, clips, bracing, framework, and similar items as required to meet specified design and performance requirements, and to securely attach delegated design Work to adjacent supports, or to adjoining work, whether or not such items are indicated on the Drawings or in the Specifications.

PART 3 - EXECUTION

3.1 DESIGN

- A. Unless otherwise indicated or specified, maintain the design intent and conform to the performance requirements indicated on the Drawings and in the Specifications, as determined by the Architect.
 - 1. In the interest of fabrication or erection methods, minor dimensional changes and detailing adjustments to the original design communicated in the Contract Documents may become necessary.
 - 2. Obtain written approval from the Architect for proposed changes and adjustments before procurement, fabrication, manufacture, assembly, or installation, as applicable.
- B. Engage a qualified professional structural engineer to design connection details and determine fastener types and sizes.
 - 1. Fasteners or connections may neither conflict with nor require revision to the finish profiles indicated or the supporting work.
 - 2. Connections may not impose eccentric loading, nor induce twisting or warping to the supporting structure.
 - 3. Connections must be designed to accommodate potential and actual misalignment of adjacent work within tolerances specified in other Sections.

3.2 DELEGATED DESIGN SCHEDULE

- A. Section 08 81 00 "Glazing," for all glazing.
- B. Section 09 22 16 "Non-Structural Metal Framing," for light gauge metal framing of gypsum board, gypsum plaster, and portland cement plaster partitions and ceilings.
- C. Section 09 51 13 "Acoustical Panel Ceilings," for ceiling suspension systems.

END OF SECTION 01 13 00

SECTION 01 14 00 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Existing utility interruptions.
2. Use of premises.
3. Occupancy requirements during construction.
4. Occupancy requirements prior to Substantial Completion.
5. Miscellaneous restrictions.

1.2 EXISTING UTILITY INTERRUPTIONS

A. Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

1.3 USE OF PREMISES

A. Access: At all times, provide the Architect and the 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. Provide access to any testing agencies to perform required testing.

1. **Coordination with Owner's Separate Contractors:** Provide access for Owner's separate contractors listed in Section 01 10 00 "Summary" and coordinate schedule for the installation of their work.

B. 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.

C. Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

D. Use of Site: Confine operations at the site to areas permitted by law, ordinances, permits, and the Contract Documents. Do not unreasonably encumber the Site with any materials or equipment. Coordinate loading on floor or roof with Architect and/or Structural Engineer to assure that no surfaces exceed carrying capacity.

1. Coordinate with Owner for secured storage within the building, if applicable.

2. Protect and maintain common areas of the building that are in the path of travel for construction personnel and used for transporting materials and equipment to and from the construction site.
 3. Do not block entrances, fire exits or lanes, or delivery routes.
- E. Condition in Existing Building: 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.

1.4 OCCUPANCY REQUIREMENTS DURING CONSTRUCTION

- A. Full Owner Occupancy: Owner will occupy site and existing building(s) 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 operations. Maintain existing exits unless otherwise indicated.
- B. Partial 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 approval of authorities having jurisdiction.
 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.
 3. Schedule use of premises for Work and coordinate construction operations with the Owner to allow for Owner occupancy.
 4. Schedule use of premises for Work and coordinate construction operations with the Owner to allow for use of site and premises by the public.
 5. Keep premises orderly, clean and with a minimum of obstruction and inconvenience to the tenants and the public.
 6. Relocate any 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.

1.5 OCCUPANCY REQUIREMENTS PRIOR TO SUBSTANTIAL COMPLETION

- A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior Owner acceptance of the completed Work.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before limited 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 Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.6 MISCELLANEOUS RESTRICTIONS

- A. 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.
 2. Obtain Owner's written permission before proceeding with disruptive operations.
- B. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.
- C. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 14 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Sections:
 - 1. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
 - 2. Divisions 02 through 49 Sections for specific requirements and limitations for substitutions.

1.2 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.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of "Substitution Request" form provided in Document 00 60 00 "Forms."
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - 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, necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section.

Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - 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 architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES and local regulations.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the 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.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Bulletin for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

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

1.5 PROCEDURES

- A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately upon 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 when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided .
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution 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.
- B. Substitutions for Convenience: Not allowed, unless otherwise indicated.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.2 MINOR CHANGES IN THE WORK

- A. Architect may issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on "Bulletin" form included in Document 00 60 00 "Forms."

1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Bulletins with "Architect's Request for Contractor's Proposal" indicated, issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Bulletin after receipt of Bulletin, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.

- B. Contractor-Initiated Proposals (Change Order Request): If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Proposal Request Form: Use form acceptable to Architect.

1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 26 13 - REQUESTS FOR INTERPRETATION (RFI)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Requests for Interpretation.

1.2 DEFINITIONS

- A. Requests for Interpretation (RFI): Contractor initiated written instrument related to the execution of the Work that is addressed to the Architect. The RFI shall be used by the Contractor as the means to ask questions related to the Work; subject to the conditions contained within this Section.

1.3 ACTION SUBMITTALS

- A. Requests for Interpretation: Include a detailed, legible description of an item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Reference to appropriate documents:
 - a. Specification Section number and title and related paragraphs.
 - b. Drawing number and detail references.
 - c. Schedule.
 - d. Bulletin number.
 - e. Other Contract Documents, if any.
 - 9. Field dimensions and conditions, as appropriate.
 - 10. Contractor's Proposed Solution: Contractor shall show proposed solution; graphic, where appropriate. RFI that fails to include a proposed solution will be rejected, and returned with instructions to provide a proposed solution. If the Contractor's proposed solution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 11. Contractor's signature.
 - 12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

- a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- B. RFI Forms: Use "Request for Interpretation" form bound in Document 00 60 00 "Project Forms."
1. Attachments shall be electronic files in Adobe Acrobat PDF format.

1.4 INFORMATIONAL SUBMITTALS

- A. RFI Log: Prepare, maintain, and submit a tabular log of RFI organized by the RFI number. Submit log weekly. 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.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Processing Time: Allow five working days for Architect's response for each RFI requiring review by a single discipline. Allow ten working days for Architect's response for each RFI requiring review by more than one discipline. RFIs received by Architect Monday through Thursday after 3:00 p.m. will be considered as received the following business day. RFIs received by Architect on Friday after 3:00 p.m. will be considered received the following Monday. These shall be the recorded RFI Receipt Dates listed in the RFI Log.
 1. Allow additional time if coordination with other work is required. Architect will advise Contractor when a RFI being processed must be delayed for coordination.
 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.
- B. Architect's action on RFI that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Proposal Request according to Section 01 26 00 "Contract Modification Procedures."
 1. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 working days of receipt of the RFI response.
- C. Frivolous RFI:
 1. RFI shall not be used for the following:
 - a. Request for approval of submittals.

- b. Request approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Request for adjustment in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Requests for coordination information already indicated in the Contract Documents, or to transfer coordination responsibility from the Contractor to the Owner or Architect.
 - g. Incomplete RFI or inaccurately prepared RFI.
- 2. The Owner reserves the right to assess the Contractor for the cost (based on time and materials) of a RFI response performed by the Architect, and any of its consultants, which is deemed by the Owner and the Architect as being frivolous or unnecessary.
 - 3. Frivolous RFI shall be removed from the RFI log.

1.6 COORDINATION

- A. Coordination: Coordinate preparation and processing of RFI with performance of construction activities.
 - 1. Submit RFI with such promptness as to cause no delays in the Work. No adjustments of Contract Time or Contract Sum will be granted because of failure to have an RFI submitted with sufficient time to allow for the orderly processing of a response by the Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S ACTION

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, prepare and submit an RFI in the form specified.
- B. Prior to submission of the RFI, coordinate the nature of the inquiry with the requirements of other Sections or trades as related thereto and responses to previous RFI.
- C. Complete each blank on the RFI form.
- D. In preparing each RFI, verify the applicable dimension(s), field conditions, Drawing requirements (small through large scale details), and/or Specification Section requirements pertaining thereto.
- E. Each RFI shall be reviewed, and signed by the RFI Manager prior to transmitting to the Architect.

- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

3.2 ARCHITECT'S ACTION

- A. Architect's Action: Architect will review each RFI, determine action required, and respond.
 - 1. Frivolous RFI will be returned without action.
- B. RFI which fail to conform to requirements, (for example, is incomplete or contain numerous errors) shall be returned to the Contractor without a response. No adjustments for Contract Time or Contract Sum shall be granted for an RFI failing to conform to requirements.

END OF SECTION 01 26 13

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule.

1.2 DEFINITIONS

- A. Site Visit: Architect's visits to the site at intervals necessary in the judgment of Architect to become generally familiar with the progress and quality of the Work completed and to determine in general if the Work completed is in accordance with the Contract Documents. Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - c. Items required to be indicated as separate activities in Contractor's Construction Schedule.
 - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.

- b. Name of Architect.
 - c. Architect's project number.
 - d. Project Manager's name and address.
 - e. Contractor's name and address.
 - f. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum. Break down principal subcontract amounts into separate labor and materials items. Breakdown of subcontractor's schedule of values must be true and accurate.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.
6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date of each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

- C. **Payment Application Forms:** Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- D. **Application Preparation:** Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration, if any.
- E. **Stored Materials:** Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and off-site.
 - 1. Provide description of item(s) being stored.
 - 2. Location of the bonded warehouse(s) where materials or equipment is stored.
 - 3. Bill of sale made to Owner stating there will be no additional cost for transportation and delivery of the stored item(s).
 - 4. Statement certifying that item or any part thereof will not be installed in any construction other than Work under this Contract.
 - 5. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 - 6. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 7. Provide summary documentation for stored materials indicating the following:
 - a. Materials previously stored and included in previous Applications for Payment.
 - b. Work completed for this Application utilizing previously stored materials.
 - c. Additional materials stored with this Application.
 - d. Total materials remaining stored, including materials with this application.
- F. **Transmittal:** Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. **Waivers of Mechanic's Lien:** With each Application for Payment, submit notarized waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors, principal suppliers and fabricators.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list (preliminary if not final).
 5. Submittals Schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 10. Initial progress report.
 11. Report of preconstruction conference.
 12. Certificates of insurance and insurance policies.
 13. Performance and payment bonds.
 14. Data needed to acquire Owner's insurance.
 15. Initial settlement survey and damage report if required.
- I. Application for Payment at Substantial Completion: After issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements, including, but not limited to:
 - a. Transmittal of required Project Record Documents to Owner.
 - b. Evidence of completion of demonstration and training.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.

1.5 REVIEW OF APPLICATION FOR PAYMENT

- A. Upon receipt of the official Application for Payment and other documentation as required by the Architect, including the updated Schedule of Values and the updated Contractor's Construction Schedule if required, the Architect shall review the documents received to determine if they correspond to the agreements reached during the draft copy review meeting. If necessary, the Architect shall revise the Application for Payment to correspond to the agreements reached, execute the Certificate for Payment, and forward the executed copies to the Owner.
- B. The Architect will rely on the accuracy and completeness of the information furnished by the Contractor. Issuance of a Certificate of Payment will not be deemed to represent that the Architect has performed audits of the supporting data.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Project Web site.
 - 3. Administrative and supervisory personnel.
 - 4. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01 32 00 "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
 - 2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 01 77 00 "Closeout Procedures" for coordinating Contract closeout.
 - 4. Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."

1.2 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary 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 in Document 00 60 00 "Forms." Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 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 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, on Project Web site, and by each temporary telephone. Keep list current at all times.

1.3 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 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, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
 4. Arrange pipes, ducts, conduits, and other overhead systems in an orderly manner when indicated to remain exposed.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as 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 the 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. Project closeout activities.
 8. Startup and adjustment of systems.

1.4 PROJECT WEB SITE

- A. Provide, administer, and use Project Web site for purposes of hosting and managing project communication and documentation until Final Completion. Project Web site shall include the following functions:
 1. Project directory.
 2. Project correspondence.
 3. Meeting minutes.

4. Contract modifications forms and logs.
 5. RFI forms and logs.
 6. Task and issue management.
 7. Photo documentation.
 8. Schedule and calendar management.
 9. Submittals forms and logs.
 10. Payment application forms.
 11. Drawing and specification document hosting, viewing, and updating.
 12. Online document collaboration.
 13. Reminder and tracking functions.
 14. Archiving functions.
- B. Provide up to seven Project Web site user licenses for use of the Owner, Architect, and Architect's consultants. Provide 4 hours of software training at Architect's office for Project Web site users.
- C. On completion of Project, provide one complete archive copy(ies) of Project Web site files to Owner and to Architect in a digital storage format acceptable to Architect.
- D. Contractor, subcontractors, and other parties granted access by Contractor to Project Web site shall execute a data licensing agreement in the form of Agreement in Ironclad provided by Architect's Project Manager.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences 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 the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
 4. Notification: Inform participants three days prior to meetings 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 10 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; testing laboratory representatives; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:

- a. Requirements in individual Specification Sections for preconstruction responsibilities.
 - b. Tentative construction schedule.
 - c. Project coordination
 - d. Critical work sequencing and long-lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communication.
 - g. Procedures for processing Requests for Interpretation (RFIs.)
 - h. Procedures for processing Bulletins.
 - i. Procedures for processing submittals.
 - j. Procedures for processing substitution requests.
 - k. Procedures for processing field decisions, proposal requests and Change Orders.
 - l. Procedures for testing and inspecting.
 - m. Procedures for processing Applications for Payment.
 - n. Distribution of the Contract Documents.
 - o. Preparation of Record Documents.
 - p. Use of the premises and existing building.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for disruptions and shutdowns.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will 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. Advise Architect of scheduled meeting dates.
 2. 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 RFI.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.

- j. Compatibility requirements.
 - k. Time schedules.
 - l. Manufacturer's written instructions.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities and controls.
 - q. Space and access limitations.
 - r. Regulations of authorities having jurisdiction.
 - s. Testing and inspecting requirements.
 - t. Installation procedures.
 - u. Coordination with other work.
 - v. Required performance results.
 - w. Protection of adjacent work.
 - x. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the 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. 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 the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. 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 for closeout documents.
 - j. Owner's partial occupancy requirements.
 - k. Installation of Owner's furniture, fixtures, and equipment.

1. Responsibility for removing temporary facilities and controls.
- E. Progress Meetings: Conduct progress meetings at regular intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. 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. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Status of EC documentation.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site utilization.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Pending changes
 - 15) Status of Change Orders.
 - 16) Pending claims and disputes.
 - 17) Documentation of information for payment requests.
 - 18) Testing and inspection requirements.
 - 19) Status of Request for Information.
 - 20) Other business relating to the Work.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

- a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

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 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Material location reports.
 - 3. Special reports.
- B. Related Sections include the following:
 - 1. Section 01 29 00 "Payment Procedures" for submitting the Schedule of Values.
 - 2. Section 01 31 00 "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Section 01 33 00 "Submittal Procedures" for submitting schedules and reports.
 - 4. Section 01 40 00 "Quality Requirements" for submitting a schedule of tests and inspections.

1.2 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 activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Event: The starting or ending point of an activity.
- C. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

- D. Major Area: A story of construction, a separate building, or a similar significant construction element.
- E. Milestone: A key or critical point in time for reference or measurement.
- F. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format, unless indicated otherwise:
 - 1. Working electronic copy of schedule file, where indicated.
 - 2. PDF electronic file.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- C. Construction Schedule Updating Reports: Submit with each Application for Payment.
- D. Material Location Reports: Submit at monthly intervals.
- E. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
- C. Coordinate Contractor's construction schedule with Owner's construction schedule for Owner's own forces. Revise Contractor's construction schedule, if necessary, after a joint review and

mutual agreement. The construction schedule shall then constitute the schedule to be used by Contractor, separate contractors and Owner until subsequently revised.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial 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 principal 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. Include selection process activities for finishes and products specified by allowances or specified to be selected during the sample review process. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less 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.
 - 7. Demonstration and Training: Training of Owner's personnel as indicated in Section 01 77 00 "Closeout Procedures."
- 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. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 01 10 00 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 - 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.
- 3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - a. Completion of mechanical installation.
 - b. Completion of electrical installation.
 - c. Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- E. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
 - 1. Refer to Section 01 29 00 "Payment Procedures" for cost reporting and payment procedures.
- F. 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 RFI.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.3 REPORTS

- A. Material Location Reports: At monthly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
 1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.

2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

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 each regularly scheduled progress meeting.
 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 Actual Completion percentage for each activity.
 4. Notify Owner and Architect a minimum of one week prior to issuance of updated schedule of all anticipated significant revisions to the Construction Schedule.
- 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.

1. Post electronic copies of the updated project schedule on the project website.
2. Post copies in Project meeting rooms and temporary field offices.
3. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates to be received by Architect as required by construction schedule, and in numerical order by CSI MasterFormat numbering. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit within 14 days of order for Commencement of the Work. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action, informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 5. Architect reserves the right to withhold 10 percent of each payment request, in addition to retainage fee if any, until the submittal schedule is received and accepted by the Architect.
- B. Submittal Scheduling: Schedule submittals to avoid concurrent submittals to maximum extent possible. Where concurrent submittals cannot be avoided, adjust review time as required to allow for Architect's concurrent review.
- C. Submittal Schedule Prioritization: Where submittal is concurrent with, or overlaps, submittals currently being reviewed, indicate priority of each outstanding submittal.
- D. Submittal Schedule Approval: Architect's approval is required for Submittal Schedule.
- E. Submittal Schedule Updating: Revise Submittal Schedule after each meeting or other activity where revisions have been recognized or made. Highlight all changes made to the Schedule. Issue updated schedule concurrently with report of each meeting.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic copies of Drawings of the Contract Drawings and Project Manual will not be provided by Architect.
- B. Architect's Digital Data Files: At Contractor's written request, electronic copies of Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals and Project record documents.
1. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 2. Execute and submit the Data Transfer Release form provided by Architect's Project Manager. Do not distribute digital data drawing files prior to transmitting to Architect copies of Data Transfer Release signed by each entity requesting the files.
- C. Environmental Product Declaration Reporting Forms: Provide EPD Reporting Forms for all materials used in Work.

- D. 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.
- E. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. Architect will document on submittal the date of receipt. Submittals received by Architect Monday through Thursday after 1:00 p.m. will be considered as received the following working day. Submittals received by Architect on Friday after 1:00 p.m. will be considered as received the following Monday. 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.
1. Initial Review: Duration of initial submittal review shall be as agreed upon in the final submittal schedule. 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. Sequential Review: Sequential review is a submittal that requires review by more than one design discipline. Where sequential review of submittals by Architect's consultants, Owner, or other parties is required, submittal schedule shall reflect sequential review. Allow fifteen (15) working days for initial review of each submittal requiring sequential review. Sequential reviews are anticipated for, but not limited to, the following:
 - a. Facility Services Subgroup Divisions: All Sections.
 - b. Site and Infrastructure Subgroup Divisions: All Sections.
 - c. Process Equipment Subgroup Divisions: All Sections.
 3. If intermediate submittal is necessary, process it in same manner as initial submittal.
 4. Allow 15 working days for review of each resubmittal.

F. Electronic Submittals: 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. Include the following information for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Date of Drawing Issue used for the preparation of the Submittal.
 - d. Name of Architect.
 - e. Name of Construction Manager.
 - f. Name of Contractor.
 - g. Name of subcontractor.
 - h. Name of supplier.
 - i. Name of manufacturer.
 - j. Unique identifier, including revision number. Submittals shall be numbered with the Section number, followed by a dash, followed by a three-digit number, followed by a dash, and ending with a sequential submission number as indicated below. The numbering system shall be retained throughout all revisions.
 - 1) Section Number: Section number where submittal is specified.
 - 2) Three-Digit Number: Sequential number, beginning with "001," for each submittal transmitted to Architect for each Section.
 - 3) Submission Number: Use "0" for initial submittal, "1" for first resubmittal, "2" for second resubmittal, and so forth.
 - 4) Example: 061000-001-0 (Section 06 10 00, first submission of the Section, initial submittal).
 - k. Number and title of appropriate Specification Section.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Other necessary identification.
2. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
3. Scanned Copies: Legible scanned PDF files of paper originals are acceptable. Scanned submittals that are not legible will be rejected.
4. 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.
5. File Security: Do not set any permissions on the file. Protected documents will not be accepted.
6. Transmittal Form for Electronic Submittals: Use software-generated form from electronic project management software.
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: 2 Megabytes.
- G. Options: Identify options requiring selection by Architect.
- H. Deviations and Additional Information: On an attached separate document, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 - 3. Resubmit submittals until they are stamped with Architect's action stamp marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."
 - 4. Costs of compensation for Architect's additional services and expenses made necessary for review of submittals exceeding the limits set forth below shall be at the Contractor's expense.
 - a. Reviews of Each Submittal: Two, including initial review.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- K. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals with Architect's action stamp marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS AS NOTED."
- L. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed by Architect and returned to Contractor with Architect's action stamp marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS AS NOTED."

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Post electronic submittals as PDF electronic files directly to Project Web site specifically established for Project. Do not post zipped files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Submit electronic submittals via email as PDF electronic files. Do not post zipped files.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 3. Action Submittals: Submit three paper copies of each submittal, unless otherwise indicated. Architect will return two copies. Mark up and retain one returned copy as a Project Record Document.
 4. Informational Submittals: Submit two paper copies of each submittal, unless otherwise indicated. Architect will not return copies.
 5. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 01 77 00 "Closeout Procedures."
 6. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
 7. Systems Submittals: Identify submittals for systems such as fire alarms and fire protection systems, on the transmittal and act upon the system singularly as a combined submittal. If resubmission is required, resubmit entire system submittal.
 8. For common use products such as ceiling tiles, flooring, carpet, etc., for which the team has familiarity, utilize Standard Products Submittal Form to submit as many as ten (10) products indicating that the Contractor will be using the basis of design product or recognized equivalent. Do not use this form for specialty items requiring detailed review. See the Standard Product Submittal Form in Section 00 60 00 "Project Forms."
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's written recommendations.
 - c. Manufacturer's product specifications.
 - d. Standard color charts.
 - e. Mill reports.
 - f. Standard product operating and maintenance manuals.
 - g. Compliance with recognized trade association standards.
 - h. Compliance with recognized testing agency standards.
 - i. Application of testing agency labels and seals.
 - j. Notation of coordination requirements.
 - k. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Environmental Product Declaration Reporting Forms. Provide EPD Reporting Forms for all materials used in the Work.
- D. Shop Drawings: Prepare and submit Project-specific information, drawn accurately to scale. Do not reproduce, digitally or otherwise, the Contract Documents and submit as Shop Drawings. Do not use, copy or reproduce title blocks, dimensions, notes, keynotes, symbols schedules or details from Contract Drawings, digital or otherwise. Use of the Contract Drawings shall be limited to reproduction, digitally or otherwise, of the exterior wall layout, interior partition layout, grid lines, doors, and windows. Do not base Shop Drawings on standard printed data.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Fabrication and installation drawings.
 - c. Roughing-in and setting diagrams.
 - d. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.

- e. Shopwork manufacturing instructions.
 - f. Templates and patterns.
 - g. Schedules.
 - h. Design calculations.
 - i. Compliance with specified standards.
 - j. Notation of coordination requirements.
 - k. Notation of dimensions established by field measurement.
 - l. Relationship and attachment to adjoining construction clearly indicated.
 - m. Seal and signature of professional engineer if specified.
- 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than size of Contract Drawings.
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- E. Samples: Submit physical units of materials or products for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
- 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - 3. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 - f. Include same finish code designators indicated on Drawings and Schedules.
 - 4. Submit corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 - 5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 - 6. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:

- a. Generic description of Sample.
 - b. Product name or name of manufacturer.
 - c. Sample source.
7. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
 - a. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
8. Standard Product Submittals: Where the Contractor intends to provide the basis of design product or material using prototypical product data and samples, the Contractor may streamline the process by identifying commonly available products and utilize the Standard Product Submittal Form to streamline the submittal process and reduce waste.
9. Photographs: Upon completion of the review, provide color photographs using a digital camera or cell phone for the project record. Photograph both sides of each actioned sample.
- F. Product Schedule or List: Prepare and submit a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Section 01 29 00 "Payment Procedures."
- H. Subcontract List: Prepare and submit a written summary 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. Submit on the form included in Document 00 60 00 "Forms," "Subcontractors and Major Material Suppliers List."
 1. Submit subcontract list in the following format:
 - a. PDF electronic file.
- I. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 00 "Construction Progress Documentation" for action required.

- J. Construction Photographs and Videos: Comply with requirements in Section 01 32 00 "Construction Progress Documentation."
- K. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 01 40 00 "Quality Requirements."
- L. Closeout Submittals: Comply with requirements specified in Section 01 77 00 "Closeout Procedures."
- M. Operation and Maintenance Data: Submit written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Section 01 77 00 "Closeout Procedures."
- N. |Qualification Data: Submit written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- O. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, where required, is authorized by manufacturer for this specific Project.
- P. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- Q. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements.
- R. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements.
- S. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- T. Product Test Reports: Submit written 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.
- U. Preconstruction Test Reports: Prepare and submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.
- V. Compatibility Test Reports: Prepare and submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

- W. Field Test Reports: Prepare and submit reports, written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.
- X. Manufacturer's Field Reports: Prepare and submit written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service 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.
- Y. 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.
- Z. Insurance Certificates and Bonds: Prepare and submit written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- AA. Material Safety Data Sheets: Do not submit data sheets to Architect. Architect will not review data sheets and will not return them to Contractor.
- BB. Material Maintenance Submittals: Comply with requirements specified in individual Sections for quantity and disposition of delivery of extra stock.
- CC. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

- 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.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Section 01 77 00 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, coordinated, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that have not been properly transmitted, reviewed by Contractor, or do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review submittal, make marks to indicate corrections or revisions required, and return it to Contractor. Architect will stamp each submittal with an action stamp as illustrated at the end of this Section, and will mark stamp appropriately to indicate action, as follows:
 - 1. "NO EXCEPTIONS TAKEN": No further review of Submittal required.

2. "MAKE CORRECTIONS AS NOTED. Resubmittal not required unless Contractor cannot comply with corrections noted.": Incorporate corrections in Work. If Contractor cannot comply with corrections as noted, revise to respond to exceptions and resubmit.
 3. "REVISE AS NOTED AND RESUBMIT": Revise as noted and resubmit for further review.
 4. "RESUBMIT PROPERLY Submittal not reviewed for reasons noted."
 5. "NOT REVIEWED Submittal not required by Contract Documents.": Remove from submittal log.
 6. "RECEIVED FOR CLIENT'S RECORD ONLY. Submittal not reviewed."
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- F. Submittals not required by the Contract Documents will not be reviewed and may be discarded or returned marked "NOT REVIEWED."
- G. Substitution items received as product data, shop drawing, or sample submittals required by individual Sections will be returned to Contractor without review. Comply with requirements in Section 01 25 00 "Substitution Procedures" for submission of substitution request.

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. 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.
 - 1. Specific quality-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.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections:
 - 1. Section 01 73 00 "Execution" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 2. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.2 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site, unless indicated otherwise. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

- D. 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.
- E. 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.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. 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).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five 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.
- K. Professional Engineer: Engineer currently licensed to practice in the State of Texas.

1.3 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 Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or 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.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Contractor's quality-control personnel.
- B. 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.
- C. 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.
- D. 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.
- E. 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.

1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Fabricator Qualifications: A firm experienced and expert in producing products similar to those indicated for this Project and with a three-year record of successful in-service performance, as well as sufficient production capacity to produce required units.

- C. **Factory-Authorized Service Representative Qualifications:** An 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.
- D. **Installer Qualifications:** A 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 three-year record of successful in-service performance.
- E. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a five-year record of successful in-service performance.
- F. **Manufacturer's Technical Representative Qualifications:** An 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.
- G. **Professional Engineer Qualifications:** A professional engineer 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 products that are similar to those indicated for this Project in material, design, and extent.
- H. **Testing Agency Qualifications:** An NRTL, an NVLAP-accredited, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 329, 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. **Preconstruction Testing:** Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. **Contractor responsibilities include the following:**
 - a. Provide test specimens and assemblies representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Fabricate and install test assemblies and mockups using installers who will perform the same tasks for Project.
 - e. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish specified in individual Sections, to comply with the following requirements, using materials indicated for the completed Work:
 1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed, unless otherwise indicated.

1.6 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 the types of testing and inspecting 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.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not..
 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.
 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.
 6. Provide quality assurance and control services required due to changes in the Work proposed by or made by the Contractor.
 7. Provide quality control services for Work done contrary to the Contract Documents, without prior notice, when so specified, or without proper supervision.
 8. Overtime expenses and schedule delays accruing as a result of executing quality control services shall be the Contractor's responsibility and shall not be charged to the Owner.
- 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 revised or replaced Work that failed to comply with requirements established by 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 requirements of the Contract Documents 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 or arranging for pick-up of test samples after normal business hours.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality 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.

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 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 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 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "As Required": As required by regulatory bodies, by referenced standards, by existing conditions, by generally accepted construction practice or by the Contract Documents. In the event of ambiguity or conflicts, the most stringent requirements shall apply.
- J. "By Others" refers to work that is not a part of the Contract.
- K. "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.
- L. "NIC": "Not in Contract" means the work or the item indicated is not a part of the Contract and will be provided by the Owner.
- M. "Day": Unless stated otherwise, "day" means a calendar day.

1.2 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, except comply with standards having different revision dates as referenced in the codes as indicated on Drawings.
- C. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

1.3 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. Names and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
 - 1. AA; Aluminum Association (The); www.aluminum.org.
 - 2. AAADM; American Association of Automatic Door Manufacturers; www.aaadm.com.
 - 3. AABC; Associated Air Balance Council; www.aabc.com.
 - 4. AAMA; American Architectural Manufacturers Association; www.aamanet.org.
 - 5. AAPFCO; Association of American Plant Food Control Officials; www.aapfco.org.
 - 6. AASHTO; American Association of State Highway and Transportation Officials; www.transportation.org.
 - 7. AATCC; American Association of Textile Chemists and Colorists; www.aatcc.org.
 - 8. ABAA; Air Barrier Association of America; www.airbarrier.org.
 - 9. ABMA; American Bearing Manufacturers Association; www.americanbearings.org.
 - 10. ACI; American Concrete Institute; (Formerly: ACI International); www.concrete.org.
 - 11. ACPA; American Concrete Pipe Association; www.concrete-pipe.org.
 - 12. ADC; Air Diffusion Council; www.flexibleduct.org.
 - 13. AEIC; Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
 - 14. AF&PA; American Forest & Paper Association; www.afandpa.org.
 - 15. AGA; American Gas Association; www.aga.org.
 - 16. AGC; Associated General Contractors of America (The); www.agc.org.
 - 17. AHA; American Hardboard Association; <http://domensino.com/AHA>.
 - 18. AHAM; Association of Home Appliance Manufacturers; www.aham.org.
 - 19. AHRI; Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
 - 20. AI; Asphalt Institute; www.asphaltinstitute.org.
 - 21. AIA; American Institute of Architects (The); www.aia.org.
 - 22. AISC; American Institute of Steel Construction; www.aisc.org.
 - 23. AISI; American Iron and Steel Institute; www.steel.org.

24. AITC; American Institute of Timber Construction; www.aitc-glulam.org.
25. ALSC; American Lumber Standard Committee, Incorporated; www.alsc.org.
26. AMCA; Air Movement and Control Association International, Inc.; www.amca.org.
27. ANLA; American Nursery & Landscape Association; www.anla.org.
28. ANSI; American National Standards Institute; www.ansi.org.
29. AOSA; Association of Official Seed Analysts, Inc.; www.aosaseed.com.
30. APA; APA; The Engineered Wood Association; www.apawood.org.
31. APA; Architectural Precast Association; www.archprecast.org.
32. API; American Petroleum Institute; www.api.org.
33. APWA; American Public Works Association; www.apwa.net.
34. ARI; Air-Conditioning & Refrigeration Institute; (See AHRI).
35. ARI; American Refrigeration Institute; (See AHRI).
36. ARMA; Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
37. ASA; Acoustical Society of America; www.acousticalsociety.org.
38. ASC; Adhesive and Sealant Council (The); www.ascouncil.org.
39. ASCA; Architectural Spray Coaters Association.
40. ASCE; American Society of Civil Engineers; www.asce.org.
41. ASCE/SEI; American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
42. ASHRAE; American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
43. ASME; ASME International; (American Society of Mechanical Engineers); www.asme.org.
44. ASPE; American Society of Plumbing Engineers; www.aspe.org.
45. ASSE; American Society of Safety Engineers (The); www.asse.org.
46. ASSE; American Society of Sanitary Engineering; www.asse-plumbing.org.
47. ASTM; ASTM International; (American Society for Testing and Materials International); www.astm.org.
48. ATIS; Alliance for Telecommunications Industry Solutions; www.atis.org.
49. ASCI; Association of the Wall and Ceiling Industry; www.awci.org.
50. AWEA; American Wind Energy Association; www.awea.org.
51. AWI; Architectural Woodwork Institute; www.awinet.org.
52. AWMAC; Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
53. AWPAA; American Wood Protection Association; (Formerly: American Wood-Preservers' Association); www.awpa.com.
54. AWS; American Welding Society; www.aws.org.
55. AWWA; American Water Works Association; www.awwa.org.
56. BHMA; Builders Hardware Manufacturers Association; www.buildershardware.com.
57. BIA; Brick Industry Association (The); www.gobrick.com.
58. BICSI; BICSI, Inc.; www.bicsi.org.
59. BIFMA; BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
60. BISSC; Baking Industry Sanitation Standards Committee; www.bissc.org.
61. BWF; Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
62. CCC; Carpet Cushion Council; www.carpetcushion.org.
63. CCFSS; Center for Cold-formed Steel Structures; www.ccfssonline.org.
64. CDA; Copper Development Association; www.copper.org.
65. CEA; Canadian Electricity Association; www.electricity.ca.

66. CEA; Consumer Electronics Association; www.ce.org.
67. CFFA; Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
68. CFI; International Certified Floorcovering Installers Association; www.cfi-installers.org.
69. CFSEI; Cold-Formed Steel Engineers Institute; www.cfsei.org.
70. CGA; Compressed Gas Association; www.cganet.com.
71. CIMA; Cellulose Insulation Manufacturers Association; www.cellulose.org.
72. CISCA; Ceilings & Interior Systems Construction Association; www.cisca.org.
73. CISPI; Cast Iron Soil Pipe Institute; www.cispi.org.
74. CLFMI; Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
75. CPA; Composite Panel Association; www.pbmdf.com.
76. CPPA; Corrugated Polyethylene Pipe Association;
www.plasticpipe.org/drainage/index.html.
77. CRI; Carpet and Rug Institute (The); www.carpet-rug.org.
78. CRRC; Cool Roof Rating Council; www.coolroofs.org.
79. CRSI; Concrete Reinforcing Steel Institute; www.crsi.org.
80. CSA; Canadian Standards Association; www.csa.ca.
81. CSA; CSA International; (Formerly: IAS; International Approval Services); www.csa-international.org.
82. CSI; Construction Specifications Institute (The); www.csinet.org.
83. CSSB; Cedar Shake & Shingle Bureau; www.cedarbureau.org.
84. CTI; Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
85. CWC; Composite Wood Council; (See CPA).
86. DASMA; Door and Access Systems Manufacturers Association; www.dasma.com.
87. DHI; Door and Hardware Institute; www.dhi.org.
88. ECA; Electronic Components Association; (See ECIA).
89. ECAMA; Electronic Components Assemblies & Materials Association; (See ECIA).
90. ECIA; Electronic Components Industry Association; www.eciaonline.org
91. EIA; Electronic Industries Alliance; (See TIA).
92. EIMA; EIFS Industry Members Association; www.eima.com.
93. EJMA; Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
94. ESD; ESD Association; (Electrostatic Discharge Association); www.esda.org.
95. ESTA; Entertainment Services and Technology Association; (See PLASA).
96. EVO; Efficiency Valuation Organization; www.evo-world.org.
97. FIBA; Federation Internationale de Basketball; (The International Basketball Federation);
www.fiba.com.
98. FIVB; Federation Internationale de Volleyball; (The International Volleyball Federation);
www.fivb.org.
99. FM Approvals; FM Approvals LLC; www.fmglobal.com.
100. FM Global; FM Global; (Formerly: FMG; FM Global); www.fmglobal.com.
101. FRSA; Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.;
www.floridarooft.com.
102. FSA; Fluid Sealing Association; www.fluidsealing.com.
103. FSC; Forest Stewardship Council U.S.; www.fscus.org.
104. GA; Gypsum Association; www.gypsum.org.
105. GANA; Glass Association of North America; www.glasswebsite.com.
106. GBCI; Green Building Certification Institute; www.gbci.org.
107. GS; Green Seal; www.greenseal.org.
108. GSI; Geosynthetic Institute; www.geosynthetic-institute.org.
109. GTA; Glass Tempering Division of Glass Association of North America; (see GANA).
110. HI; Hydraulic Institute; www.pumps.org.

111. HI/GAMA; Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
112. HMMA; Hollow Metal Manufacturers Association; (See NAAMM).
113. HPVA; Hardwood Plywood & Veneer Association; www.hpva.org.
114. HPW; H. P. White Laboratory, Inc.; www.hpwhite.com.
115. IAPSC; International Association of Professional Security Consultants; www.iapsc.org.
116. IAS; International Accreditation Service; www.iasonline.org.
117. IAS; International Approval Services; (See CSA).
118. ICBO; International Conference of Building Officials; (See ICC).
119. ICC; International Code Council; www.iccsafe.org.
120. ICEA; Insulated Cable Engineers Association, Inc.; www.icea.net.
121. ICPA; International Cast Polymer Alliance; www.icpa-hq.org.
122. ICRI; International Concrete Repair Institute, Inc.; www.icri.org.
123. IEC; International Electrotechnical Commission; www.iec.ch.
124. IEEE; Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
125. IES; Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
126. IESNA; Illuminating Engineering Society of North America; (See IES).
127. IEST; Institute of Environmental Sciences and Technology; www.iest.org.
128. IGCC; Insulating Glass Certification Council; www.igcc.org.
129. IGMA; Insulating Glass Manufacturers Alliance; www.igmaonline.org.
130. IGSHPA; International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
131. ILI; Indiana Limestone Institute of America, Inc.; www.iliai.com.
132. Intertek; Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
133. ISA; International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
134. ISAS; Instrumentation, Systems, and Automation Society (The); (See ISA).
135. ISFA; International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
136. ISO; International Organization for Standardization; www.iso.org.
137. ISSFA; International Solid Surface Fabricators Association; (See ISFA).
138. ITU; International Telecommunication Union; www.itu.int/home.
139. KCMA; Kitchen Cabinet Manufacturers Association; www.kcma.org.
140. LMA; Laminating Materials Association; (See CPA).
141. LPI; Lightning Protection Institute; www.lightning.org.
142. MBMA; Metal Building Manufacturers Association; www.mbma.com.
143. MCA; Metal Construction Association; www.metalconstruction.org.
144. MFMA; Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
145. MFMA; Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
146. MHIA; Material Handling Industry of America; www.mhia.org.
147. MIA; Marble Institute of America; www.marble-institute.com.
148. MIA; Masonry Institute of America; www.masonryinstitute.org.
149. MMPA; Moulding & Millwork Producers Association; (Formerly: Wood Moulding & Millwork Producers Association); www.wmmpa.com.
150. MPI; Master Painters Institute; www.paintinfo.com.
151. MSS; Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
152. NAAMM; National Association of Architectural Metal Manufacturers; www.naamm.org.
153. NACE; NACE International; (National Association of Corrosion Engineers International); www.nace.org.

154. NADCA; National Air Duct Cleaners Association; www.nadca.com.
155. NAIMA; North American Insulation Manufacturers Association; www.naima.org.
156. NBGQA; National Building Granite Quarries Association, Inc.; www.nbgqa.com.
157. NCAA; National Collegiate Athletic Association (The); www.ncaa.org.
158. NCMA; National Concrete Masonry Association; www.ncma.org.
159. NCPI; National Clay Pipe Institute; www.ncpi.org.
160. NCTA; National Cable & Telecommunications Association; www.ncta.com.
161. NEBB; National Environmental Balancing Bureau; www.nebb.org.
162. NECA; National Electrical Contractors Association; www.necanet.org.
163. NeLMA; Northeastern Lumber Manufacturers Association; www.nelma.org.
164. NEMA; National Electrical Manufacturers Association; www.nema.org.
165. NETA; InterNational Electrical Testing Association; www.netaworld.org.
166. NFHS; National Federation of State High School Associations; www.nfhs.org.
167. NFPA; NFPA; (National Fire Protection Association); www.nfpa.org.
168. NFPA; NFPA International; (See NFPA).
169. NFRC; National Fenestration Rating Council; www.nfrc.org.
170. NGA; National Glass Association; www.glass.org.
171. NHLA; National Hardwood Lumber Association; www.nhla.com.
172. NLGA; National Lumber Grades Authority; www.nlga.org.
173. NOFMA; National Oak Flooring Manufacturers Association; (See NWFA).
174. NOMMA; National Ornamental & Miscellaneous Metals Association; www.nomma.org.
175. NRCA; National Roofing Contractors Association; www.nrca.net.
176. NRMCA; National Ready Mixed Concrete Association; www.nrmca.org.
177. NSF; NSF International; (National Sanitation Foundation International); www.nsf.org.
178. NSPE; National Society of Professional Engineers; www.nspe.org.
179. NSSGA; National Stone, Sand & Gravel Association; www.nssga.org.
180. NTMA; National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
181. NWFA; National Wood Flooring Association; www.nwfa.org.
182. PCA; Portland Cement Association; www.cement.org.
183. PDCA; Painting and Decorating Contractors of America; www.pdca.com.
184. PCI; Precast/Prestressed Concrete Institute; www.pci.org.
185. PDI; Plumbing & Drainage Institute; www.pdionline.org.
186. PGI; PVC Geomembrane Institute; <http://pgi-tp.ce.uiuc.edu>.
187. PLANET; Professional Landscape Network; www.landcarenetwork.org.
188. PLASA; PLASA; (Formerly: ESTA; Entertainment Services and Technology Association); www.plasa.org.
189. PTI; Post-Tensioning Institute; www.post-tensioning.org.
190. RCSC; Research Council on Structural Connections; www.boltcouncil.org.
191. RFCI; Resilient Floor Covering Institute; www.rfci.com.
192. RIS; Redwood Inspection Service; www.redwoodinspection.com.
193. RMA; Rubber Manufacturers Association; www.rma.org.
194. SAE; SAE International; (Society of Automotive Engineers); www.sae.org.
195. SCTE; Society of Cable Telecommunications Engineers; www.scte.org.
196. SDI; Steel Deck Institute; www.sdi.org.
197. SDI; Steel Door Institute; www.steeldoor.org.
198. SEFA; Scientific Equipment and Furniture Association; www.sefalabs.com.
199. SEI/ASCE; Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
200. SGCC; Safety Glazing Certification Council; www.sgcc.org.
201. SIA; Security Industry Association; www.siaonline.org.

202. SJI; Steel Joist Institute; www.steeljoist.org.
203. SMA; Screen Manufacturers Association; www.smainfo.org.
204. SMACNA; Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
205. SMPTE; Society of Motion Picture and Television Engineers; www.smpte.org.
206. SPFA; Spray Polyurethane Foam Alliance; www.sprayfoam.org.
207. SPIB; Southern Pine Inspection Bureau; www.spib.org.
208. SPRI; Single Ply Roofing Industry; www.spri.org.
209. SRCC; Solar Rating and Certification Corporation; www.solar-rating.org.
210. SSINA; Specialty Steel Industry of North America; www.ssina.com.
211. SSMA; Steel Stud Manufacturers Association; www.ssma.com.
212. SSPC; SSPC: The Society for Protective Coatings; www.sspc.org.
213. STI; Steel Tank Institute; www.steeltank.com.
214. SWI; Steel Window Institute; www.steelwindows.com.
215. SWPA; Submersible Wastewater Pump Association; www.swpa.org.
216. SWRI; Sealant, Waterproofing, and Restoration Institute; www.swrionline.org.
217. TCA; Tilt-Up Concrete Association; www.tilt-up.org.
218. TCNA; Tile Council of North America, Inc.; (Formerly: Tile Council of America); www.tileusa.com.
219. TEMA; Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
220. TIA; Telecommunications Industry Association; (Formerly: TIA/EIA; Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
221. TIA/EIA; Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
222. TMS; The Masonry Society; www.masonrysociety.org.
223. TPI; Truss Plate Institute; www.tpinst.org.
224. TPI; Turfgrass Producers International; www.turfgrasssod.org.
225. TRI; Tile Roofing Institute; (Formerly: National Tile Roofing Manufacturing Association); www.tilerroofing.org.
226. UBC; Uniform Building Code; (See ICC).
227. UFAC; Upholstered Furniture Action Council; www.ufac.org.
228. UL; Underwriters Laboratories Inc.; www.ul.com.
229. UNI; Uni-Bell PVC Pipe Association; www.uni-bell.org.
230. USAV; USA Volleyball; www.usavolleyball.org.
231. USGBC; U.S. Green Building Council; www.usgbc.org.
232. USITT; United States Institute for Theatre Technology, Inc.; www.usitt.org.
233. WASTEC; Waste Equipment Technology Association; www.wastec.org.
234. WCLIB; West Coast Lumber Inspection Bureau; www.wclib.org.
235. WCMA; Window Covering Manufacturers Association; www.wcmanet.org.
236. WDMA; Window & Door Manufacturers Association; www.wdma.com.
237. WI; Woodwork Institute; (Formerly: WIC; Woodwork Institute of California); www.wicnet.org.
238. WMMPA; Wood Moulding & Millwork Producers Association; (See MMPA).
239. WSRCA; Western States Roofing Contractors Association; www.wsrca.com.
240. 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.

Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. DIN; Deutsches Institut für Normung e.V.; www.din.de.
2. IAPMO; International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC; International Code Council; www.iccsafe.org.
4. 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. Names and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. COE; Army Corps of Engineers; www.usace.army.mil.
2. CPSC; Consumer Product Safety Commission; www.cpsc.gov.
3. DOC; Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD; Department of Defense; <http://dodssp.daps.dla.mil>.
5. DOE; Department of Energy; www.energy.gov.
6. EPA; Environmental Protection Agency; www.epa.gov.
7. FAA; Federal Aviation Administration; www.faa.gov.
8. FG; Federal Government Publications; www.gpo.gov.
9. GSA; General Services Administration; www.gsa.gov.
10. HUD; Department of Housing and Urban Development; www.hud.gov.
11. LBL; Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; <http://eetd.lbl.gov>.
12. OSHA; Occupational Safety & Health Administration; www.osha.gov.
13. SD; Department of State; www.state.gov.
14. TRB; Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.
15. USDA; Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA; Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDJ; Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP; U.S. Pharmacopeia; www.usp.org.
19. USPS; United States Postal Service; www.usps.com.

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. Names and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

1. ADAAG; Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; www.access-board.gov.
2. CFR; Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
3. DOD; Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.

4. DSCC; Defense Supply Center Columbus; (See FS).
5. FED-STD; Federal Standard; (See FS).
6. 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.
7. MILSPEC; Military Specification and Standards; (See DOD).
8. USAB; United States Access Board; www.access-board.gov.
9. 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 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections include the following:
 - 1. Section 01 33 00 "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
 - 2. Section 01 73 00 "Execution" for progress cleaning requirements.
 - 3. Divisions 02 through 49 for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.2 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum, unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 - 1. Owner's construction forces.
 - 2. Occupants of Project.
 - 3. Architect.
 - 4. Testing agencies.
 - 5. Personnel of authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

- B. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
1. Locations of dust-control partitions at each phase of work.
 2. HVAC system isolation schematic drawing.
 3. Location of proposed air-filtration system discharge.
 4. Waste handling procedures.
 5. Other dust-control measures.
- C. Implementation and Termination Schedule: Within 15 days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

1.4 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
 2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines,.

1.5 PROJECT CONDITIONS

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
1. Keep temporary services and facilities clean and neat.
 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials suitable for use intended.
- B. Lumber and Plywood: Comply with requirements in Section 06 10 53 "Miscellaneous Rough Carpentry."
- C. Gypsum Board: Minimum 1/2 inch (12.7 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.
- D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.
- E. Paint: Comply with requirements in Section 09 91 23 "Interior Painting".
- F. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10 mil (0.25 mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- G. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- H. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- I. Water: Potable.

2.2 EQUIPMENT

- A. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- B. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- C. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.
- D. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Section 01 77 00 "Closeout Procedures."

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
 3. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.
- B. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 1. Provide rubber hoses as necessary to serve Project site.
 2. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water for use of construction personnel. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Toilets: Use of Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 2. Drinking-Water Facilities: Provide bottled-water, drinking-water units.
 - a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7.2 to 12.7 deg C).
- D. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.
1. Maintain a minimum temperature of 50 deg F (10 deg C) in permanently enclosed portions of building for normal construction activities, and 65 deg F (18.3 deg C) for finishing activities and areas where finished Work has been installed.
- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
1. Install electric power service underground, unless overhead service must be used.
 2. Install power distribution wiring overhead and rise vertically where least exposed to damage.

3. Connect temporary service to Owner's existing power source, as directed by electric company officials.
- H. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
- I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- C. Project Signs: Prepare Project signs as indicated. Do not permit installation of unauthorized signs.
 1. Identification Signs: Provide Project identification signs as indicated on Drawings. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
 3. Maintain and touchup signs so they are legible at all times.
- D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution."
 1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects
 - 1. Comply with work restrictions specified in Section 01 14 00 "Work Restrictions."
- C. Barricades, Warning Signs, and Lights: Comply with authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting. Paint with appropriate colors and graphics to inform personnel and public of possible hazard.
- D. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Vertical Openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
 - 3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing construction.
 - 4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
 - 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use fire-retardant-treated material for framing and main sheathing.
- F. Temporary Partitions: Provide and maintain floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction side of stud framing.
 - 2. Construct dustproof partitions with 2 layers of 6 mil (0.14 mm) polyethylene sheets on each side. Cover floor with 2 layers of 6 mil (0.14 mm) polyethylene sheets, extending sheets 18 inches (460 mm) up the side walls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
 - a. Construct a vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.

3. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 4. Insulate partitions to control noise transmission to occupied areas.
 5. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.
- G. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking in construction area.
 2. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
 - a. Field Offices: Class A stored-pressure water-type extinguishers.
 - b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
 - c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.
 3. Store combustible materials in containers in fire-safe locations.
 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting.
 5. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
 6. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities. Protect fire protection system from damage due to construction activities and environmental conditions.
 7. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 8. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- D. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. At Substantial Completion, repair, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Sections:
 - 1. Section 01 25 00 "Substitution Procedures" for requests for substitutions.
 - 2. Section 01 42 00 "References" for applicable industry standards for products specified.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting warranties for contract closeout.
 - 4. Divisions 03 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.2 DEFINITIONS

- A. Products: Items purchased 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.
 - 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. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to 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.
- B. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
- C. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

- D. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.3 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
 2. 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 seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 01 33 00 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.5 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.
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. 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.

3. 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.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage and liquids from freezing.
10. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 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. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 03 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. Components, materials, or parts required to be supplied in quantity within a Section shall be of the same manufacture, shall be interchangeable, and shall be the same with regard to function, texture, pattern, and color.

- B. Except for building equipment in service areas, no manufacturers' labels or name plates shall be visible on any component, unless required by local authorities having jurisdiction.

2.2 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that 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. Standard Products: Unless custom products or nonstandard options are specified, provide products of both quality and type that have been used successfully in similar situations on equal quality projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures: Procedures for product selection include the following:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 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. Products:
 - a. 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.
 - b. 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.
 4. Manufacturers:
 - a. 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.

- b. Nonrestricted 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.
- 5. Basis-of-Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to a list of manufacturers' names, provide either the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- 6. Visual Matching Specification: Where Specifications require matching an established Sample, provide a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. 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 proposal of product.
- 7. Visual Selection Specification:
 - a. Standard Range: Where Specifications include the phrase "as selected by Architect from manufacturer's standard range" or similar phrase, Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.3 COMPARABLE PRODUCTS

- A. 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 extensive 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.
 - 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 3. Evidence that proposed product provides specified warranty.
 - 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

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The Woodlands Township
Office Renovation
The Woodlands, Texas

5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
- B. Related Sections include the following:
 - 1. Section 01 31 00 "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 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 84 13 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.2 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.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer.

1.4 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.
 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.
 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.
- B. 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 utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
1. Before construction, verify the location and points of connection of utility services.
- 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. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. 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.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- 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 interpretation to Architect according to Section 01 26 13 "Request for Interpretation."

3.3 INSTALLATION

- A. 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. Where indicated to remain exposed, arrange overhead systems in an orderly manner.
 4. Maintain minimum headroom clearance of 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. 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.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.
- G. 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.
- H. 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.
- I. 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.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

- A. 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.
- B. Temporary Support: Provide temporary support of work to be cut.

- C. 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.
- D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 14 00 "Work Restrictions."
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- F. 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: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. Avoid cutting steel reinforcement.
 - a. Locate steel reinforcement using Ground Penetrating Radar or Ferroskan prior to cutting or drilling reinforced concrete and masonry. If existing steel reinforcement is in proposed cut or hole location, contact Architect before proceeding with the Work.
 - 4. 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.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- G. 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.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. 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.
- C. 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.
- D. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted. Comply with waste disposal requirements in

- G. 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.
- H. 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.
- I. 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.

3.6 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- 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."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout.

1.2 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items (Punch List): Initial submittal at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Project Record Documents:
 - 1. Record Drawings.
 - 2. Record product data.
 - 3. Miscellaneous record submittals.
- D. Operation and maintenance manual(s).
- E. Warranties.

1.4 MAINTENANCE MATERIAL SUBMITTALS

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

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Submittals Prior to Substantial Completion: Complete the following a minimum of 5 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Prepare and submit a list of incomplete items (punch list), indicating the value of items on the list, and reasons why the Work is not complete.

2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, final certifications, and similar documents.
 3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 4. Prepare and submit Project Record Documents, operation and maintenance manuals, and similar final record information.
 5. 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 where applicable.
 - 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.
 6. Submit test/adjust/balance records.
 7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- B. Procedures Prior to Substantial Completion: Complete the following 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. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 8. Complete final cleaning requirements.
 9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Inspection: Submit a written request for inspection for 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 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. Reinspection: 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.

1.6 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Submit a final Application for Payment.
 - 2. Submit copy of Contractor's original Substantial Completion inspection list with Architect's annotations of items to be completed or corrected (punch list), endorsed and dated by Architect. Copy shall be certified by Contractor and state that each item has been completed or otherwise resolved for acceptance.
- B. Inspection: Submit a written request for final inspection for acceptance a minimum of 5 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect 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. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: 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.
 - 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.
 - d. Name of Contractor.
 - e. Page number.
- B. Submit list of incomplete items in MS Excel electronic file and three paper copies. Architect will return annotated electronic file.

1.8 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. 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 prepare the marked-up record prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later, and the locations of those items that need to be located for servicing.
 - b. Accurately record information in a readily understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - d. Mark record prints completely and accurately.
 - e. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - f. Note Change Order numbers, alternate numbers, and similar identification where applicable.
- C. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
 - 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 Drawings, where applicable.
- D. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections such as tests and inspections, and inspections by authorities having jurisdiction. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.9 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
 - 1. Operation Data:
 - a. Emergency instructions and procedures.
 - b. System, subsystem, and equipment descriptions, including operating standards.
 - c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
 - d. Description of controls and sequence of operations.
 - e. Piping diagrams.

- f. Noise and vibration adjustments.
 - g. Effective energy utilization.
- 2. Maintenance Data:
 - a. Manufacturer's information, including list of spare parts.
 - b. Name, address, and telephone number of Installer or supplier.
 - c. Maintenance procedures.
 - d. Maintenance and service schedules for preventive and routine maintenance.
 - e. Maintenance record forms.
 - f. Sources of spare parts and maintenance materials.
 - g. Copies of maintenance service agreements.
 - h. Copies of warranties and bonds.
 - i. Cleaning.
 - j. Control sequence.
 - k. Fuels, lubricants, tool, and other related items.
 - l. Identification systems.
- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, 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.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide 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 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. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - c. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.
 - d. Remove debris and surface dust from limited access spaces, including plenums, shafts, and similar spaces.
 - e. Sweep concrete floors broom clean in unoccupied spaces.
 - f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - h. Remove labels that are not meant to be permanent.
 - i. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - j. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - k. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - l. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - m. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in lighting fixtures to comply with requirements for new fixtures.

- n. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.

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 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.
 - b. Do not paint over labels for fire resistive joints.
 - 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.

END OF SECTION 01 77 00

SECTION 01 81 33 - SUSTAINABLE DESIGN REQUIREMENTS - EMBODIED CARBON

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.
- B. Related Requirements:
 - 1. Environmental Product Declarations Reporting Form (00 60 00 "Project Forms").
 - 2. Individual sections with embodied carbon submittal requirements.

1.2 SUMMARY

- A. Section includes general requirements and procedures for compliance with the Project's embodied carbon design goals, including the reduction of embodied carbon associated with select material types.
 - 1. FSC Certified wood (100% FSC Certified).

1.3 DEFINITIONS AND STANDARDS

- A. Embodied carbon is the amount of carbon dioxide equivalents resulting from the production, shipping, installation, use and disposal of a material.
- B. Environmental Product Declaration (EPD) is a standardized way of reporting the environmental impact of a product or system, including but not limited to embodied carbon. Products with EPDs in accordance with ISO 14025, ISO 21930, or EN 15804 can report a product's Global Warming Potential.
- C. Global Warming Potential (GWP) is the calculated value for tracking embodied carbon and is the amount of equivalent metric tons of carbon dioxide emitted as a result of the life-cycle of a material. GWP is reported by an EPD or LCA, and can be reported as total value, by subtotal value for each life-cycle stage, or by individual life-cycle modules:
 - 1. Production Stage (modules A1-A3): GWP reported for this stage, also known as "cradle-to-gate," includes raw material supply (A1), transport of raw materials to the production site (A2), and manufacturing (A3).
- D. Life-Cycle Assessment (LCA) is a standardized way of quantifying the environmental impact of a product or system, including but not limited to embodied carbon. LCAs must be conducted in accordance with ISO 14044, and report a product's Global Warming Potential.

1.4 STANDARDS

- A. ISO 14044 Environmental Management Life Cycle Assessment.
- B. ISO 14025 Environmental Labels and Declarations.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Embodied Carbon Documentation:
 - 1. Compile and review all documentation required to support the Project's embodied carbon goals.
 - a. Collect and compile all required EPDs for products requiring embodied carbon documentation.

1.6 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals:
 - 1. Embodied Carbon Documentation:
 - a. The EPD Reporting Form included in Section 00 60 00 "Project Forms" is required for product category listed below. If a system is specified, each product in the system must be counted separately.
 - b. Provide the Product-Specific or Industry-Wide Type III EPD in compliance with ISO 14025 or LCA for each product specified, with specific emphasis on the following product categories:
 - 1) Gypsum board.
 - 2) Interior non-structural metal framing.
 - 3) Insulation.
 - c. For products in which an EPD or LCA is not available, provide a dated written confirmation on manufacturer's letterhead that an EPD or LCA is not available for the product at time of product submission.
- B. Qualification Data: For Embodied Carbon coordinator.
- C. Embodied Carbon Materials Preliminary Action Plan: Within 14 days of date established for commencement of the Work, identify products anticipated to be submitted.

1.7 QUALITY ASSURANCE

- A. Embodied Carbon Coordinator: Engage an experienced professional to coordinate the embodied carbon documentation. The embodied carbon coordinator may also serve as a sustainable design coordinator, a waste management coordinator, and indoor air quality coordinator if required by the Project.

1. Embodied Carbon Coordinator shall facilitate all Monthly Embodied Carbon Coordination Meetings and compile all Embodied Carbon Progress Reports.
2. Embodied Carbon Coordinator is responsible for compiling product documentation to be provided to the Owner at Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 81 33

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

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

B. Related Requirements:

1. Section 01 10 00 "Summary" for use of the premises and Owner occupancy requirements.
2. Section 01 14 00 "Work Restrictions" for restrictions on use of the premises due to Owner or tenant occupancy.
3. Section 01 32 00 "Construction Progress Documentation" for preconstruction photographs taken before selective demolition.
4. Section 01 50 00 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
5. Section 01 73 00 "Execution" for cutting and patching procedures.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Materials to be reused remain the property of the Owner.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for dust control and for noise control. Indicate proposed locations and construction of barriers.
- C. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before Work begins.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.7 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.

2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 COORDINATION

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. If available, review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
1. Comply with requirements for existing services/systems interruptions specified in Section 01 14 00 "Work Restrictions."
- B. Existing Services/Systems to be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor. Provide minimum 48 hours' notice when requesting shut-off.
 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.
 - a. Piping to be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Equipment to be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
 - h. Fire Suppression System Partial or Complete Removal: Arrange for bypass of area to be removed so that overall building fire suppression system remains in operation. If continuous operation is not possible, coordinate with local Fire authorities; maintain firewatch during removal operations and until system can be restored to working order. Maintain fire extinguishers on the site.

- i. Where existing concrete ceilings and soffits are to be left exposed, remove existing mechanical, electrical, and plumbing elements indicated to be removed or abandoned. In addition, cut ceiling suspension devices flush with the exposed surface of the slabs and soffits.
- C. Ballasts: If ballast is not labeled "No PCBs," or if the label is illegible, contact a ballast recycler for disposal.
- D. Mercury-Containing Devices: Mercury-containing devices include thermostats, silent switches, mechanical switches and relays or contacts. Dispose of these devices with an appropriate recycler.
- E. Nickel-Cadmium and Lead-Acid Batteries: Exit signs, emergency lighting units, alarm systems, smoke detectors and carbon-monoxide detectors may contain nickel-cadmium or lead-acid. Arrange with an appropriate recycler for disposal.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 3. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities and Controls."

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations, and for duration required by Authorities Having Jurisdiction hours after completion of flame cutting operations and other "hot work" as defined by NFPA 51B.

4. Maintain adequate ventilation when using cutting torches.
5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. When cutting concrete, masonry, wallboard and any other dust-producing materials, provide temporary barriers to prevent spread of dust into the rest of the building. Provide filters for mechanical systems and air ducts.
8. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site .
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- B. Resilient Floor Covering and Glued-down carpets: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Carpets, Carpet Tile, Acoustical Ceiling Panel and Tiles: Divert carpeting and ceiling tiles from local landfills. Remove and recycle products using Armstrong Reclamation Carpet/Tile Guidelines.

- B. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Burning: Do not burn demolished materials.

3.7 CLEANING

- A. Refer to Section 01 73 00 "Execution" for progress cleaning.

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Refer to Drawings.

END OF SECTION 02 41 19

SECTION 03 54 16 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes hydraulic-cement-based, polymer-modified, self-leveling underlayment for application below interior floor coverings.

1.2 COORDINATION

- A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Hydraulic Cement Underlayment.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Qualification Data: For Installer.
- C. Product Certificates: Signed by manufacturers of underlayment and floor-covering systems certifying that products are compatible.
- D. Field Test Results: Floor surface flatness and levelness measurements to determine compliance with specified tolerances.
- E. Preconstruction Test Reports: Prior to the installation of the underlayment, provide test results indicating slab moisture vapor emission meets the requirements of the finish flooring manufacturer in accordance with ASTM F 2170.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer and factory trained for application of underlayment products required for this Project.
- B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
 - 1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F (10 and 27 deg C).

PART 2 - PRODUCTS

2.1 HYDRAULIC-CEMENT-BASED UNDERLAYMENTS

- A. Hydraulic Cement Underlayment: Hydraulic-cement-based, polymer-modified, self-leveling product that can be applied in minimum uniform thickness of 1/4 inch (6 mm) and that can be feathered at edges to match adjacent floor elevations.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ARDEX GmbH; K-15 Self-Leveling Underlayment Concrete.
 - b. BASF, Master Builders Solutions; MasterTop 111SL.
 - c. L&M Construction Chemicals, Inc.; Levelex.
 - d. MAPEI Corporation; Ultraplan 1 Plus.
 - 2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
 - 3. Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.
 - 4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- B. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).

- C. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
- D. Surface Sealer: Designed to reduce porosity as recommended by manufacturer for type of floor covering to be applied to underlayment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance.
 - 1. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
- B. Provide clean, dry, neutral-pH substrate for underlayment application.
 - 1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
 - 2. Fill substrate voids to prevent underlayment from leaking.
- C. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond. Do not use solvents.
 - 1. Moisture Testing: Perform tests recommended by flooring manufacturer, but not less stringent than one of the following:
 - a. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.
 - 2. Alkalinity and Adhesion Testing: Perform tests recommended by flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
- D. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces according to manufacturer's written instructions.
- E. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 APPLICATION

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
 - 1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
 - 2. Coordinate application of components to provide optimum adhesion to substrate and between coats.
 - 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply underlayment to produce uniform, level surface.
 - 1. Feather edges to match adjacent floor elevations.
- D. Use the straightedge method test, ACI 117 to verify that there is no more than 1/4 inch (6 mm) deviation in flatness in a 10 foot span.
 - 1. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface with carpeting:
 - a. Specified Overall Values (SOV):
 - 1) Flatness: F_F 25.
 - 2) Levelness: F_L 20.
 - b. Minimum Local Values (MLV):
 - 1) Flatness: F_F 17.
 - 2) Levelness: F_L 15.
 - 2. Finish surfaces to the following tolerances for slabs-on-grade, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface with resilient flooring:
 - a. Specified Overall Values (SOV):
 - 1) Flatness: F_F 35.
 - 2) Levelness: F_L 25.
 - b. Minimum Local Values (MLV):
 - 1) Flatness: F_F 24.
 - 2) Levelness: F_L 17.
 - 3. Feather edges to match adjacent floor elevations.

- E. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.
- F. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 FIELD QUALITY CONTROL

- A. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 24 hours of finishing.

3.5 PROTECTION

- A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 03 54 16

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes miscellaneous carpentry.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of process and factory-fabricated product indicated.
 - 1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that materials comply with requirements.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Fire-Retardant Treated Plywood.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 QUALITY ASSURANCE

- A. Fire Performance Characteristics: Provide materials identical to those tested for the following fire performance characteristics per ASTM test methods indicated by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify treated lumber with classification marking of inspecting and testing organization in the form of separable paper label or, where required by authorities having jurisdiction, of imprint on lumber surfaces that will be concealed from view after installation.
 - 1. Surface Burning Characteristics for Concealed Blocking, Furring, and Door Subframing: Not exceeding a flame spread of 25, and smoke developed of 50 when tested per ASTM E 84 for 30 minutes.
- B. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in

compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.

1. Softwood Lumber.
2. Softwood Plywood.
3. Moisture-Resistant MDF.
4. Fire-Rated MDF.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels; for lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: Comply with DOC PS 20 "American Softwood Lumber Standard" and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 3. Provide dressed lumber, S4S, unless otherwise indicated.
 4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.
- B. Wood Panels:
 1. Plywood: Comply with DOC PS 1 "Construction and Industrial Plywood" for plywood panels. Use exterior grade for panels in wet conditions.
 2. Thickness: As needed to comply with requirements specified but not less than thickness indicated.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Provide chemical fire retardant process tested and labeled by UL with flame spread and smoke developed ratings of 25 or less. Comply with performance requirements in AWPA U1, Use Category UCFA as a minimum for pressure treatment. Size wood before treatment so that minimum cutting will be required after treatment. Kiln dry lumber to a maximum 19 percent moisture content, kiln dry plywood to a maximum 15 percent moisture content, after treatment. Treat indicated items and the following:

1. Wood members required to be treated by Building Code having jurisdiction at the site and wood members specified as fire-retardant-treated.
- B. Identify fire-retardant-treated wood with appropriate classification marking of UL.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. 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, and similar concealed members in contact with masonry or concrete.

2.4 MISCELLANEOUS LUMBER

- A. Provide miscellaneous lumber for support or attachment of other construction, including blocking, nailers, and similar members.
- B. For concealed boards, provide lumber with 19 percent maximum moisture content and the following species and grades:
 1. Mixed southern pine, No. 2 grade; SPIB.
 2. Western Woods; WCLIB or WWPA, No. 2 Grade.

2.5 PANEL PRODUCTS

- A. Medium-Density Fiberboard (Moisture Resistant): A sustainable, moisture-resistant, medium density fiberboard (MDF) panel manufactured from minimum 92 percent preconsumer recycled wood fiber complying with ANSI A208.2, Grade 155, having a minimum 48 pcf (769 kg/m³) density except that minimum for screw holding capacity on face shall be 325 pounds (1445 N); an ASTM E 84 Class C flame spread rating, minimum 3/4 inch (19 mm) thick, edged and faced as specified, fabricated with binder containing no added urea formaldehyde.
 1. Roseburg Forest Products; NAUF Medex.
- B. Telephone, Stretched Fabric Wall System Artwork Blocking, and Electrical Equipment Backing Panels:
 1. APA, Exposure 1, C-C Plugged, fire-retardant treated, manufactured with no added urea-formaldehyde, in thickness indicated or, if not indicated, not less than 15/32 inch (11.9 mm) thick.
- C. Medium-Density Fiberboard (fire rated): A sustainable, fire rated, medium density fiberboard (MDF) panel manufactured from minimum 82 percent recycled wood fiber complying with ANSI A208.2, Grade 130, having a minimum 48 pcf (769 kg/m³) density except that minimum for screw holding capacity on face shall be 250 pounds (1112N); an ASTM E 84 Class A flame

spread rating, minimum 3/4 inch (19 mm) thick, edged and faced as specified, fabricated with binder containing no added urea formaldehyde.

1. Roseburg Forest Products; NAUF Medite FR.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
- B. Power-Driven Fasteners: NES NER-272.
- C. Nails, Wire, Brads, and Staples: Select material, type, size, and finish required for each use.
 1. ASTM F 1667 for driven fasteners such as nails, spikes and staples.
 2. ASTM F 547 for nails used with wood and wood based products.
- D. Wood Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1.
- E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
- C. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- 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 PANEL PRODUCT INSTALLATION

- A. General: Comply with applicable recommendations contained in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial," and local utility requirements, if any, for plywood backing panels utilized as indicated.
- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Plywood Backing Panels: Secure to wall using proper fastening devices for substrates encountered spaced 12 inches (305 mm) on center maximum at perimeter 1/2 inch (12.7 mm) from corners and three rows of 3 fasteners each in the backerboard field. Countersink fasteners flush with plywood surface. Butt adjacent panels without lapping.

END OF SECTION 06 10 53

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes interior architectural woodwork:
 - 1. Plastic-laminate cabinets.
 - 2. Plastic-laminate countertops.
 - 3. Quartz-surfacing material countertops.
- B. Related Requirements:
 - 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for concealed blocking for millwork items.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each material and product specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
 - 1. Cabinet hardware and accessories.
 - 2. Glass products and glazing materials.
 - 3. Finishing materials and processes.
 - 4. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
 - 5. Include submittal of stone sealer manufacturer's recommended methods for application of impregnator and surface protection coatings based on testing of project specific stone countertop materials.
- B. Shop Drawings: Submit shop drawings showing locations of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components. Elevations shall be drawn at a scale of not less than $1/2" = 1'-0"$ (1:25). Details shall be drawn at a scale of not less than $3" = 1'-0"$ (1:5).
 - 1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 2. Show locations and sizes of cutouts and holes for plumbing, electrical, computer and telephone equipment and other items installed in architectural woodwork.
 - 3. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
- C. Samples: Submit samples of the following:

1. Lumber and panel products for transparent finish, for each species and cut, finished on one side and one edge. Furnish lumber in 12 inch (305 mm) lengths, furnish panel samples in 12 inch (305 mm) squares.
2. Lumber and panel products with shop-applied opaque finish, for each finish system and color, with exposed surface finished. Furnish lumber in 12 inch (305 mm) lengths, furnish panel samples in 12 inch (305 mm) squares.
3. Thermoset decorative-overlay surfaced panel products, for each type, color, pattern, and surface finish.
4. Quartz-surfacing materials, 6 inches (150 mm) square.
5. Cabinet Locks: Three samples of each type.
6. Metal Trim Shapes: Three samples of each type and finish, 12 inches (305 mm) long.
7. Submit samples of each type of door specified showing construction and finishes selected. Samples shall be 12 inch (305 mm) by 12 inch (305 mm) corner section.
8. Submit samples of stainless steel glass rosette cap assemblies in each finish specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Instructions: Submit maintenance instructions for all countertop materials. Where countertop materials are recommended to be protected with hot pads, provide manufacturers recommended hot pad product properly sized for the hot equipment designed to be placed thereon.

1.5 QUALITY ASSURANCE

- A. Single-Source Manufacturing and Installation Responsibility: Engage a qualified Manufacturer - acceptable to the Architect - to assume undivided responsibility for woodwork specified in this Section, including fabrication, finishing, and installation. The manufacturer shall have a minimum of 15 years successful experience in the custom fabrication and installation of architectural woodwork comparable to that shown and specified, be a member of the AWI, maintain an organized quality control program, perform its own in-house veneer lay-up work, and who retains facilities with sufficient capacity and quality to produce the required architectural woodwork without causing delay to the Project.
- B. Quality Standard: Fabricate and install all architectural woodwork in accordance with the applicable requirements of Architectural Woodwork Standards, 2nd edition, published jointly by AWI, AWMAC, and WI, unless more stringent requirements are specified or shown.

- C. Fire Performance Characteristics: Provide materials identical to those tested for the following fire performance characteristics per ASTM test methods indicated by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify treated lumber with classification marking of inspecting and testing organization in the form of separable paper label or, where required by authorities having jurisdiction, of imprint on lumber surfaces that will be concealed from view after installation.
1. Surface Burning Characteristics for Concealed Blocking, Furring, and Door Subframing: Not exceeding a flame spread of 25, and smoke developed of 50 when tested per ASTM E 84 for 30 minutes.
 2. The fire performance finish requirements for all exposed interior wall and ceiling woodwork (including the paneling but not limited to paneling) substrates in fully sprinklered spaces shall be as follows which has been taken from the IBC 2018, Table 803.9. Footnotes to Table 803.9 that are pertinent to the project are also made a part of this specification.

Use Group	Interior Exit Stairways, Exit Ramps, and Exit Passageways	Corridors and Enclosures for Exit Access Stairways, and Exit Access Ramps	Rooms and Enclosed Spaces
A-1, and A-2	Class B	Class B	Class C
A-3	Class B	Class B	Class C
B, E, M, R-1	Class B	Class C	Class C
S	Class C	Class C	Class C

Class B: Flame spread 26-75, smoke developed 0-450 when tested in accordance with ASTM E 84.

Class C: Flame spread 76-200, smoke developed 0-450 when tested in accordance with ASTM E 84.

1.6 DELIVERY, STORAGE, AND HANDLING

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

1.7 FIELD CONDITIONS

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

- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify actual dimensions of other construction by accurate field measurements before fabrication of woodwork; and indicate measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on shop drawings.
 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

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

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of the AWS quality standard for each type of woodwork and quality grade specified.
- B. Lumber Standards: Comply with applicable provisions for grading and workmanship of AWS Architectural Woodwork Standards, Section 3, and the requirements shown and specified; where standards conflict the more stringent shall apply. Provide lumber surfaced 4 sides (S4S) and fabricated to profiles shown. All lumber shall be kiln dried to the moisture content indicated in AWS, Section 2.
1. Furring, Blocking, Shims: No. 1 Common; Southern Pine.
- C. Thermoset Decorative Overlay (Melamine): Particleboard or medium-density fiberboard with surface of thermally fused, melamine-impregnated decorative paper complying with the recommendations of the Composite Panel Association's Technical Bulletin "Laminating Composite Panels."
1. Face Colors: As indicated in the Finish Schedule on the Drawings.
 2. Manufacturers and Products:
 - a. Roseburg Forest Products; Duramine.
- D. High-Pressure Decorative Laminate (PL##): Complying with NEMA LD 3 for Horizontal General Purpose Grade (HGS) typically and Vertical General Purpose Grade (VGS) where specified. Nominal thickness for HGS and VGS laminates to be 0.048 inches (1.2 mm) +/-0.005 inches (0.12 mm) and 0.028 inches (0.71 mm) +/- 0.004 inches (0.10 mm),

respectively. Where high pressure decorative laminate is indicated to be faced with aluminum, provide aluminum sheet goods specifically made for laminating to vertical MDF and particleboard substrates in sheet thickness of 0.025 inches (0.63 mm) +/- 0.002 inches (0.05 mm).

1. Types: As indicated in the Finish Schedule on the Drawings.
 - a. Provide factory applied protective peel coat to prevent surface damage during fabrication and handling of aluminum faced decorative laminates. Remove protective peel coat after installation in accordance with the manufacturer's recommendations. If the film is left in place after installation, exposure to direct sunlight for a prolonged period may cause a paste residue and create other problems.
2. Backing Sheets: Non-decorative, high pressure laminate, NEMA LD3, Grade, types and thickness to match face sheets and equalize pull.

E. Quartz-Surfacing Material (SC##): Provide material that meets or exceeds National Sanitation Foundation 51 Food Zone Compliance standards, consisting of quartz crystals and proprietary binders and manufactured in sheets of specific thicknesses. Quartz surfacing material shall be solid, non-porous, homogeneous, hygienic, renewable, and, when applicable, may feature inconspicuous hygienic seams. Quartz surfacing material shall be free from conspicuous internal strengthening fibers.

1. Products: Subject to compliance with requirements, provide products scheduled on Drawings.

F. Adhesives, General: Use only low emitting VOC adhesives that leave no glue lines on finished surfaces of architectural woodwork. Do not use adhesives that contain urea formaldehyde.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where indicated, use materials impregnated with fire-retardant chemical formulations indicated by a pressure process or other means acceptable to authorities having jurisdiction to produce products with fire-test-response characteristics specified.

1. Do not use treated material that does not comply with requirements of referenced woodworking standard. Do not use twisted, warped, bowed, discolored, or otherwise damaged or defective lumber or panel products.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
3. Treat only door subframing, blocking and furring items.

B. Fire-Retardant-Treated Lumber: Materials impregnated with fire-retardant chemical formulations to comply with AWPA U1, Use Category UCFA. Kiln-dry material after treatment to levels required for untreated woodwork.

- C. Fire-Retardant Particleboard: Panels made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture and complying with fire-test-response characteristics specified.
- D. Fire-Retardant Fiberboard: ANSI A208.2 medium-density fiberboard panels made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture and complying with fire-test-response characteristics specified.

2.3 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials for a complete installation of architectural woodwork, except for items specified in Section 08 71 00 "Door Hardware."
- B. Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.
- C. Frameless Concealed Hinges for Cabinet Doors (European Type): Concealed all-metal furniture hinges adaptable or engineered for 35 mm hinge cup boring pattern, with minimum 155 degree opening angle, three-dimensional hinge having adjustments located in the steel hinge arm, steel or die-cast zinc hinge cups, mounting plates, and plastic insertion dowels to receive hinge screws. Automatic soft closing shall engage only in the last 10 degrees of swing. All hinge pins and linkages shall be hardened. Complying with BHMA A156.9, B01602. Bright nickel finish (US15).
 - 1. Hinge Quantity: Provide hinge quantity as recommended by hinge manufacturer based on cabinet door width, weight, thickness, door material, and hinge cup selection.
 - 2. Metal Furniture Hinge Products and Manufacturers: One of the following:
 - a. Basis of Design: Grass Tiomos Series; Grass America, Inc.; Kernersville, NC.
 - b. Blumotion Series; Blum USA; Stanley, NC.
 - c. Salice; Silencia Series 200.
- D. Catches: Magnetic, complying with BHMA A156.9, B03141 for single doors and B03161 for double doors.
 - 1. For Single Doors: One of the following:
 - a. CD41 Single Magnetic Cabinet Catch; Stanley Commercial Hardware.
 - b. 900; Rockwood Manufacturing Company, Rockwood, PA.
 - c. 246.94.701 housing x 246.94.702 counterpiece; Hafele America Co. Archdale, NC.
 - 2. For Double Doors: One of the following:
 - a. 901; Rockwood Manufacturing Company.
 - b. CD45 Double Magnetic Cabinet Catch; Stanley Commercial Hardware.
- E. Cabinet Shelf Rests: Nickel plated brass or steel, or stainless steel, minimum 6 mm diameter shelf support pegs in sockets, complying with BHMA A156.9, B04013. One of the following:

1. Hafele 282.01.701 x 282.50.704; Hafele America, Co.
2. K-10S with K-2 Sleeve; Brusso, Inc.
3. 331 Series Flat Top Shelf Support Pin with 325 Series Insert Grommet; Knappe and Vogt.

F. Drawer Slides:

1. Drawers less than 4 inches (102 mm) deep: Similar to Accuride 7432 having full extension carburized steel ball bearing, side mounting, 100 pound (45 kg) capacity medium duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
2. Drawers greater than 4 inches (102 mm) but less than 8 inches (203 mm) deep: Similar to Accuride 7432 having full extension carburized steel ball bearing, side mounting, 100 pound (45 kg) capacity medium duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
3. Drawers greater than 8 inches (203 mm) deep: Similar to Accuride 4032 having full extension carburized steel ball bearing, rail mounting, 150 pound (67.5 kg) capacity heavy duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
4. Refuse Cabinets: Similar to Accuride 3600-201 having full extension carburized steel ball bearing, bottom mounting, 175 pound (78.75 kg) capacity heavy duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, progressive action, positive stop, bright electro zinc plate finish.
5. Accuride International, S.A. de C.V., Mexicali, B.C., C.P. 21395 Mexico.

G. Waste Container System:

1. Sliding Bottom Mount waste container system, fabricated from wood, in configuration indicated on the drawings.

a. Basis-of-Design Product: 4VLWCSC-series; Rev-A-Shelf LLC.

H. Silencers: Provide rubber silencers on jamb and/or head and sill strike areas of all cabinet doors and drawers, 2 for paired doors, and 3 for single doors. Silencers shall be approximately 1/4-inch (6.4-mm) diameter, color compatible with adjacent finish.

I. Exposed Hardware Finishes: Unless otherwise specified above, or on the Drawings, all exposed portions of the woodwork hardware shall comply with BHMA A156.18 for BHMA finish number indicated.

1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
2. Satin Stainless Steel: BHMA 630.

J. Steel Reinforcing: Carbon steel shapes, tubes and plates complying with ASTM A 36 (shapes and plates), and ASTM A 500 or A 501 (for tubes).

1. Shop Primer for Concealed Steel Reinforcing: Provide fast curing, lead and chromate free, universal modified alkyd primer complying with performance requirements in FS TT-P-664.

2. Electrodes for Concealed Steel Reinforcing: Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded.
- K.** Resilient Base: Refer to Section 09 65 13 "Resilient Wall Base and Accessories."
- L.** Undercabinet Light Fixtures: Approximately 0.59 inch (15 mm) high by 1.38 inch (35 mm) wide surface mounted continuous undercabinet LED task light. Task lighting shall have end butted, fixture to fixture, ganging with concealed wiring. Provide each ganged section of light fixtures with a single dimmer switch that, when activated, will switch the entire ganged section of light fixtures to either "on" or "off", and also offers dimming from full capacity to 5 percent capacity.
1. Basis-of-Design Manufacturer and Fixture: Workrite Ergonomics Inc.; Ciglio 2 Series undercabinet lighting, (800) 959-9675. Other manufacturers will be considered subject to Architect's acceptance.
 2. All light fixture components shall be UL Approved and Listed for the applications indicated. Provide 65W, 24V transformer to connect to 120 VAC electrical voltage. Provide NEC acceptable wiring, and conduits if required, from light fixtures complete with 3 prong connector for plugging into outlet strips or power receptacles.
 3. Lamp Type and Wattage: Each fixture shall include evenly spaced LED lamps with a color temperature of 3100 degrees Kelvin and a CRI of 83; length as required to suit applications shown.
- M.** Door Hardware: At full sized doors, provide door hardware as scheduled under Section 08 71 00 "Door Hardware."
- N.** Hanging (Zee Clip) Strips: Extruded aluminum zee type interlocking clips; type, size and quantity for the condition of use.
- O.** Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1.
- P.** Nails, Wire, Brads, and Staples: Select material, type, size, and finish required for each use.
1. ASTM F 1667 for driven fasteners such as nails, spikes and staples.
 2. ASTM F 547 for nails used with wood and wood based products.
- Q.** Anchors: Select material, type, size, and finish required by each substrate for secure anchorage. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.4 FABRICATION, GENERAL

- A.** General: Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to the maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting. The width of scribe and filler panels shall not exceed 1/2 inch (13 mm), or 1/2 inch (13 mm) clear dimension from adjacent wall to outside face of cabinet door in a 90 degree position, whichever is greater.

1. Interior Woodwork Grade: Custom complying with the referenced quality standard.
- B. Fabricate woodwork to dimensions, profiles, and details indicated.
 1. Reinforcing shown is minimum. Provide additional steel and lumber reinforcing as required to sustain imposed loads and to ensure a rigid assembly.
 2. Exposed surfaces shall be free from dents, tool marks, warpage, buckle, glue and open joints, or other defects affecting serviceability or appearance. Accurately fit all joints, corners and miters. Conceal all fasteners. Make threaded connections up tight so that threads are entirely concealed.
- C. Shop cut openings to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 1. Seal edges of openings in countertops with a coat of varnish.
 2. Install glass to comply with applicable requirements in Section 08 80 00 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.5 WOOD CABINETS FOR PLASTIC LAMINATE FINISH

- A. AWS Type of Cabinet Construction: Flush overlay.
- B. Laminate Cladding for Exposed Surfaces: High-pressure decorative of grade indicated.
 1. Horizontal Surfaces Other Than Tops: HGS.
 2. Vertical Surfaces: VGS.
 3. Edges: HGS unless otherwise indicated.
 4. Colors, Patterns, and Finishes: As indicated on the Drawings and in the Finish Schedule.
- C. Materials for Semiexposed Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS.
 1. Drawer Sides and Backs: Solid-hardwood lumber.
 2. Drawer Bottoms: Hardwood plywood.

2.6 PLASTIC LAMINATE COUNTERTOPS

- A. General: Comply with AWS Section 11 and as follows.
- B. High-Pressure Decorative Laminate Grade: HGS.
- C. Colors, Patterns, and Finishes: As indicated on the Drawings and in the Finish Schedule.
- D. Edge Treatment: Same as laminate cladding on horizontal surfaces unless otherwise indicated.

- E. Core Material at Sinks: Particleboard or exterior-grade plywood.

2.7 QUARTZ SURFACING MATERIAL COUNTERTOPS

- A. General: Comply with AWS Section 11 and as follows.
- B. Surfacing-Material Thickness: 3/4 inch (19 mm).
- C. Radius corners and edges. Provide 1/8 inch (3.2 mm) radius.
- D. Colors, Patterns, and Finishes: As indicated by manufacturer's designations in Finish Schedule.
- E. Fabricate tops in one piece, unless otherwise indicated. Comply with quartz-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.8 SHOP FINISHING

- A. Production finish architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
- B. Priming of interior architectural woodwork with field applied opaque finish required to be performed at fabrication shop are specified in this Section. Refer to Section 09 91 23 "Interior Painting" for finishing opaque finished architectural woodwork.
- C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative overlay.
 - 2. Gluing of face veneers shall, where possible, be by the hot plate method; glued surfaces shall be in close contact throughout. Glue stains will not be permitted.
 - 3. Grain of all transparent finished wood shall run in the direction shown, or if not shown, as accepted on the shop drawings.
- D. Exposed Surfaces:
 - 1. Plastic Laminate Finish: Gluing of plastic laminate surfacing materials shall be by the hot plate method, glued surfaces shall be in close contact throughout. Glue stains shall not be permitted.
 - 2. Quartz Surfacing Finish: As scheduled.
- E. Unexposed Wood Finish: Shop-applied alkyd type primer-sealer.

PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 INSTALLATION

- A. Quality Standard: Install woodwork to comply with requirements of the AWS for the same grade specified in this Section for type of woodwork involved.
 - 1. Install woodwork level, plumb, true, with no distortions, and with no variations in flushness of adjoining surfaces. Shim as required with concealed shims.
 - 2. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.
- B. Anchor woodwork to blocking built in or directly attached to substrates. Secure to blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- C. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 96 inches (2438 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
 - 1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
- D. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets without sag, bow, or other variation from a straight line.
 - 2. Maintain veneer sequence matching of cabinets with transparent finish.
 - 3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches (400 mm) on center with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood blocking, or hanging strips or with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
- E. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Calk space between backsplash and wall with silicone sanitary sealant specified in Section 07 92 00 "Joint Sealants."

- 2. Secure backsplashes to tops with concealed metal brackets at 16 inches (406 mm) on center and to walls with adhesive.
- F. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean woodwork on exposed and semiexposed surfaces. Touchup shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer, that ensures that woodwork will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 06 40 23

SECTION 07 84 13 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes through-penetration firestop systems for penetrations through the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items:
 - 1. Floors.
 - 2. Walls and partitions.
 - 3. Smoke barriers.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of through penetration firestop system product indicated.
- B. Through-Penetration Firestopping Schedule: Submit a Through-Penetration Firestopping Schedule indicating the type of through-penetration firestop system to be installed for each penetration. Indicate each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of testing and inspection agency acceptable to the authorities having jurisdiction that evidences compliance with requirements for each condition indicated.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.
 - a. Engineering judgment shall include both project name and contractor's name who will install firestop system as described in document

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.

2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Product Certificates: Signed by manufacturers of through-penetration firestop system products certifying that products furnished comply with requirements.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified or licensed, by firestop system manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements. A manufacturer's willingness to sell its firestop system materials to Contractor or to an installer engaged by Contractor does not in itself confer qualification on the buyer.
 1. The installer must have no less than 3 years of experience with fire stop installation.
- B. Installer Qualifications: A firm that has been approved by FM Approval according to FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
 1. The installer must have no less than 3 years of experience with fire stop installation.
- C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multi-component materials.
- B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet.
- B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.
- C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until Architect, Owner's inspecting agency and building inspector, if required by authorities having jurisdiction, have examined each installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 - 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg (74.7 Pa).
1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at and no more than 50-cfm (0.024-cu. m/s) cumulative total for any 100 sq. ft. (9.3 sq. m) at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
- F. Provide non-hardening resilient firestop material at penetrations, sleeves and passthroughs in acoustic construction assemblies.
1. Acceptable Products:
 - a. Specified Technologies, Inc.; Elastomeric Sealant ES100
 - b. Johns Manville; Firetemp CI Caulk.
 - c. 3M; Fire Barrier 2001 Silicone RTV Foam.
 - d. Hilti; Flexible Firestop Sealant CP 606.

2.3 FILL MATERIALS

- A. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.
- B. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- C. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.
- D. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- E. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- F. Mortars: Prepackaged, dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

- G. Pillows/Bags: Reusable, heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- H. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- I. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
- J. Gypsum Products: The use of gypsum products for through-penetration firestopping is strictly prohibited.

2.4 MIXING

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with written recommendations of firestop system manufacturer and the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.

2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without damaging substrate or disturbing firestop system's seal with substrates.

3.3 INSTALLATION

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

3.4 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing through-penetration firestop systems with other construction only after inspection reports are issued and installations comply with requirements.

3.5 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

END OF SECTION 07 84 13

SECTION 07 84 43 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fire-resistive joint systems for the following:

1. Floor-to-floor joints.
2. Floor-to-wall joints.
3. Head-of-wall joints.
4. Bottom of wall joints.
5. Wall-to-wall joints.

1.2 ACTION SUBMITTALS

A. Product Data: Submit product data for each type of product indicated.

B. Fire-resistive Joint Systems Schedule: Submit a Fire-resistive Joint Systems Schedule indicating the types of fire resistive joint system to be installed and the relationships to adjoining construction. Include fire-resistive joint system design designation of testing and inspecting agency acceptable to authorities having jurisdiction that demonstrates compliance with requirements for each condition indicated.

1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular fire-resistive joint system, submit illustration, with modifications marked, approved by the fire resistive joint system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.
 - a. Engineering judgment shall include both project name and contractor's name who will install fire-resistive joint system as described in document.

1.3 INFORMATIONAL SUBMITTALS

A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."

1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

- B. Product Certificates: Signed by manufacturers of fire resistive joint system products certifying that products furnished comply with requirements.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified or licensed by the fire resistive joint system manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements. A manufacturer's willingness to sell its fire resistive joint system materials to Contractor or to an installer engaged by Contractor does not in itself confer qualification on the buyer.
 - 1. The installer must have no less than 3 years of experience with fire resistive joint system installation.
- B. Source Limitations: Obtain fire-resistive joint systems, for each kind of joint and construction condition indicated, through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fire-resistive joint system products to Project site in original, unopened containers or packages with qualified testing and inspecting agency's classification marking applicable to Project and with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, lot number, shelf life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials for fire-resistive joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not install fire-resistive joint systems when ambient or substrate temperatures are outside limits permitted by fire-resistive joint system manufacturers or when substrates are wet.
- B. Ventilate fire-resistive joint systems per manufacturer's written instructions by natural means or, if this is inadequate, forced-air circulation.

1.7 COORDINATION

- A. Coordinate construction of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- B. Coordinate sizing of joints to accommodate fire-resistive joint systems.
- C. Notify Owner's inspecting agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on days preceding each series of installations.

- D. Do not cover up fire-resistive joint system installations that will become concealed behind other construction until Owner's inspecting agency and building inspector, if required by authorities having jurisdiction, have examined each installation.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide fire resistive joint systems in acoustic and fire rated fire resistive joint assemblies.
1. Specified Technologies, Inc. Elastomeric Sealant ES100.
 2. Johns Manville Firetemp CI Caulk.
 3. 3M Fire Barrier 2001 Silicone RTV Foam.
 4. Hilti FS One Max.
 5. Sika; Sikacryl - 620 Fire.
 6. Master Building Solutions; MasterFlame JS110.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."

2.3 JOINT FIRESTOPPING

- A. General: Provide fire-resistive joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly in which fire-resistive joint systems are installed. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
1. Gypsum Products: The use of gypsum products for joint firestopping is strictly prohibited.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E 1966 or UL 2079.

1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Joints in Smoke Barriers: Provide joint firestopping systems with ratings determined per UL 2079 based on testing at a positive pressure differential of 0.30-inch wg (74.7 Pa).
 1. L-Rating: Not exceeding 5.0 cfm/ft. (0.00775 cu. m/s x m) of joint at both ambient and elevated temperatures.
- D. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
 1. Sealant shall have a VOC content of 250 g/L or less.

2.4 FILL MATERIALS

- A. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.
- B. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.
- C. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
- D. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of Work.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire-resistive joint system materials. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates or damaging adjoining surfaces.

3.3 INSTALLATION

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

3.4 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- B. Where deficiencies are found or joint firestopping system is damaged or removed because of testing, repair or replace joint firestopping system to comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and inspecting agency has approved installed fire-resistive joint systems.

3.5 CLEANING AND PROTECTING

- A. Clean off excess fill materials adjacent to joints as Work progresses by methods and with cleaning materials that are approved in writing by fire-resistive joint system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure fire-resistive joint systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

END OF SECTION 07 84 43

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes joint sealants.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each joint sealant product indicated.
- B. Samples: Submit samples for each exposed joint sealant product indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers. Store and handle materials in compliance with manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Colors: For fully concealed joints, provide the manufacturer's standard color of sealant which has the best overall performance characteristics for the application shown. For exposed joints, the Architect will select colors from the manufacturer's standard colors.

2.2 JOINT SEALANTS

- A. Butt Glazing Sealant: Comply with ASTM C 920, Type S, Grade NS, Class 50; use NT, G, and A, black color unless otherwise indicated.

1. Products and Manufacturers: Provide one of the following:
 - a. DOWSIL 795; Dow Chemical Company.
 - b. Spectrem 2; Tremco, an RPM Co.
 - c. Silpruf SCS 2000; Momentive.
 - d. Sika, Sikasil WS 295.
- B. Mildew-Resistant Silicone Sealant (use for joints at plumbing fixtures, toilet room countertops and vanities): Complying with ASTM C 920, Type S (single component), Grade NS (non-sag), class 25, Use NT (non-traffic), Substrate uses G, A, and O; and containing a fungicide for mildew resistance; white color.
 1. Products: Provide one of the following:
 - a. Dow Chemical Company; 786 Silicone Sealant.
 - b. Momentive; Sanitary SCS 1700.
 - c. Pecora Corporation; 898 NST Sanitary Mildew Resistant Sealant.
 - d. Tremco, an RPM Co.; Tremsil 200 Sanitary.
- C. Latex Sealant: Complying with ASTM C 834, Type OP (opaque sealants):
 1. Products: Provide one of the following:
 - a. Pecora Corporation; AC-20 + Silicone.
 - b. DAP Products Inc.; Alex Plus Acrylic Latex Caulk Plus Silicone.
 - c. MBCC Group Master Builders Solutions (formally BASF); MasterSeal NP 520.
 - d. Tremco, an RPM Co.; Tremflex 834.

2.3 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: One of the following preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding backings of flexible plastic foam complying with ASTM C 1330, and of type indicated below. Select shape and density of cylindrical sealant backings in consultation with the manufacturer for proper performance in specific condition of use in each case.
 1. Type C: Closed-cell polyethylene foam material with a surface skin, which is nonabsorbent to liquid water and gas, non-outgassing in unruptured state; one of the following:
 - a. HBR Closed Cell Backer Rod; Nomaco, Inc.
 - b. MasterSeal 920; BASF Master Builders.
 - c. Mile High Foam, Backer Rod Mfg., Inc.

2.4 MISCELLANEOUS MATERIALS

- A. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.
- B. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and which will not stain nor mar the finish of surfaces adjacent to joints to which it is applied.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with the recommendations of joint sealant manufacturer and the following requirements:
 - 1. Remove foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), existing joint sealants, oil, grease, water, and surface dirt.
 - 2. Clean concrete, masonry, unglazed surfaces of tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean metal, glass, porcelain enamel, glazed surfaces of tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- C. Installation of Sealant Backings: Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- D. Installation of Sealants: Install sealants so they directly contact and fully wet joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform, concave shaped beads, to eliminate air

pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint.

- F. Cleaning: Clean excess sealants or sealant smears adjacent to joints as installation progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.2 JOINT SEALANT SCHEDULE

- A. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
1. Control and Expansion Joints on Exposed Interior Surfaces of Exterior Walls: Latex sealant.
 2. Perimeter Joints of Exterior Openings Where Indicated: Latex sealant.
 3. Vertical Control and Expansion Joints in Stone and Tile Surfaces: Latex sealant.
 4. Perimeter Joints between Interior Wall Surfaces and Frames of Interior Doors, Windows, and Elevator Entrances: Latex sealant.
 5. Perimeter Joints between Scalloped, Bent, or Warped Interior Wallboard Surfaces and Straight Trim: Latex Sealant.
 6. Joints between Plumbing Fixtures and Adjoining Walls, Floors, and Counters: Mildew resistant silicone sealant.
 7. Joints between Glass, and between Glass and Adjacent Substrates: Butt glazing sealant.

END OF SECTION 07 92 00

SECTION 08 12 16 - INTERIOR ALUMINUM FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes extruded aluminum frames for interior locations.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each product indicated. Include material descriptions for each type of frame specified.
- B. Shop Drawings: Submit shop drawings showing scaled elevations, plans, and sections of the interior aluminum frame work. Show reinforcing at locations of hardware installation. Full scale sections shall be prepared and submitted for details of the assemblies that cannot be shown in the elevations or sections. Include with shop drawings glass thicknesses, metal finishes, and all other pertinent information as necessary or requested by the Architect to indicate compliance with the Contract Documents. Details of field connections, anchorage, and their relationship to the work of others shall be clearly indicated for the coordination of the work by other building trades. Details of fastening and sealing methods and product joinery shall be shown to ensure proper performance of the field installation.
- C. Samples: Submit samples for each type of corner construction and each type of exposed finish required. Prepare samples from same material to be used for the Work.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Aluminum Doors and Frames.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Subcontract the interior frame work to a firm who has successfully installed interior aluminum framing systems similar in material, design, and extent to those

indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- B. Source Limitations: Obtain aluminum frames through one source from a single manufacturer with the capacity and resources to provide products of consistent quality in appearance and physical properties.
- C. Product Options: Drawings indicate dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction dimensions. Other manufacturers' products complying with requirements may be considered. Refer to Section 01 60 00 "Product Requirements."
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging of components shall be so selected to protect the components from damage during shipping and handling.
- B. Storage on Site: Store components in a location and in a manner to avoid damage to the components. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of metals.

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify interior aluminum frame dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening and wall dimensions and note on shop drawings that these are not measured dimensions. Proceed with fabricating interior aluminum frames without field measurements. Coordinate wall, floor, and ceiling construction to ensure that actual opening dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: The interior aluminum frame work shown and specified is based on products by Frameworks. Interior aluminum frame products, by the following manufacturers, similar to those described in the specifications and indicated on the drawings may be considered and is subject to the acceptance of the Architect.

1. Wilson Partitions, Vernon, CA.
2. Raco Interior Products, Inc., Houston, TX.
3. Western Integrated Materials, Inc., Long Beach, CA.

2.2 MATERIALS

- A. Fabricate interior aluminum frame components from aluminum extrusions complying with ASTM B 221 (ASTM B 221M), 'Anodizing Quality' and formed to the sizes, shapes, and profiles indicated; temper required to suit structural and finish requirements.
- B. Recycled Content of Aluminum Components: Not less than 25 percent.

2.3 ACCESSORIES

- A. Fasteners: Aluminum, nonmagnetic stainless-steel or zinc plated steel.
- B. Door Silencers (Mutes): Manufacturer's standard gray mohair.
- C. Glazing Gaskets: Manufacturer's standard extruded or molded gray plastic or EPDM, to accommodate provide 3/8 inch (10 mm) thick glass at 2 side supported framing where units are indicated to be 96 inches (2438 mm) or less in height, provide 1/2 inch (12 mm) thick glass at 2 side supported framing where units are indicated to be 120 inches (3048 mm) or less in height, unless otherwise indicated.
- D. Copolymer Strips: A clear and continuous copolymer strip designed to reduce deflection between two-side supported glass units, with pre-applied clear high bond strength tape on both faces. Overall thickness of gap not to exceed 0.082 inch (2.1 mm).
 1. C.R. Laurence: EZCC10 180 Degree Clear Partition Strips for 3/8 inch (10 mm) thick glass.
 2. C.R. Laurence: EZCC12 180 Degree Clear Partition Strips provide 1/2 inch (12 mm) thick glass.
- E. Glass: As specified in Section 08 80 00 "Glazing."
- F. Hardware: As specified in Section 08 71 00 "Door Hardware."

2.4 SEALING MATERIALS

- A. Exposed Sealing Materials: Acrylic latex type sealants, exposed at perimeter joints in contact with adjacent wallboard materials are specified in Section 07 92 00 "Joint Sealants."

2.5 FABRICATION

- A. General: Fabricate the interior aluminum frames to the designs, shapes, and sizes shown using the materials specified and shown to produce assemblies which meet or exceed the performance

requirements. To the greatest extent possible complete fabrication, assembly, finishing, hardware applications and other work before shipment to Project site.

1. Metal Wall Thickness: Provide shapes as shown and as required to suit the performance requirements but with wall thickness of not less than the following for each major component:
 - a. Door Frames: Extruded aluminum, not less than 0.062 inch (1.575 mm) thick, reinforced for hinges and strikes.
 - 1) Locate hardware as required by fire-rated label for assembly.
 - 2) Fabricate aluminum frame assemblies with a cold-formed, primed, interior steel liner where required to comply with the fire resistance ratings indicated.
 - b. Glass Frames: Extruded aluminum, not less than 0.062 inch (1.575 mm) thick, designed for glass thickness indicated.
 - c. Ceiling Tracks: Extruded aluminum, not less than 0.062 inch (1.575 mm) thick.
 - d. Trim: Extruded aluminum, not less than 0.050 inch (1.27 mm) thick, removable snap-in glass stops without exposed fasteners.
 - e. Frame Face Dimension: As indicated on the Drawings.
2. Glazing shall be performed in accordance with Section 08 80 00 "Glazing."
- B. Provide continuous glazing stops with concealed fasteners for all frames. Provide stops with hairline joints at corners. Provide stops with square, not beveled, shouldered profile unless otherwise shown.
- C. Cut, reinforce, drill and tap frames in strict accordance with the printed door hardware manufacturers templates and instructions. Provide solid steel hardware reinforcements, securely fastened to frames where door hardware is to be attached.
- D. Joints in Metal Work: All exposed work shall be carefully fitted and matched to produce continuity of line and design, with all joints, being accurately fitted for hairline contact and rigidly secured.
 1. Provide concealed corner reinforcements and alignment clips for precise butt or mitered connections.
 2. Fabricate frames for glass to allow glass replacement without dismantling door or frame.
 3. Fabricate all components to allow secure installation without exposed fasteners.
- E. Shop Assembly: As far as practicable, all fitting and assembly work shall be done in a fabrication shop.

2.6 ALUMINUM FINISHES

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

- B. Finish Application: Apply coatings to all exposed surfaces of interior aluminum frame work.
- C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- D. Protective and Decorative, Finishes: Complying with the following:
 - 1. Metal Preparation and Pretreatment: Remove die markings prior to finishing operations. Perform this work in addition to the finish specified. Scratches, abrasions, dents and similar defects are unacceptable.
 - 2. Colors:
 - a. Painted Finish: Factory applied baked enamel coating complying with AAMA 2603, in custom color(s) as indicated on the drawings and schedules and matching Architect's sample(s).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate interior aluminum door and frame work with the work of other Sections and provide items to be placed during the installation of other work at the proper time to avoid delays in the Work.
- B. Place such items, including concealed overhead framing, accurately in relation to the final location of interior aluminum door and frame components.

3.2 EXAMINATION

- A. Examine walls, floors, and ceilings for suitable conditions where interior aluminum doors and frames are to be installed.
- B. Verify that wall thickness does not exceed standard tolerances allowed by throat size indicated.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Comply with interior aluminum door and frame manufacturer's written installation instructions and the Architect reviewed shop drawings. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints.
- B. Frame Installation: Install frames plumb and square, shimmed and then securely anchored to substrates with fasteners recommended by frame manufacturer.

1. At fire-protection-rated openings, install interior aluminum frames according to NFPA 80.
2. Fasten to steel stud bulkhead framing using sheet metal screws or other fasteners approved by frame manufacturer in accordance with the accepted shop drawings.
 - a. Use concealed installation clips to ensure that splices and connections are tightly butted and properly aligned.
 - b. Secure clips to main structural extrusion components and not to snap-in or trim members.
 - c. Do not leave screws or other fasteners exposed to view when installation is complete.
- C. Doors: Doors shall be securely anchored in place to a straight, plumb and level condition, without distortion. Adjust doors to operate smoothly, without binding, with hardware functioning properly. Weatherstripping contact, and hardware movement, shall be field tested and final adjustment, and lubrication, made for proper operation and performance of doors.
 1. Door Hardware: Refer to Section 08 71 00 "Door Hardware."
 2. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.
 3. Wood Door Installation: Refer to Section 08 14 16 "Flush Wood Doors."
- D. Install glazing to comply with requirements of Section 08 80 00 "Glazing," unless otherwise indicated.
 1. At two- and three-side supported glass units, install copolymer strips, in one continuous length, at each glass to glass panel vertical joint.
- E. Install acrylic latex perimeter sealant to comply with requirements of Section 07 92 00 "Joint Sealants," unless otherwise indicated.

3.4 CLEANING

- A. Clean exposed surfaces of interior aluminum doors and frames promptly after installation, using cleaning methods recommended by interior aluminum door and frame manufacturer.
 1. Clean and maintain anodized aluminum according to AAMA 609.
- B. Wash glass on both faces not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer. Remove excess glazing and sealant compounds, dirt, and other substances.
- C. Immediately remove any deleterious material from surfaces of aluminum.

3.5 PROTECTION

- A. Institute protective measures required throughout the remainder of the construction period to ensure that interior aluminum doors and frames work will be without damage or deterioration at time of acceptance.

END OF SECTION 08 12 16

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes solid core flush wood doors.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of door required. Include factory-finishing specifications.
 - 1. Submit laboratory test report results of hinge loading, cycle/slam, stile edge screw withdrawals, and stile edge split resistance for fire rated doors.
- B. Shop Drawings: Submit shop drawings indicating location, size, thickness, and hand of each door; elevation of each kind of door; construction details not covered in the product data; location and extent of hardware blocking; clearances and undercuts, special beveling, and other pertinent data.
 - 1. Indicate dimensions and locations of mortises and holes for hardware of factory machined doors.
 - 2. Indicate dimensions and locations of cutouts.
 - 3. Indicate fire label requirements including fire rating time duration, maximum temperature rise requirements, and smoke label requirements.
 - 4. Indicate routing of electrical conduit and dimensions and locations of cutouts in wood doors to accept electric hardware devices.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

- B. Quality Standard: Comply with the applicable provisions and recommendations of AWI's "Architectural Woodwork Quality Standards Illustrated, 8th Edition, Version 2.0, Section 1300" where standards and specifications conflict the more stringent shall be required.
- C. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 - 1. Flush wood doors.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect wood doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in heavy duty ventilated poly bags.
- C. Handle wood doors with clean gloves. Lift and carry wood doors when moving them around the site, do not drag wood doors across one another.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until wet work , such as masonry, concrete, stone, tile, terrazzo, plastering, wallboard joint treatment, is complete and dried, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period. Do not expose doors to sudden changes in temperature such as forced heat used to dry out the site.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form, signed by manufacturer, Installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship for the life of the original installation of the door. A representative of the door manufacturer shall inspect the installed doors and shall note on the warranty that no provisions of the warranty have been nullified in the manufacture and/or installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.
- B. Manufacturers: Subject to compliance to requirements, provide products by one of the following:

1. Aspiro Series/Marshfield-Algoma, Masonite Architectural.
2. Heritage Collection; VT Industries.

2.2 DOOR CONSTRUCTION

A. General:

1. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain added formaldehyde.

B. Doors for Opaque Finish:

1. Grade: Custom.
2. Face Veneer: Minimum 3 mil thick medium-density overlay (MDO) or high density fiberboard (HDF).
3. Thickness: 1-3/4 inch (45-mm) unless otherwise indicated.
4. Materials:
 - a. Particleboard Core Material: Complying with ANSI A208.1, Grade 1-LD-1 or 1-LD-2.
 - b. Blocking: 5-1/2 inch (138-mm) wide minimum top-rail blocking at doors with closers and bottom rail blocking at doors with kickplates consisting of minimum 1/2 inch (13-mm) wide single length structural composite lumber (SCL) outer band and single length SCL inner band.
 - c. Vertical Edges: 1-3/8 inch (35-mm) wide minimum prior to fitting, 2 ply laminated wood construction consisting of a single piece hardwood outer band, without fingerjoints, and an inner band of SCL. Trim non-rated door width equally on both jamb edges.
 - d. Crossbanding: Minimum 1/16 inch (1.5-mm) thick, low density hardwood, composite, or high density fiberboard (HDF).
5. Construction: AWI Section 1300, PC-5 CE. Stiles, rails, and blocking bonded to core then entire unit abrasive planed before veneering. Crossbanding materials shall extend full width of door with grain running horizontally, tapeless spliced without voids or show through (telegraphing), and directly glued to core and blocking. Sand crossbanding before application of face veneer. Face veneer shall extend full height of door with grain running vertically, tapeless spliced without voids or show through (telegraphing), and directly glued to cross band. Glue lines between face veneer, crossbanding, and blocking shall be of a type to comply with the specified warranty using the hot plate process.

2.3 FABRICATION

- A. Fabricate doors in sizes indicated for Project-site fitting.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3 unless otherwise indicated to match existing frame hardware preparations. Comply with final hardware schedules, door frame Shop Drawings, AWI Section 1300-G-20, BHMA A156.115-W standards, and hardware templates.

1. Coordinate measurements of hardware mortises in frames to verify dimensions and alignment before factory machining.
 2. Locate lock and latchsets in doors to match existing strike locations on existing door frames; locate hinges in doors to match hinge locations on existing door frames.
- C. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required. Install light beads with fasteners spaced for opening size and fire rating indicated. Install wood bead moldings with finish nails and countersink without striking bead. Fill countersunk heads with putty matching wood bead color.

2.4 SHOP PRIMING

- A. Doors for Opaque Finish: Shop prime faces and edges of doors, including cutouts, with one coat of wood primer/sealer as standard with door manufacturer. Surfaces shall be clean and dry before priming. Apply primer/sealer uniformly without bare spots, runs, or sags.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hardware: Apply hardware to new doors in accordance with hardware manufacturer's instructions and Section 08 71 00 "Door Hardware." For particleboard core doors drill pilot holes of proper size for installing hinge screws. Adjust hardware items just prior to final inspection. Leave work in complete and proper operating condition.
1. Factory wrapping shall be maintained on new doors during construction period, and all hardware shall be installed by cutting the factory wrapping at the mounting location of the hardware item.
- B. General Door Installation Standards: Install doors in locations indicated to comply with manufacturer's written instructions, referenced quality standard, and as indicated. Where standards conflict the more stringent shall apply.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; and to contact stops uniformly, do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Field cutting, fitting or trimming, shall be executed in a workmanlike manner. Machine doors for hardware. Seal cut and trimmed surfaces immediately after fitting and machining using clear varnish or sealer.
1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch (6.4 mm) from bottom of door to top of threshold.

- D. Existing Wood Doors (Salvaged from Alteration Work): Install salvaged existing wood doors in locations indicated. Field cutting, fitting or trimming, if required, shall be executed in a workmanlike manner.
- E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- F. Field-Finished Doors: Refer to the following for finishing requirements:
 - 1. Section 09 91 23 "Interior Painting."

3.2 ADJUSTING AND PROTECTION

- A. Rehang or replace doors that do not swing or operate freely.
- B. Protection: Protect wood doors to ensure that the wood door work will be without damage or deterioration at the time of Substantial Completion.
 - 1. Refinish or replace wood doors damaged during installation. Replace any new wood doors that are warped, twisted, demonstrate core show through, are not true in plane, or cannot be refinished to the satisfaction of the Architect.

END OF SECTION 08 14 16

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes door hardware.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier and signed by either a qualified Architectural Hardware Consultant or an Door and Hardware Consultant (DHC), Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.
 - 1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 - a. Organize door hardware sets in same order as in the Door Hardware Schedule.
 - 2. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail conditions requiring custom extended lip strikes, or other special or custom conditions.
 - g. Door and frame sizes and materials.
- C. Keying Schedule: Submit keying schedule prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit maintenance data for each type of door hardware. Include final hardware and keying schedule.
- B. Warranties: Submit special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three projects over the last five years which were similar in material, design and extent to that indicated for the project and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - 1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
- C. Source Limitations: Obtain each type of door hardware from a single manufacturer, unless otherwise indicated.
- D. Regulatory Requirements: Comply with the following:
 - 1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)."
 - 2. NFPA 101: Comply with applicable provisions for means of egress doors.
 - 3. Electrified Door Hardware: Listed and classified by Underwriters Laboratories, Inc. or by a testing agency acceptable to authorities having jurisdiction, as suitable for the purpose indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.7 COORDINATION

- A. Coordinate layout and installation of recessed pivots and closers with floor construction.
- B. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

1.8 WARRANTY

- A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 - 1. Faulty operation of door hardware.
 - 2. Deterioration of metals, metal finishes, and other materials beyond normal use.
- B. Warranty Period for Manual Closers: Ten years from date of Substantial Completion.
- C. Warranty Period for Other Hardware: Two years from date of Substantial Completion.
- D. Warranty for Mortised Mechanical Lock and Latchsets: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets are keyed on the Drawings at each door opening, and the Door Hardware Schedule.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.

2. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

2.2 HINGES AND PIVOTS

A. Butt Hinge Products and Manufacturers:

1. Standard Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8112, one of the following:
 - a. BB1279; Hager Companies (HAG).
 - b. TA2714; McKinney Products Company (MCK).
 - c. FBB179; Stanley Commercial Hardware (STH) division of Dorma/Kaba .
 - d. 5BB1; Ives (IVS).

B. General Hinge and Pivot Characteristics: Where door jamb or trim projects to such an extent that the width of leaf specified will not allow the door to clear such frame or trim, furnish hinges and pivots with leaves of sufficient width to clear. Hinges and pivots shall be template hinges and in accordance with door and frame material requirements.

C. Butt Hinge and Offset Pivot Hinge Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to and including 60 inches (1524 mm).
2. Three Hinges: For doors with heights of greater than 60 inches (1524 mm) to and including 90 inches (2286 mm).
3. Four Hinges: For doors with heights greater than 90 inches (2286 mm) to and including 120 inches (3048 mm).
4. Provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

D. Butt Hinge Sizes: 4-1/2 inches (114 mm) h. x 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors up to and including 36 inches (914 mm) in width; 5 inches (127 mm) h. x 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors greater than 36 inches (914 mm) in width.

E. Hinge Characteristics: Full mortise type with square corners. All butt hinges are to have non-rising pins for interior hinges. Provide non-removable pins (NRP) and security studs (SH or SSF) at interior butt hinges for security doors where scheduled. Provide only steel bodied butt and pivot hinges at labeled doors. All butt hinges shall be furnished with button tips. Provide heavy weight, ball bearing, hinges at doors 40 inches (1016 mm) and greater in width.

F. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2.3 LOCKS AND LATCHES

- A. Mortise Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with BHMA A156.13 Series 1000, Grade 1, with throughbolt lever trim. Furnish mortise type, field reversible without disassembly, field multifunctional without opening lock cases, lock and latch sets with 1 or 2 piece anti-friction deadlocking stainless steel latchbolts having a minimum 3/4 inch (19 mm) throw, 2-3/4 inches (70 mm) backset, and UL listed for 3 hour doors. All lock and latch sets, to be furnished complete with heavy 0.109 inch (2.77 mm) (12 gage) wrought steel zinc dichromate or chrome plated case, trim, adjustable beveled square cornered armored fronts, cold forged steel or stainless steel hubs, and 6 pin cylinders. Conceal fastenings, washers and bushings. Provide wrought, or black plastic, box strikes for each lock and latch set. Provide brass, bronze or stainless steel strikes with curved lips of sufficient length to protect frames. Provide solid forged or cast levers with wrought roses. Where electro-mechanical locksets are scheduled provide transformers properly sized for conversion of power supply to the power characteristics of the electromechanical locksets. Where electro-mechanical locksets are scheduled provide request to exit (REX) monitoring feature.
1. Sargent 8200 Series, **LNJ Design x 130 KB Turnlever**; Sargent Manufacturing Company (SGT). Provide handed ANSI 4-7/8" curved lip strikes die punched to match bolts provided with latchset functions only, provide non-handed standard curve lip strikes 82-0110 for all other functions. Where electro-mechanical locksets are scheduled provide 8270 Series with trim matching mechanical locksets.
 2. Corbin-Russwin ML2000 Series, **Lustra LSA Design x 519F10 Thumbturn Lever**; Corbin Russwin Architectural Hardware (CR). Provide handed ANSI 4-7/8 inches curved lip strikes die punched to match bolts provided with latchset functions only 340L62 (RH) and 340L63 (LH), provide handed standard curve lip strikes for all other functions 340L60 (RH) and 340L61 (LH). Where electro-mechanical locksets are scheduled provide ML20900 ECL Series with trim matching mechanical locksets.
 3. Schlage L9000 Series, **03 Design x A Rose x 09-509 Turnlever**; Schlage Lock Company (SCH). Provide handed ANSI 4-7/8 inches curved lip strikes die punched to match bolts provided with latchset functions only (Part No. XL11-820/XL11-821), provide non-handed standard curve lip strikes for all other functions 10-072. Where electro-mechanical locksets are scheduled provide L9090EL Series with trim matching mechanical locksets.
 4. Best 45H Series, with **3 Lever Design x H Rose x Thumbturn**; Stanley Security Solutions. Provide handed ANSI 4-7/8" curved lip strikes die punched to match bolts provided with latchset functions only S5, provide handed standard curve lip strikes for all other functions S6. Where electro-mechanical locksets are scheduled provide 45HW Series with trim matching mechanical locksets.

2.4 CYLINDERS AND KEYING

- A. Cores for Bored Cylindrical Locksets: Provide key-in lever 6 pin cores for all bored cylindrical locksets, keyed into base building system, as manufactured by the bored lockset manufacturer.
- B. Cylinders: Full faced cylinders with square shouldered (not tapered) compression rings, 6 pin cylinders, standard threaded, keyed into building system, with cams to suit lock functions. Provide cylinders for installation into all locks.

1. 1100 Series Flexible Head Mortise Cylinder; Corbin Russwin Architectural Hardware (CR).
 2. Series 40 Adjustable Front Cylinder; Sargent Manufacturing Company (SGT).
 3. 30-001 full-faced mortised cylinder with 36-083 compression rings; Schlage Lock Company (SCH).
 4. 1E Series with Straight Rings ; Stanley Security Solutions.
- C. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the Owner. Supplier and Contractor shall meet with the Owner and obtain final instructions in writing. Provide two nickel silver keys for each lock, and six keys for each grandmaster and masterkey system. Provide two blank keys for each lock for the Owner's convenience in making additional keys.
1. Temporary Cylinders: Provide temporary cylinders in locks during construction and as may be necessary for security or as may be requested by the Owner. All temporary cylinders shall be individually keyed as required and subject to a single master key.

2.5 STRIKES

- A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article 'Locks and Latches.'

2.6 CLOSERS

- A. Overhead Concealed Closers, Butt and Offset Hung: Closers shall meet BHMA A156.4, Grade 1. Properly detail closers to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Provide manufacturer's standard cover plate finished to match exposed portions of butts or pivots provided.
1. 2010/2030; LCN Closers (LCN).
 2. RTS 88 Series, Offset Slide Arm; Dorma.
 3. PH 91 Series; Rixson-Firemark, Inc. (RIX).

2.7 STOPS AND HOLDERS

- A. Floor Stops: Cast half dome design with rubber bumper, finish as scheduled. Provide manufacturer's standard riser heights as required for carpeted areas in conjunction with the floor bumpers scheduled. Unless otherwise scheduled, provide floor stops at each door leaf where partition construction does not allow the door to swing greater than 90 degrees.
1. For Doors with Standard 3/8 inch (9.5 mm) Clearance: Comply with BHMA 156.16 Type L12161, L02141 or L12141.
 - a. 3310X; Door Controls International (DCI).
 - b. FS436; Ives (IVS).

- c. 1210; Trimco Hardware (TBM).
- d. 441; Rockwood Manufacturing Company (RM).

- B. Silencers for Aluminum Door Frames: Refer to Section 08 12 16 "Interior Aluminum Frames."

2.8 FABRICATION

- A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturer's labels, names, or designs.
- B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use throughbolts for renovation work only where existing door blocking and reinforcements are unknown.
 - 1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed throughbolting of hardware items. Doors installed with exposed throughbolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

2.9 FINISHES

- A. Standard: Comply with BHMA A156.18.
- B. Appearance of Finished Work: Finishes of the same designation, that come from two or more sources, shall match when the items are viewed at arm's length and approximately 24 inches (610 mm) apart. Unless otherwise scheduled, match each hardware item in a single hardware set with the scheduled latch or lock set finish. Painting of BHMA 600 (USP) surfaces is required and is specified under Section 09 91 23 "Interior Painting."
- C. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:
 - 1. BHMA 626 (US26D): Satin chromium plated.
 - 2. BHMA 630 (US32D): Satin stainless steel.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Hardware for fire door assemblies shall be installed in accordance with NFPA 80. Hardware for smoke and draft control door assemblies shall be installed in accordance with NFPA 105. Install hardware for non-labeled and non-smoke and draft door assemblies in accordance with BHMA A156.115 for steel doors and frames, BHMA A156.115-W series for wood doors, and hardware manufacturer's installation instructions for doors and frames fabricated from other than steel or wood.
 - 1. All modifications to fire doors and frame for electric and mortised hardware shall be made by the respective door and frame manufacturers.

3.2 INSTALLATION

- A. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the Drawings or required to comply with governing regulations:
 - 1. Locks and Latches: 38 inches (956 mm) to center of lever from finish floor.
 - 2. Butt Hinges: 10 inches (254 mm) to bottom of lowest hinge from finish floor; 5 inches (127 mm) to top of upper hinge from top of door; space intermediate hinges equally between lower and upper hinges.
- B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. All wall stops shall be installed with reinforced blocking in wallboard construction. Drywall anchors are not an acceptable means of reinforcement/blocking. Provide intermediate steel plates or channel reinforcement backing at wall stops mounted in wallboard construction.
- C. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of the Owner's representative, permanent key all lock cylinders. Record and file all keys in the key control system, and turn system over to Owner for sole possession and control.

3.3 ADJUSTING

- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended. Adjust door control devices to compensate for building

stack pressures, final operation of forced air mechanical equipment and to comply with referenced accessibility requirements.

1. Coordinate with electrical installation for interface and connection with life safety and security systems.

3.4 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

3.5 DOOR HARDWARE SCHEDULE - SCHEDULED DOORS

- A. Provide hardware as indicated on the Drawings.

END OF SECTION 08 71 00

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Interior borrowed lites.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each glass product and glazing material indicated.
- B. Samples: Label samples to indicate product, characteristics, and locations in the Work. Furnish samples of the following:
1. Except for clear glass, submit samples of each glass type specified, in the form of 12 inch (300 mm) square Samples.
 2. Submit samples of each glass type specified where production run varies and defects are expected.
 3. Submit samples of applied film adhered to clear glass, in the form of 12 inch (300 mm) square samples.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Manufacturer Certificates: Submit a letter from glass manufacturer certifying that he has reviewed the glazing details proposed for the Project, including the use of gaskets and sealants, and that each product to be furnished is recommended for the application shown.
- C. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
1. Material Certificates: Submit glass treatment certificates signed by manufacturer of the heat-soaked glass products certifying that products furnished comply with requirements.

- D. Warranties: Submit special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Safety Glass: Comply with the applicable requirements of the laws, codes, ordinances and regulations of Federal and Municipal authorities having jurisdiction; wherever requirements conflict, the more stringent shall be required. Obtain approvals from all such authorities. As a minimum, provide Category II complying with testing requirements in 16 CFR 1201 (Consumer Product Safety Commission "Safety Standard for Architectural Glazing Materials," as published in the Code of Federal Regulations) and ANSI Z97.1 for Category A performance.
- C. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
1. GANA Publications: GANA's "Glazing Manual" and "Laminated Glass Design Guide."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions and as needed to prevent damage to glass and glazing materials.

1.6 WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Written warranty, made out to Owner and signed by laminated-glass manufacturer agreeing to furnish replacements for laminated-glass units that develop edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those specified within the warranty period indicated below. Upon notification of such deterioration within the warranty period, furnish replacement glass units for those glass units having edge separation, delamination, and blemishes at the convenience of the Owner.
1. Warranty Period: Five years from date of Substantial Completion.
- B. Heat Soaked Tempered Glass Special Warranty: Executed by the Contractor, manufacturer and the glass installer agreeing to replace glass units that spontaneously break as a result of Nickel Sulfide (NiS) inclusions within the specified warranty period without material or labor charges to the Owner.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Refer to Finish Schedule on the Drawings for the extent of glass types and locations. Confirm the levels of heat treatment required for each glass type scheduled as contained in Articles "Performance Requirements" and "Quality Assurance."

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide and install glazing systems capable of withstanding impact loads without failure of any kind, including loss or breakage of glass, failure of seal or gaskets, exudation of glazing sealants, and excessive deterioration of glazing materials.
- B. Glass Design: Glass thicknesses and heat treatments indicated are minimum requirements. Glazing details shown are for convenience of detailing only and are to be confirmed by the Contractor relative to cited standards and final framing details.
 - 1. At interior aluminum door and frame openings, provide glass thickness such that the center of glass deflection at a full lateral pressure of 5 psf (239 Pa) in a direction normal to the plane of the wall shall not exceed 1/2 inch (13 mm). Confirm glass thicknesses and heat treatments, as required to meet the performance requirements.

2.3 MATERIALS - GENERAL

2.4 PRIMARY FLOAT GLASS

- A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), Quality q3 (glazing select); Class 1, clear. as indicated in Finish Schedule on the Drawings.

2.5 HEAT-TREATED FLOAT GLASS

- A. General: Heat-treat glass where required to meet safety glazing requirements.
- B. Sizes and Cutting: Prior to heat treatment, cut glass to required sizes as determined by accurate measurement of openings to be glazed, making allowance for required edge clearances. Cut and process edges in accordance with glass manufacturer's recommendations. Do not cut or treat edges in the field. Make all internal cuts for hardware, access, or glass-mounted trim or accessories before heat treating.
- C. Fully Tempered Glass: Provide glass complying with ASTM C 1048, Kind FT, and meeting the requirements of ANSI Z97.1 for Category A performance and 16 CFR 1201 for Category II performance. Surface compression shall be equal to or greater than 10,000 psi (69 MPa). After tempering, heat-soak 100 percent of all fabricated glass units to European Union Standard

EN14179 to reduce the potential for inclusion related glass breakage. Statistical heat soaking shall not be permitted.

2.6 LAMINATED GLASS

- A. Laminated Glass: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified, including those in the Glass Schedule.
- B. Interlayer: Minimum 0.060 inch (1.5-mm) thick polyvinyl butyral (PVB) sheet or ionoplast sheet interlayer material with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.
 - 1. All interlayer furnished for the Project shall have been manufactured by one of the following:
 - a. Eastman Chemical Company.
 - b. Kuraray.
- C. Laminating Process: Prior to laminating, cut glass to required sizes and profiles as determined by accurate measurement of openings to be glazed, making allowance for required edge clearances. Cut and process edges in accordance with glass manufacturer's recommendations. Do not cut or treat edges in the field. Fabricate laminated glass to produce glass free of scuff vinyl markings, handprints, tag residue, and foreign substances such as lint, hair, vinyl shavings in the central glass area and the outer 20 percent area when viewed from a distance of 39 inches (1 meter) and 10 feet (3048 mm), respectively. Handprints, tag residue, scuff vinyl markings and foreign substances must be separated by more than 12 inches (300 mm) if not detectable at less than the viewing distances. Delaminations, blow ins, short interlayers, and air or gas pockets shall not be permitted in the central glass area. In the outer 20 percent area, delamination will not be permitted; blow-ins, air or gas pockets, and short interlayers shall be limited to a maximum dimension of 3/32 inch (2.38-mm) in diameter, 3/32 inch (2.38-mm) in diameter, and 1/16 inch (1.5-mm) long, respectively. Laminate units as follows:
 - 1. Laminate lites with interlayer in autoclave with heat plus pressure.

2.7 GLAZING SEALANTS

- A. Gasket, Blocking, and Spacer Wet Glazing Materials: Silicone, compatible with and adherent to each material it will be in contact with, as recommended by the manufacturer to fulfill performance requirements.
- B. Butt Glazing Sealants: Refer to Section 07 92 00 "Joint Sealants" for butt glazing sealant.

2.8 GLAZING GASKETS

- A. Dense Compression Gaskets: Continuous extruded EPDM with cross-sectional profile, physical properties, and tolerances as recommended by the glass manufacturer, and as required

to comply with the performance requirements specified and shown, all in compliance with the applicable provisions of ASTM C 864, Option II.

2.9 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces and wet glazing materials contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: EPDM complying with ASTM C 864 (Option II), blocks, 85 +/- 5 Shore A durometer hardness, 1/16 inch (1.5 mm) less than the channel width, and length based on the face area the glass unit to be supported in accordance with GANA standards and glass manufacturer recommendations but not less than 4 inches (101.6 mm).
- D. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

2.10 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing standard, to comply with system performance requirements.
 - 1. Edge and Surface Conditions: Comply with the recommendations of AAMA "Structural Properties of Glass" for "clean-cut" edges, except comply with manufacturer's recommendations when they are at variance therewith.
 - 2. Exposed Glass Edges and Surface Condition: All edges shall be flat with an arrissed edge profile (small bevel of uniform width not exceeding 1/16 inch (1.5 mm) at an angle of approximately 45 degrees to the surface of the glass) with a polished (surface is reflective in appearance similar to the major surface of the glass) surface.
- B. Cutting: Do not nip glass edges. Edges may be wheel cut or sawed and seamed at manufacturer's option. For glass to be cut at site, provide glass 2 inches (50.8 mm) larger than required in both dimensions, so as to facilitate cutting of clean cut edges without the necessity of seaming or nipping. Do not cut, seam, nip or abrade heat-treated glass.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine glass framing, with glazier and glass framing erector present, for compliance with the following:

1. Compliance with the specified manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Minimum required face or edge clearances.
 3. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing stops, glazing channels, and rabbets which will be in contact with the glazing materials immediately before glazing. Remove coatings which might fail in adhesion or interfere with bond of sealants. Comply with manufacturer's instructions for final wiping of surfaces immediately before application of primers. Wipe metal surfaces with IPA (isopropyl alcohol).
1. Prime surfaces to receive glazing compounds. When priming, comply with wet glazing manufacturer's recommendations.
- B. Inspect each glass unit immediately before installation. Do not install any units which are improperly sized or have damaged edges, scratches or abrasion, or other evidence of damage. Remove labels from glass immediately after installation.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
1. All glass units shall be installed in accordance with the glass manufacturer's recommendations.
 - a. Butt Glazed Interior Monolithic Glass Units: Mask the surfaces on both sides of the joints to be glazed. Provide wood dowel, with a diameter of at least three times that of the joint width, wrapped in polyethylene tape, and firmly taped to interior face of glass unit to be glazed to act as a backup during glazing operation. Place glazing sealant and tool face of sealant slightly concave using extreme care not to chip or otherwise abrade corners of glass. Allow sealant to fully cure before removing dowel.
- B. Glazing channel dimensions as indicated on Drawings. Provide necessary bite on glass, minimum edge and face clearances, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

- D. Apply primers to surfaces indicated to receive glazing materials.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless more stringent requirements are recommended by glass manufacturer.
 - 1. For Glass Units Less Than 72 Inches (1830 mm): Locate setting blocks at sill one-quarter of the width in from each end of the glass unless otherwise recommended by the glass manufacturer.
 - 2. For Glass Units 72 Inches (1830 mm) or Greater: Locate setting blocks at sill one-eighth of the width in from each end of the glass, but not less than 6 inches (150 mm), unless otherwise recommended by the glass manufacturer.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Set glass lites with uniform pattern, draw, bow, and similar characteristics, producing the greatest possible degree of uniformity in appearance on the entire wall elevation.
 - 1. Set glass units with void between edge of units and glazing channel.
- H. Where wedge-shaped gaskets are driven into one side of channel to pressurize gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- I. Miter cut gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away.

3.4 PROTECTION AND CLEANING

- A. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way and from any source, including natural causes, accidents, and vandalism.
- B. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass and film manufacturer.

END OF SECTION 08 80 00

SECTION 09 22 16 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes non-structural metal framing assemblies.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each product indicated.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product types in this Section:
 - a. Steel Suspended Ceiling Framing: Carrying and Furring Channels.
 - b. Steel Partition and Soffit Framing: Double-Runner System.
 - c. Steel Partition and Soffit Framing: Deflection Track.
 - d. Steel Partition and Soffit Framing: Firestop Track.
 - e. Steel Partition and Soffit Framing: Cold-Rolled Channel Bridging.
 - f. Steel Partition and Soffit Framing: Hat-Shaped Rigid Furring Channels.
 - g. Steel Partition and Soffit Framing: Resilient Furring Channels.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For non-structural metal framing assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance-Rated Assemblies: Indicated by design designations from UL's "Fire Resistance Directory."
- B. Sound Transmission Characteristics: For non-structural metal framing faced with gypsum wallboard materials and having STC ratings, provide materials and construction identical to

those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."
- C. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 1. Steel Suspended Ceiling Framing: Grid Suspension System for Interior Ceilings.
 2. Steel Suspended Ceiling Framing: Studs and Runners.
 3. Wood Blocking and Concealed Plywood.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 FIELD CONDITIONS

- A. Comply with ASTM C 754 requirements or wallboard material manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. General: For fire rated assemblies, provide materials, including accessories and fasteners produced by one manufacturer, or, when products of more than one manufacturer are used in a rated system, they shall be acceptable to authorities having jurisdiction.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.2 PERFORMANCE REQUIREMENTS

- A. Gypsum Board Assembly Deflections:
 1. Typical Walls: Wall assemblies shall be constructed for deflection not to exceed 1/240 of the wall height when subjected to a positive and negative pressure of 5 psf (239 Pa).

2. Ceilings, bulkheads, soffits, ceiling transitions, ledges, and coves shall be constructed for a deflection not to exceed $1/360$ of the distance between supports.

2.3 STEEL SUSPENDED CEILING FRAMING

- A. Components, General: Provide steel framing members sized and spaced as indicated but not less than that required to comply with ASTM C 754 under the maximum deflection conditions specified under Article 'Assembly Performance Requirements.'
- B. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625 inch (1.59 mm) diameter wire, or double strand of 0.0475 inch (1.21 mm) diameter wire.
- C. Hanger Attachments to Overhead Decks: Suitable for application indicated, fabricated from corrosion-resistant materials, with eyepins, clips or other devices for attaching hangers and capable of sustaining, without failure, a load equal to 10 times that imposed by the complete ceiling system.
- D. Hangers: As follows:
 1. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162 inch (4.12 mm) diameter.
 2. Flat Hangers: Commercial-steel sheet, ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized.
 - a. Size: 1 by 3/16 inch (25.4 by 4.76 mm) by length indicated.
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base metal thickness of 0.0538 inch (1.37 mm), a minimum 1/2 inch (12.7 mm) wide flange, with manufacturer's standard corrosion-resistant zinc coating.
- F. Furring Channels (Furring Members): Commercial-steel sheet with ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized zinc coating. No equivalent coatings allowed.
 1. Cold Rolled Channels: 0.0538 inch (1.37 mm) bare steel thickness, with minimum 1/2 inch (12.7 mm) wide flange, 3/4 inch (19.1 mm) deep.
 2. Steel Studs: ASTM C 645, 0.0312 inch (0.79 mm) minimum base metal thickness and minimum depth as required to suit deflection criteria.
 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep.
 - a. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
 4. Resilient Furring Channels: 1/2 inch (12.7 mm) deep members designed to reduce sound transmission.

2.4 STEEL PARTITION AND SOFFIT FRAMING

- A. General: Provide steel framing members sized and spaced as indicated but not less than that required to comply with ASTM C 754 under the maximum deflection conditions specified under Article 'Assembly Performance Requirements.'
1. In areas where top of partitions are dependent on ceiling system for lateral support, coordinate design and installation to comply with the above deflection limitation.
 2. Steel Sheet Components: Complying with ASTM C 645 requirements for metal and with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating. No equivalent coatings (EQ) allowed.
- B. Steel Studs and Runners: ASTM C 645, in minimum depth indicated in partition type details; one of the following:
1. Allsteel & Gypsum Products, Inc.
 2. CEMCO.
 3. Clark Dietrich.
 4. Consolidated Fabricators, Corporation.
 5. Craco Manufacturing, Inc.
 6. Custom Stud, Inc.
 7. Marino\WARE.
 8. Phillips Manufacturing Company.
 9. Quail Run Building Materials, Inc.
 10. SCAFCO Corporation.
 11. Telling Industries.
 12. The Steel Network.
 13. United Metal Products.
 14. Minimum Base Metal Thickness:
 - a. Typical: As required to comply with deflection criteria but not less than 0.0179 inch (0.45-mm).
 - b. Partitions Supporting Wall Mounted Casework: 0.053 inch (1.3 mm) minimum thickness.
 15. Depth: As indicated.
- C. Double-Runner System: ASTM C 645 top runners, inside runner with custom fabricated flanges with depths sized to accommodate roof and floor deck live and dead load deflections but not less than 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer runner sized to friction fit inside runner.
- D. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CEMCO; CST and SLP-TRK brand Slotted Slip Tracks, City of Industry, CA.

- b. ClarkDietrich Building Systems; Max Trak (SLT) Slotted Deflection Track, West Chester, OH.
 - c. Metal-Lite, Inc.; Slotted Track.
 - d. The Steel Network, Inc; VertiClip SLD Series or VertiTrack VTD Series.
- E. Flat Strap and Backing Plate: 36 inch (914 mm) wide by 6 inch (150 mm) high steel sheet for blocking and bracing required for the attachment of surface mounted items and accessories indicated. Locate to span a minimum of 2 studs.
 - 1. Minimum Base Metal Thickness: 0.0312 inch (0.79 mm).
- F. Cold-Rolled Channel Bridging: For channel bridging for fixture attachment or lateral bracing provide 0.0538 inch (1.37 mm) bare steel thickness, with minimum 1/2 inch (12.7 mm) wide flange:
 - 1. Depth: 1-1/2 inches (38.1 mm).
 - 2. Clip Angle: 1-1/2 by 1-1/2 inch (38.1 by 38.1 mm), 0.068 inch (1.73 mm) thick, galvanized steel.
- G. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
 - 1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
 - 2. Depth: 7/8 inch (22.2 mm).
- H. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members securely to substrates involved; complying with the recommendations of the gypsum board manufacturers for applications indicated.

2.5 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining, latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90. One of the following:
 - 1. SHEETROCK Acoustical Sealant; U.S. Gypsum.
 - 2. AC-20 FTR; Pecora.
- C. Isolation Strip at Exterior Walls: Adhesive-backed, closed-cell, compressible, non-extruding, sound transmission reducing, vinyl foam tape strips with approximately 10 Shore 00 hardness that allow fastener penetration without foam displacement, 0.90 inch (23 mm) thick, in width 1/2 inch (12.7 mm) less than window mullion width.
 - 1. Norseal V820 Series, Norseal V8229 Tape, Saint Gobain; black color.

- D. Wood Blocking and Plywood Concealed in Partition Construction: Fire retardant treated, refer to Section 06 10 53 "Miscellaneous Rough Carpentry."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which non-structural metal framing attaches or abuts, installed door frames and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination with Sprayed Fire-Resistive Materials:
1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed-on fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (600 mm) on center.
 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of the non-structural metal framing and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

3.3 INSTALLING STEEL FRAMING, GENERAL

- A. General: Install steel framing to comply with ASTM C 754, ASTM C 840 and the gypsum board manufacturer's recommendations, where standards conflict the more stringent shall apply.
- B. Install supplementary framing, blocking, backerplates and bracing at locations in gypsum board assemblies which are indicated to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with gypsum board manufacturer's written recommendations or, if none available, with United States Gypsum's "Gypsum Construction Handbook."
- C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement.
1. Isolate ceiling assemblies where they abut or are penetrated by building structure.
 2. Isolate partition framing and wall furring where it abuts structure, except at floor. Install slip-type joints at head of assemblies that avoid axial loading of assembly and laterally support assembly.
 - a. Use deep-leg deflection track where indicated.

- b. Use proprietary firestop track where indicated.

3.4 INSTALLING STEEL SUSPENDED CEILING FRAMING

- A. Suspended Ceiling Framing:
 - 1. Suspend ceiling hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
 - 3. Attach hangers to structural members. Do not support ceilings from or attach hangers to permanent metal forms, steel deck tabs, steel roof decks, ducts, pipes, or conduit.
 - 4. Secure wire hangers by looping and wire-tying, to eyescrews, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail.
 - 5. Secure rod and flat hangers to structure, including intermediate framing members, by attaching to 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.
- B. Installation Tolerances: Install steel framing components for suspended ceilings so members for panel attachment are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member and transversely between parallel members.
- C. Wire-tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.
- D. Install suspended steel framing components in sizes and spacings indicated, but not less than that required by the referenced steel framing and installation standards unless more stringent spacings are recommended by the gypsum board manufacturer.
- E. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

3.5 INSTALLING STEEL PARTITION AND SOFFIT FRAMING

- A. Install continuous runners (tracks) sized to match studs at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction. Secure runners to substrates with fasteners spaced a maximum of 24 inches (600 mm) on center unless closer spacing is recommended by the framing manufacturer for the floor and ceiling construction involved. Provide fasteners at all corners and ends of runner tracks.

1. Where studs are installed directly against exterior walls, install foam gasket isolation strip between studs and wall.
 2. Install two beads of sealant below floor tracks for acoustical and dust control.
- B. Installation Tolerance: Install each steel framing and furring member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings and at partial height partitions. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
1. Cut studs 1/2 inch (13 mm) short of full height to provide perimeter relief.
 2. For fire-resistance-rated and STC-rated partitions that extend to the underside of floor/roof slabs and decks or other continuous solid-structure surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed to support gypsum board closures and to make partitions continuous from floor to underside of solid structure.
 3. Terminate partition framing at suspended ceilings where indicated.
 4. Terminate partial height partition framing as indicated.
- D. Install steel studs and furring in sizes and at spacing indicated but not less than that required by the referenced steel framing installation standard to comply with maximum deflection and minimum loading requirements specified, unless more stringent requirements are recommended by the gypsum board manufacturer:
1. Space studs 16 inches (400 mm) on center, unless otherwise indicated.
- E. Install steel studs so flanges point in the same direction and leading edge or end of each panel can be attached to open (unsupported) edges of stud flanges first.
- F. Install backerplates for support of wall mounted items.
- G. Frame door openings to comply with GA-600 and with gypsum board manufacturer's applicable written recommendations, unless otherwise indicated. Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
1. Install two studs at each jamb, unless otherwise indicated. Install one additional stud no more than 6 inches (150 mm) from jamb studs at single doors greater than 48 inches (1200 mm) and at all pairs of doors.
 2. Install cripple studs at head adjacent to each jamb stud. Provide runner track and typical studs above door openings with studs spaced not more than 24 inches (600 mm) on center.
 3. Where indicated, frame openings to receive interior aluminum frames and overhead concealed closers as follows:
 - a. By inverting the head track, and boxing the header above the closer body. Refer to special template ST-561 for LCN 2010/2030 overhead concealed closers.

- b. By forming a box header with back-to-back studs. Refer to template no. 08279232 for Dorma RTS 88 Series overhead concealed closers.
 - c. By complying with closer manufacturer's template requirements for other overhead concealed closers.
- 4. At all welded frames with fixed anchor clips secure stud reinforcing to jamb anchor clips with not less than two self tapping screws per clip.
- 5. Extend jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- H. 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.
- I. Isolation Strip Attachment: Where partitions abut exterior wall window mullions, and partition filler panels are not indicated, adhesively attach isolation strips to window mullions. Center isolation strips on mullion to form a continuous, sound resistant and lightproof, recessed joint seal for the entire length of the interface between the partition studs and trim members and the vertical window mullions.

3.6 CLEANING AND PROTECTION

- A. Clean floors of all non-structural metal framing debris and leave broom clean. Excess material, scaffolding, tools and other equipment are to be removed upon completion of the Work.
- B. Provide final protection and maintain conditions that ensure non-structural metal framing work remains without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 22 16

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes interior gypsum board.

1.2 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product types in this Section:
 - a. Flexible Gypsum Board for Curved Surfaces.
 - b. Sag-Resistant Gypsum Ceiling Board.
 - c. Impact-Resistant Gypsum Board.
 - d. Moisture and Mold-Resistant Gypsum Board.
 - e. Acoustically-Enhanced Gypsum Board.
 - f. Tile Backing Panels.
 - g. Cementitious Backer Units.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.3 QUALITY ASSURANCE

- A. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
- B. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.
- C. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 - 1. Joint Compound for Interior Gypsum Board.
 - 2. Gypsum Board: Type X, 5/8-inch.
 - 3. Sound attenuation blankets.

- D. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Install mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 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.

1.4 DELIVERY, STORAGE, AND HANDLING

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

1.5 FIELD CONDITIONS

- A. Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 1. Fire-Resistance-Rated Assemblies: Indicated by design designations from UL's "Fire Resistance Directory."
- B. Sound Transmission Characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to

ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1. STC-Rated Assemblies: Indicated by design designations from GA-600, "Fire Resistance Design Manual."

2.2 MATERIALS, GENERAL

- A. General: For fire rated assemblies, provide materials, including accessories and fasteners produced by one manufacturer, or, when products of more than one manufacturer are used in a rated system, they shall be acceptable to authorities having jurisdiction.

2.3 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. American Gypsum.
 2. CertainTeed Corp.
 3. Georgia-Pacific Gypsum LLC.
 4. Continental Building Products/Lafarge North America Inc.
 5. National Gypsum Company.
 6. USG Corporation.
- B. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- C. Gypsum Board: ASTM C 1396/C 1396M.
 1. Type X:
 - a. Thickness: 5/8 inch (15.9 mm).
 - b. Long Edges: Tapered.
 - c. Location: Vertical surfaces, where required for fire-resistance-rated assembly, and where indicated on Drawings.
- D. Gypsum Ceiling Board: ASTM C 1396/C 1396M, manufactured to have more sag-resistance than regular-type gypsum board.
 1. Thickness: 1/2 inch (12.7 mm).
 2. Long Edges: Tapered.
 3. Location: Interior ceiling surfaces.

2.4 TRIM ACCESSORIES

- A. Interior Steel Trim Accessories: ASTM C 1047; formed metal sheet steel zinc coated by hot-dipped process. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047.

1. Cornerbead: Use at outside corners.
 2. LC-Bead with both face and back flanges to receive joint compound; use at exposed panel edges.
 3. U-Bead with face and back flanges; face flange formed to be left without application of joint compound: Use where indicated.
 4. Expansion (Control) Joint: One-piece control joint formed with V-shaped slot, with removable strip covering slot opening. Use where indicated.
- B. Aluminum Trim Accessories: Extruded aluminum trim with 1/4 inch (6.35 mm) diameter holes in fins for attachment to gypsum board or studs; longest lengths available in profiles indicated; primed for finish painting; sized for scheduled gypsum board thickness shown.

2.5 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of the products and joint treatment materials for each application indicated.
- B. Joint Tape:
1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, flanges of trim accessories, and fasteners, use setting-type taping compound.
 3. Second Coat: For filling over tape, beads and fasteners. Use setting-type, sandable topping compound.
 4. Third Coat: For finishing over tape, beads and fasteners. Use drying-type, all-purpose compound.
 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from slag wool, or rock wool.
1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 2. Product: Subject to compliance with requirements, provide one of the following:

- a. Rockwool AFB; Rockwool.
 - b. SAFB Blankets; Thermafiber LLC.
- D. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed door frames and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840, GA-216, and the gypsum board manufacturer's recommendations, where standards conflict, the more stringent shall apply. Install specialty gypsum board as specified below except where manufacturer's instructions conflict; follow manufacturer's instructions for specialty performance board to maintain warranty coverage.
- B. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.
- C. Single-Layer Application:
- 1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints or avoid them entirely.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
 - b. At high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
- D. Multilayer Application:
- 1. 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.
2. On Ceilings: Apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply base layers in same sequence. Apply base layers at right angles to framing members and offset face layer joints one framing member, 16 inches (406 mm) minimum, from parallel base joints, unless otherwise indicated or required by fire-resistance-rated assembly.
- E. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- F. Multilayer Fastening Methods: Fasten base layers and face layers separately to supports with screws.
- G. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- H. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- I. 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.
- J. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- K. Attach gypsum panels to framing provided at openings and cutouts.
- L. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
1. Fit gypsum panels around ducts, pipes, and conduits.
 2. Where partitions intersect open exterior and interior wall kickers, and other structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by the wall kickers and other structural members; allow 1/4 to 3/8 inch (6.4 to 9.5 mm) wide joints to install sealant.
 3. Where chase walls are shown, provide bracing between parallel rows of studs. Unless otherwise shown, provide gypsum board braces no less than 1/2 inch (12.7 mm) thick by 12 inches (300 mm) wide and cut to width of chase. Locate at quarter points in wall height between each pair of parallel studs. Fasten with not less than 3 screws at each stud.
- M. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors. Provide 1/4 to 1/2 inch (6.4 to 12.7 mm) wide spaces at these locations, and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

- N. STC-Rated Assemblies: Seal construction at perimeters, behind control and expansion joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- O. Cut openings in gypsum board for electrical outlets, piping and other penetrations. Maintain close tolerances so that edges will be covered by plates and escutcheons. Cut both face and back paper. Do not install electrical outlets back to back on opposing sides of partitions.
- P. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
 - 1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.
 - 2. Space fasteners in panels that are tile substrates a maximum of 8 inches (203.2 mm) o.c.
 - 3. Install fasteners not less than 3/8 inch (9.5 mm) from ends or edges of gypsum board sheets, spacing fasteners opposite each other on adjacent ends or edges.
 - 4. Begin fastening from center of gypsum board and proceed toward edges and corners.
 - 5. Apply pressure on surface of gypsum board adjacent to fasteners being driven to ensure that gypsum board will be secured tightly to supporting members.
 - a. Drive fastener with shank perpendicular to face of board.
 - b. Drive screws with a power screwdriver as recommended by gypsum board manufacturer. Set heads of screws slightly below surface of paper without cutting paper.

3.3 INSTALLING TRIM ACCESSORIES

- A. General: Fasten trim accessories according to manufacturer's written instructions for type, length, and spacing of fasteners.
- B. Install corner beads at external corners.
- C. Install interior trim accessories where edge of gypsum panels would otherwise be exposed or semiexposed. Provide interior trim accessories with face flange formed to receive joint compound.
- D. Install aluminum trim accessories where indicated.
- E. Install control joints in locations indicated and where directed by the Architect for visual effect, or if not indicated or directed by the Architect, provide control joints in accordance with ASTM C 840 which is as follows:
 - 1. Where a partition, wall or ceiling traverses a construction joint (expansion, seismic, or building control element) in the base building structure.
 - 2. Where a wall or a partition runs in an uninterrupted straight plane exceeding 30 linear feet (9,100 mm).

3. Control joints in interior ceilings with perimeter relief shall be installed so that linear dimensions between control joints do not exceed 50 feet (15,000 mm) and total area between control joints does not exceed 2500 square feet (230 sq m).
4. Control joints in interior ceilings without perimeter relief shall be installed so that linear dimensions between control joints do not exceed 30 linear feet (9,100 mm) and total area between control joints does not exceed 900 square feet (84 sq m).
5. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.

3.4 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Apply joint treatment at gypsum board joints, flanges of interior trim and aluminum trim accessories, interior angles, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated. Produce surfaces free of tool marks and ridges ready for decoration of type indicated. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:
 1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile and where indicated.
 3. Level 3: Typically not used.
 4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated.
 5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface where gypsum board is indicated to receive wall coverings, semi-gloss and high gloss paints, and Italian plaster.

3.5 CLEANING AND PROTECTION

- A. Clean floors of all gypsum board debris and leave broom clean. Excess material, scaffolding, tools and other equipment are to be removed upon completion of the Work.

- B. Provide final protection and maintain conditions that ensure gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 29 00

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.

1.2 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of product indicated.
- B. Samples: Submit samples for each acoustical panel, for each exposed suspension system member, for each exposed molding and trim, and for each color and texture required, prepared on Samples of size indicated below. Samples shall show the full range of color and texture variations to be expected in the final installation.
 - 1. Acoustical Panel: Set of 6-inch (150-mm) square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch (300-mm) long Samples of each type, finish, and color.

1.4 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Carrying channels.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish and store at the site where directed, 2 percent of each type of acoustic panel installed in the Project, packaged in manufacturer's unopened cartons and identified as to contents.

1.6 QUALITY ASSURANCE

- A. **Installer Qualifications:** Engage an Installer, with not less than 5 years experience in the installation of materials specified, and who has completed acoustical panel ceilings similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
- B. **Source Limitations:** Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.
- C. **Performance Requirements:** In areas where gypsum wallboard partitions are dependent on the ceiling suspension system for lateral support, design and install suspension system components to sustain the imposed load from the completed partition system including a minimum inward and outward pressure of 5 psf (239 Pa) normal to the plane of the wall.
- D. **Environmental Product Declarations:** For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 - 1. Metal Suspension Systems.
 - 2. Metal Edge Moldings and Trim.
 - 3. Acoustical Ceiling Panels.
- E. **Sample Installations:** Before installing acoustical panel ceilings, install sample installations for each type of acoustical panel ceiling installation required to demonstrate aesthetic effects and qualities of materials and execution. The sample installation shall be complete in every way and include all attachments to structure, hangers, grids, ceiling panels, moldings and column trims, light fixtures, air outlets and inlets, speakers, sprinklers heads, heat and smoke detectors. Install sample installations to comply with the following requirements, using materials indicated for the completed Work:
 - 1. **Size and Location:** Provide 250 square foot (23.23 sq. m) sample installations in locations as directed by Architect.
 - 2. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 3. Obtain Architect's approval of sample installations before starting work.
 - 4. Maintain sample installations during construction in an undisturbed condition as a standard for judging the completed Work.
- F. Approved sample installations may become part of the completed Work if undamaged at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until wet work (painting, drywall, interior tilework, and concrete leveling) in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 METAL SUSPENSION SYSTEMS

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- B. Overhead Deck Hanger Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
 - 1. Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with eyepins, clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling assembly.
- C. Hangers: As follows:
 - 1. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - a. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 12 gage (0.106-inch) (2.69-mm) diameter wire.
 - 2. Flat Hangers: Commercial-sheet steel, ASTM A 653/A 653M, G60, hot dip galvanized.
 - a. Size: 1 by 3/16 inch (25.4 by 9.5 mm) by length indicated.

- D. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners; provide in longest standard single piece lengths.
1. Shadow (Stepped Moldings): Stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member. Form from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
 2. F Moldings: Provide F moldings at ceiling breaks, soffits, bulkheads, and changes in elevation other than vertical walls and columns to the extent indicated. Form from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
 3. Metal Perimeter Channel Trim: Shapes and profiles to suit conditions indicated; fabricated from extruded aluminum; finished to match exposed flanges of suspension system runners. Provide manufacturer's recommended tee-bar connection clips, and hanging clips, which lock into specially designed bosses on the channel trim and are screw attached to the web of the intersecting suspension system members. Join sections of trim together with manufacturer's standard splice plates and alignment clips.
 4. Perimeter Wing Trim: Shapes and profiles to suit conditions indicated; fabricated from and finished to match exposed panel. Provide manufacturer's recommended connect wing cantilevers, connect splines, connect hooks, connect multi-connection, and installation screws suitable for installation indicated.
- E. Clips: Provide support clips, clamps, fasteners, splines, and other attachment devices as required to align components and to connect components and transfer imposed loads of suspension system.
1. Provide partition attachment clips, and fasteners for areas where partition ceiling runners are secured to the ceiling suspension system.
 2. Provide attachment clips for runner to angle molding to avoid use of pop rivets.
 3. Provide grid converter accessories as required to change main tee direction 90 degrees from adjacent main tee.
 4. Provide light fixture clips.
 5. Provide hold down clips at entryways to reduce flutter as required.
 6. Provide miter closure clips.
- F. Manufacturers and Products: Refer to drawings and schedules for extent and types of each metal suspension system required.
- G. Subject to requirements, provide scheduled suspension systems, or comparable products, acceptable to the Architect, by one of the following:
1. Armstrong World Industries, Inc.
 2. CertainTeed Corporation.
 3. Chicago Metallic Corporation.
 4. United States Gypsum Company.

2.2 ACOUSTICAL PANELS (CL##)

- A. Manufacturers and Products: Refer to drawings and schedules for extent and types of each acoustical panel required.
- B. Subject to requirements, provide scheduled acoustical panels, or comparable products, acceptable to the Architect, by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. United States Gypsum Company.
- C. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation, anchorage, with requirements for installation tolerances, and other conditions affecting performance of acoustical panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Layout the Work to center board pattern both directions around Work points shown in each major space or room as shown on the Drawings or directed and, where possible, adjust pattern so that edge pieces will be not less than 1/2 unit in width.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook," and as required to match the accepted sample installation.
- B. Suspend ceiling hangers as follows:
 - 1. Fasten hangers to anchors that extend into decks. Space hangers not more than 48 inches (1200 mm) on center along each member supported directly from hangers; and provide hangers not more than 6 inches (150 mm) from ends of each member. Provide additional hangers for support of fixtures and other items including but not limited to light fixtures and diffusers, as required to prevent overloading of deck attachment, eccentric deflection or rotation of supporting runners.

2. Hangers:
 - a. Secure wire hangers to ceiling suspension members and to supports above with a minimum of 3 tight turns. Connect hangers directly to drilled in anchors (eye screws), or other devices that are secure, and are appropriate for substrate.
 - b. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to drilled in anchors, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved.
 3. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 4. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of the supporting structure or of the ceiling suspension system.
 5. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 6. Lateral Force Bracing:
 - a. Horizontal restraints shall be provided by four No. 12 gage (2.7 mm) wires secured to the main runner within 2 inches of the cross runner intersection and splayed 90 degrees from each other at an angle not exceeding 45 degrees from the plane of the ceiling. A strut fastened to the main runner shall be extended to and fastened to the structural members supporting the roof or floor above. The strut shall be adequate to resist the vertical component induced by the bracing wires. These horizontal restraint points shall be placed not more than 12 feet (3.65 m) on center in both directions with the first point within 6 feet from each wall. Attachment of the restraint wires to the structure above shall be adequate for the load imposed.
 - b. Lateral force bracing members shall be spaced a minimum of 6 inches (150 mm) from all horizontal piping or ductwork that is not provided with bracing restraints for horizontal forces. Bracing wires shall be attached to the grid and to the structure in such a manner that they can support a design load of not less than 200 pounds or the actual design load, whichever is greater, with a safety factor of 2.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Typical Edge Molding Attachment: Align moldings accurately and screw attach securely to substrate with concealed fasteners at intervals not more than 16 inches (400 mm) on center and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system. Miter corners accurately and connect securely.
 - a. Do not use exposed fasteners, including pop rivets, on moldings and trim.
 2. Window and Curtain Wall Frame Head Attachment: Unless otherwise indicated, align moldings accurately and secure to window and curtain wall frame heads using

manufacturer's recommended double-sided foam white tape, leveling with ceiling suspension system. Miter corners accurately and adhere securely.

- a. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Clip runners to angle moldings do not use exposed fasteners. Finish to lines and levels shown, with maximum deflection not to exceed 1/360 of the span between supports. Laser level accurately in all directions, leveling to a tolerance of 1/8-inch (3.18-mm) noncumulative. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Run grain of units in one direction as accepted on shop drawings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 3. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.
 - 4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using sealer and coating recommended in writing for this purpose by acoustical panel manufacturer.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Acoustical panel ceiling hangers and anchors and fasteners will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 61 23 - CONCRETE FLOORING TREATMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes concrete sealing compound for the following applications:

1. Existing concrete floor to remain exposed.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, VOC content, application instructions, and general recommendations. Include data substantiating that products to be furnished comply with requirements of the contract documents.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Sealing Compounds.
 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit manufacturer's instructions for proper maintenance materials and procedures.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Accessibility Requirements: Comply with applicable provisions of the following:
 - a. U.S. Architectural and Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities (ADAAG).

- B. Manufacturer Qualifications: Provide products produced by a company that has successfully specialized in production of this type of work for not less than 5 years.
- C. Mockups: Apply mockups of each concrete flooring treatment indicated and each color and finish selected to verify color selection and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each concrete flooring treatment specified in Part 2.
 - a. Provide samples of at least 48 by 48 inches square (1220 by 1220 mm sq).
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. 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 materials in original packages and containers with seals unbroken and bearing manufacturer's labels.
- B. Store materials in a clean, dry location protected from exposure to direct sunlight. In storage areas, maintain environmental conditions within range recommended in writing by manufacturer.

1.7 FIELD CONDITIONS

- A. Environmental Requirements: Do not proceed with installation until areas to receive the work have been enclosed and until temperature and relative humidity have been stabilized and will be maintained within values established by the manufacturer for optimum quality control.
- B. Environmental Limitations: Comply with coating manufacturer's written instructions for substrate temperature, ambient temperature, humidity, ventilation, and conditions affecting floor treatment application. Do not apply coating until wet work in spaces is complete and dry; and overhead work, including installation of mechanical systems, and lighting is complete.
 - 1. Apply floor coatings when substrate temperature and surrounding air temperatures are between 50 deg F and 95 deg F (10 deg F and 35 deg C).
- C. Do not apply floor coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

- D. Ventilation: Provide adequate ventilation to prevent accumulation of hazardous fumes, if any, during application of concrete floor sealer in enclosed spaces, and maintain ventilation until sealer has cured.

PART 2 - PRODUCTS

2.1 SEALING COMPOUND

- A. Clear, Waterborne, Membrane-Forming Sealing Compound: ASTM C 1315, Type 1, Class A or B.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Master Builder Solutions by BASF; MasterKure HD 200WB.
 - b. The Euclid Chemical Company; Diamond Clear VOX.
 - c. QC Construction Products; QC VOC 100 WB

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for conditions affecting performance and conditions of floor treatment with requirements for maximum moisture content. Verify concrete slabs are flat, level, and dry.
1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter for concrete: 12 percent.
 2. Verify compatibility with and suitability of substrates, including existing finishes or primers. Verify if plasticizers in existing concrete substrate will not impair bond.
 3. Perform tests recommended by manufacturer. Proceed with installation after substrates pass testing.
 4. Commence coating application after unsatisfactory conditions are corrected and surfaces are dry.
 5. Commencement of floor treatment application indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Clean substrate, removing projections and substances detrimental to the work; comply with recommendations of manufacturer for preparation procedures. Mask off or protect adjacent surfaces not scheduled to receive sealer.
- B. Concrete Substrates: Prepare and clean substrates according to manufacturer's written instructions.

1. Clean substrates of substances that impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants. Neutralize plasticizers that cannot be removed.
 2. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 3. Remove incompatible primers and reprime substrate with compatible primers as required
 4. Remove laitance, glaze, curing compounds, form release agents, dust, dirt, grease, oil, and contaminants that impair bond. Remove contaminants using mechanical means.
 5. Treat nonmoving substrate cracks and control joints to prevent cracks from telegraphing (reflecting) through flooring according to manufacturer's written recommendations.
 6. Protect substrate voids and joints to prevent flooring resins from flowing into or leaking through them.
- C. Protect walls, floor openings, equipment inserts, electrical openings, door frames, and obstructions during installation. Cover floor and wall areas at mixing stations.

3.3 APPLICATION

- A. General: Comply with manufacturer's instructions, except where more stringent requirements are shown or specified, and except where Project conditions require extra precautions or provisions to ensure satisfactory performance of the Work.
- B. Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.4 CLEANING

- A. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or appropriate methods for coating. Do not scratch or damage adjacent finished surfaces.

3.5 PROTECTION

- A. Institute protective procedures and install protective materials as required to ensure that work is without damage or deterioration at substantial completion. Protect adjacent work against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- B. At completion of construction activities and before Substantial Completion, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 09 61 23

SECTION 09 65 13 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes resilient wall base and moldings.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of product indicated.
- B. Samples: For each type of product indicated, in manufacturer's standard-size Samples but not less than 12 inches (300 mm) long, of each resilient product color, texture, and pattern required.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product types in this Section:
 - a. Resilient Stair Treads.
 - b. Resilient Molding Accessory.
 - c. Trowelable Leveling and Patching Compounds.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 QUALITY ASSURANCE

- A. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in

compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.

1. Resilient Wall Base.

1.6 FIELD CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:
 1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT WALL BASE (RB##)

- A. Products and Manufacturers: As indicated in Finish Schedule on Drawings. Nominal thickness not less than 1/8 inch (3 mm) unless greater thickness is scheduled. All resilient base shall be manufactured from rubber complying with ASTM F 1861, Type TS (rubber, vulcanized thermoset) or Type TP (rubber, thermoplastic), Group I (solid, homogeneous). Provide all resilient wall base in continuous coils to minimize field butt joints.
- B. Provide all resilient wall bases with a coved base toe style typically; and with straight flat or toeless base style at carpet, unless otherwise indicated in Finish Schedule on Drawings.

2.2 RESILIENT MOLDING ACCESSORY

- A. Description: Reducer strip for resilient floor covering.
- B. Material: Rubber.
- C. Profile and Dimensions: As indicated on the Drawings.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based formulation provided or approved by resilient product manufacturers for applications indicated.

- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
 - 1. Do not install resilient products until they are the same temperature as the space where they are to be installed.

3.3 RESILIENT WALL BASE INSTALLATION

- A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.
- C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- D. Apply wall base with full adhesive coverage.
- E. Do not stretch wall base during installation.
- F. Job-Formed Corners:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.

2. Inside Corners: Use straight pieces of maximum lengths possible. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor coverings that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Remove adhesive and other blemishes from exposed surfaces.

END OF SECTION 09 65 13

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes resilient floor tile.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of product indicated.
- B. Samples: Submit full-size units of each color and pattern of resilient floor tile required.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Trowelable Leveling and Patching Compounds.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Field Test Reports: Provide signed field test reports for tests indicated below. Indicate results and test locations. Include manufacturer's recommendations.
 - 1. Relative humidity probe test results.
 - 2. Alkalinity test results.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit maintenance data for resilient floor tile and floor finish products.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 QUALITY ASSURANCE

- A. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.

1. Resilient Tile.

1.7 FIELD CONDITIONS

- A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:
 1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor covering installation.
- D. Close spaces to traffic for 48 hours after floor covering installation.
- E. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT FLOOR TILE (RT##)

- A. Product(s): As indicated in Finish Schedule on Drawings.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based formulation provided or approved by resilient product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

- C. Vinyl Composition Tile Protective Floor Polish: Product recommended by manufacturer to suit resilient products indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare concrete substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by flooring manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
 - 4. Moisture Testing: Perform tests recommended by flooring manufacturer, but not less stringent than the following:
 - a. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.
- C. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.
- D. Apply primer to concrete slabs, if recommended by the flooring manufacturer, prior to application of adhesive.
- E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

1. Do not install resilient products until they are same temperature as space where they are to be installed.
- F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out tiles so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 1. Lay tiles square with room axis unless otherwise indicated.
- C. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 1. Lay tiles in pattern of colors and sizes indicated.
- D. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings. Extend unexposed edges of flooring under set on bases and similar trim work.
- E. Extend tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tile to center of door openings unless indicated otherwise.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Install tiles on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with pieces of tile installed on covers. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation which is smooth, clean and free from imperfections such as open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing resilient product installation:
 1. Remove adhesive and other blemishes from exposed surfaces.
 2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.

4. Do not wash or apply floor polishes until flooring adhesives have cured unless otherwise recommended by the flooring manufacturer.
- B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.
1. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Completion.
 2. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.
- C. Cover floor tile until Substantial Completion.

END OF SECTION 09 65 19

SECTION 09 68 13 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes carpet tile.
- B. Related Requirements:
 - 1. Section 03 54 16 "Hydraulic Cement Underlayment" for patching and leveling of substrates

1.2 STANDARDS

- A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:
 - 1. The Carpet and Rug Institute "CRI 104; Standard for Installation of Commercial Carpet, edition Sept. 2015" (CRI 104).
 - 2. The Carpet and Rug Institute "Green Label Plus" Standards.

1.3 ACTION SUBMITTALS

- A. Product Data: For each product indicated, submit product data, specifications, installation instructions for materials specified herein and other data as may be required to show compliance with the Contract Documents. Include installation recommendations for each type of substrate required.
- B. Shop Drawings: Show the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation, direction, and starting points per floor.
 - 6. Pattern type and location.
 - 7. Type, color, and location of edge, transition, and other accessory strips.
 - 8. Pile direction.
 - 9. Transition and other accessory strips.
 - 10. Transition details to other flooring materials.
- C. Samples: For each of the products showing full range of color, texture, and pattern variations expected. Prepare samples from same material to be used for the Work. Label each Sample

with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in Schedules. Submit the following:

1. Carpet Tile: Full-size Samples.
2. Exposed Edge Stripping and Accessory: 12 inch (300 mm) long Samples.

1.4 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Trowelable Leveling and Patching Compounds.
 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Qualification Data: For Installer.
- C. Field Test Reports: Provide signed field test reports for tests indicated below. Indicate results and test locations. Include manufacturer's recommendations.
 1. Anhydrous calcium chloride test results.
 2. Relative humidity probe test results.
 3. Alkalinity test results.
- D. Warranty: Submit special warranties specified in this Section.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit copies of instructions for care, cleaning, maintenance and repair of carpet tiles.
 1. Each carpet manufacturer shall meet with the authorized Building Services personnel in the presence of the Owner, to review the characteristics of the carpet tile, and to recommend appropriate maintenance procedures, prior to occupancy of the finished spaces.
 2. Include methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 3. Include precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Materials: Furnish extra materials described below before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Engage a carpet installer, who has completed a minimum of three projects over the last 10 years which were similar in material, design and extent to that indicated for the Project - as determined by the Architect - and which have resulted in construction with a record of successful in service performance.
 - 1. In the case where the Installer is actually a Dealer, it is understood that the terms Installer, Dealer, Carpeting Contractor and Contractor shall be one and the same for purposes of this Contract. Installer shall assume responsibility for all of the work, including acquisition of the materials from the manufacturers herein specified.
- B. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 - 1. Carpet Tile.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.
- B. Deliver carpeting in original mill protective wrapping with mill register numbers and tags attached.
- C. Deliver other materials in manufacturer's unopened containers identified with name, brand, type, grade, class, and other qualifying information.
- D. Store materials in a dry location, in such a manner as to prevent damage.

1.9 FIELD CONDITIONS

- A. General: Comply with CRI 104, Section 7.0 "Site Conditions."
- B. Environmental Limitations: Do not deliver or install carpet tile until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during remainder of construction.

1.10 WARRANTY

- A. Special Carpet Manufacturer's Warranty: Written warranty, signed by carpet tile manufacturer agreeing to replace carpet tile that does not comply with requirements or that fails within specified warranty period. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than 10 percent loss of face fiber, wear, static buildup in excess of 3.0 kV when tested under the Standard Shuffle Test at 70 deg F (21 deg C) and 20 percent RH, edge raveling without seam sealers, tuft bind loss, zippering (wet or dry), shrinkage, curling, doming, snags, runs, and delamination. Warrantees shall be full term, not pro-rated for the specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Carpet Tile Installer's Warranty: Written warranty, signed by carpet tile installer agreeing to fix, repair or replace carpet tile that does not comply with requirements or that fails within specified warranty period. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than edge raveling, shrinkage, curling, doming, and delamination.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE (CP##)

- A. Carpet Tile Types: Provide manufacturer's commercial grade carpet tile for 100 percent glue-down installation as indicated in Finish Schedule on Drawings.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Portland cement-based formulation provided by or recommended by carpet tile manufacturer. Do not use gypsum based compounds.
- B. Adhesives: Water-resistant, mildew-resistant, and nonstaining, pressure sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for intended carpet tile, and recommended by manufacturer for releasable installation.
 - 1. VOC Limits: Provide adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Carpet Edging: Provide rubber composition carpet edging in single lengths wherever possible, keeping the number of joints or splices to a minimum. Provide in quantities and locations as job required based upon the recommended good practice of the industry; include in every location where carpet terminates and other flooring continues. Color to match adjacent carpet types.

- D. Floor Sealer: Type as recommended and manufactured by the carpet tile manufacturer for the applications indicated.
 - 1. VOC Limits: Provide floor sealer with VOC content not more than 200 g/L when calculated according to 40 CFR 59, Subpart D (EPA method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. For painted subfloors, verify the following:
 - 1. Perform bond test recommended in writing by adhesive manufacturer.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 8.0 "Substrate Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Coordinate the installation of carpet so as not to delay the occupancy of the site or interfere with the completion of construction.
- C. Examine the substrates, adjoining construction and the conditions under which the Work is to be installed. Verify recommended limits for moisture content and alkalinity of concrete substrates with carpet manufacturer.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

- a. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 2. Alkalinity Test: Verify alkalinity of concrete substrates by drilling a 3/8 inch (9.5 mm) diameter hole approximately 1/4 inch (6.35 mm) deep, remove all residue; fill with distilled water, allow water to stand 3 minutes and test with a calibrated electronic meter or pH paper. Perform testing at a frequency of not less than once every 1,000 square feet (93 sq.m).
 3. Alternative test procedures for moisture content and alkalinity may be acceptable subject to the carpet manufacturer's review and written acceptance.
- D. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
1. Provide one of the following:
 - a. Remove coatings, including curing compounds, existing floor covering adhesive residues, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by the carpet manufacturer.
 - b. In lieu of mechanical substrate preparation methods, the Contractor may utilize floor sealer materials and methods of the types and methods as recommended, in writing, by the carpet tile manufacturer. Apply sealer in number of coats, and at the spread rate, as required by the carpet tile manufacturer.
 2. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by the carpet tile manufacturer.
 3. Use leveling and patching compounds recommended by flooring manufacturer for filling cracks, holes and depressions in the substrate. Surface shall be smooth, level and at proper elevation. Remove ridges, roughness and protrusions from concrete surfaces by grinding.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet.
- F. Carpet installation shall not commence until painting and finishing work are complete and ceiling and overhead work is tested, approved, and completed.
- G. Proceed with installation only after unsatisfactory conditions have been corrected

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 10.0 "Carpet Tile Installation," carpet tile manufacturer's written installation instructions, and as required to match the accepted sample installations. Apply adhesive in accordance with adhesive manufacturer's directions.

- B. Adhere all full size, perimeter tiles, and cut tiles, with a full spread of adhesive. Dry fit cut tiles and apply adhesive to tile back after tile has been cut. Use full uncut tiles down the center of corridors and, where necessary, cut perimeter tiles to butt walls.
 - 1. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
 - 2. Cut openings in carpet for electrical outlets, piping and other penetrations. Maintain close tolerances so that edges of carpet will be covered by plates and escutcheons.
 - 3. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- C. Butt carpet tile tightly together to form seams without gaps or entrapped pile yarns and aligned with adjoining tiles.
- D. Edge Strip Installation: Install edge strip at every location where edge of carpet is exposed to traffic, unless otherwise indicated. Unless otherwise directed by Architect install in single lengths and secure in accordance with manufacturer's directions.
- E. Traffic over adhesive installations shall be restricted until adhesive has properly cured in accordance with the adhesive manufacturer's recommendations.

3.4 CLEANING AND PROTECTION

- A. Cleaning: As the carpeting is installed, remove and dispose of all trimmings, excess pieces of carpeting and laying materials from each area as it is completed. Vacuum carpeting with a commercial vacuum, having a cylindrical brush or beater bar and high suction. Remove adhesives, stains, and soil spots in accordance with the carpet manufacturer's recommendations.
- B. Protection: Protect installed carpet tile to comply with CRI 104, Section 11.0 "Post Installation," and against damage as damaged carpeting shall be rejected. Use non-staining cover material for protection. Tape joints of protective covering.
 - 1. Plastic and polyethylene sheet protective coverings shall not be permitted.
 - 2. Remove and replace rejected carpeting with new carpet tile. At the completion of the Work and when directed by the Architect, remove covering, vacuum clean carpeting and remove soiling and stains (if any) to the satisfaction of the Architect.

END OF SECTION 09 68 13

SECTION 09 72 00 - WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes wall coverings and accessories necessary for a complete installation.
- B. Related Requirements:
 - 1. Section 09 29 00 "Gypsum Board" for Levels 4 and 5 finishes required under wallcovering.
 - 2. Section 09 77 13 "Stretched-Fabric Wall Systems" for panels requiring wall coverings.
 - 3. Section 09 91 23 "Interior Painting" for priming wall surfaces.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of product.
 - 1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.
- B. Shop Drawings: Include location and extent of each wall covering type, seam locations and termination points.
- C. Samples: Submit wall covering samples in full width by 36-inch- (1000-mm-) long sections of wall covering for each wall covering indicated and for each color, pattern, and texture required. Samples shall show complete pattern repeat.
 - 1. Wall-Covering Sample: Submit samples from same production run to be used for the Work, with specified treatments applied. Mark top and face of fabric.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - a. Wall Coverings.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below, before installation begins, from the same production run as the wall coverings installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Rolls of Wall Covering Material: Full-width rolls of wall covering equal to 5 percent of amount of each type installed, but not less than 1 full roll.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has specialized in the installation of wall coverings similar to that required for this project.
- B. Mockups: Install mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for installation.
 - 1. Build mockups for each type of wall covering on each substrate required. Comply with requirements in ASTM F 1141 for appearance shading characteristics.
 - 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.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at the levels indicated when the site is occupied for its intended use.
- B. Lighting: Do not install wall covering until a permanent level of lighting is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace wall covering that does not comply with requirements or that fails within two years from date of

Substantial Completion. Warranty does not include deterioration or failure of wall covering from failure of substrate, vandalism, or abuse. Failures include, but are not limited to, blistering, fading, fraying, seam delamination, and discoloration.

PART 2 - PRODUCTS

2.1 WALL COVERING PRODUCTS (WC##)

- A. General: Provide rolls of each type of wall covering from the same run number or dye lot. Color and pattern matching Architect's samples.
- B. Product(s): As indicated in Finish Schedule on Drawings.

2.2 ACCESSORIES

- A. Adhesive: Mildew-resistant, nonstaining adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
- B. Primer/Sealer: Mildew resistant, primer/sealer recommended in writing by the wall-covering manufacturer for intended substrate.
- C. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended in writing by wall-covering manufacturer.
- D. Seam Tape: As recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- 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. Clean substrates of substances that could impair bond of wall covering, including mold, mildew, oil, grease, incompatible primers, dirt, and dust.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 2. Metals: If not factory primed, clean and apply primer recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 3. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 4. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
1. Fabric Wrapped Panel Applications: For application of fabrics to stretched fabric wall systems, refer to Section 09 77 13 "Stretched-Fabric Wall Systems."
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.
- E. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- F. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.

- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

SECTION 09 77 13 - STRETCHED-FABRIC WALL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes stretched fabric wall systems.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each type of frame and core material specified.
- B. Shop Drawings: Submit shop drawings including attachment devices; seaming diagrams; and details at head, base, joints, corners and intersections with shelves, countertops, doors, electrical outlets and switches, thermostats, and other components. Indicate frame edge and core materials.
 - 1. Include elevations showing panel sizes and direction of fabric weave.
 - 2. Include elevations showing location of tackable board substrates located beneath stretched fabric.
- C. Samples: Submit samples of the following products. Prepare Samples from the same material to be used for the Work.
 - 1. Fabric: Full-width by 36 inch (1000 mm) long Sample from dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
 - 2. Frame System: 12 inch (300 mm) long Sample showing edge profile and corner.
 - 3. Core Material: 12 inch (300 mm) square Sample, each core type.
 - 4. Portable mockup of complete installation, no smaller than 24 by 24 inches (610 by 610 mm) and no larger than 36 by 36 inches (1000 by 1000 mm). Show joints at seams.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product types in this Section:
 - a. Stretched-Fabric Wall Systems:
 - 1) Frame Systems.
 - 2) Core Materials.
 - 3) Tackable Infill.

2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

- B. Warranty: Special warranty specified in this Section.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Submit maintenance instructions for stretched-fabric systems including fabric manufacturer's cleaning and stain-removal recommendations.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage a firm with a minimum of 5 years successful experience in the fabrication and erection of fabric wall panel units of similar sizes, shapes, and finishes to the units required for this Project, and which has ample production facilities to produce, furnish, and supply the units as required for this Project.
- B. Sample Installations: Before installing stretched-fabric wall systems, install sample installations for each type of system and finish required to verify selections made under sample submittals and to demonstrate aesthetic affects and qualities of materials and workmanship. Install sample installations to comply with the following requirements, using materials indicated for the completed Work:
 1. Install sample installations in the location and of the size indicated or, if not indicated, as directed by Architect.
 - a. Include intersection at door opening.
 - b. Include intersection at wall and ceiling.
 2. Demonstrate the proposed range of aesthetic effects and workmanship.
 3. Obtain Architect's approval of sample installations before starting installation of stretched-fabric systems.
 4. Maintain sample installations during installation in an undisturbed condition as a standard for judging the completed Work.
 5. Approved sample installations may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. Formaldehyde-Free: Third Party Certified with UL Environmental Validation.
- D. Low-Emitting Materials: For all thermal and acoustical applications of glass insulation products, provide materials complying with the testing and products requirements of UL Environmental Validation and UL GreenGuard Gold certification.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Framing members, fabrics, and core materials shall be delivered to the job site and stored elevated above the floor in an enclosed space with proper ventilation and protection from damage.
- B. Comply with fabric manufacturer's written instructions for minimum and maximum temperature and humidity requirements for storage.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not install stretched-fabric systems until wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Verify dimensions by field measurements.
- C. Lighting during Installation: Provide not less than 50 fc (538 lx) on surface to be covered.

1.8 WARRANTY

- A. Special Warranty: Provide a written warranty for a period of at least two years from date of substantial completion that the fabric installation shall remain dimensionally stable year round and will not sag or distort due to variances in temperature and humidity conditions. Further warranty that the grain and weave will be level and true and that all seams are plumb and true without sagging and equally spaced. If the fabric should sag due to climatic conditions, or if the fabric or seams are imperfect, the installing contractor will replace or repair, restretch and reinstall the fabric at his own expense. The Owner and/or Architect will be the determinant if the fabric is sagging, distorted or imperfect in any way.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: Stretched-fabric wall systems shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency on systems prepared according to ASTM E2573. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 286.

2.2 SYSTEMS AND MANUFACTURERS

- A. General: Subject to compliance with requirements, provide products by one of the following:

1. Accutrack Upholstered Wall System; Accutrack Systems.
2. Type SWB Butt Joint Snap-Loc; StretchWall Products, Inc.
3. Fabri-Trak Upholstered Wall System, Fabri-Trak Systems, Inc.
4. Snap-Tex Acoustical Fabric Mounting System; Snap-Tex, (800) 762-7875.

2.3 STRETCHED-FABRIC WALL SYSTEM COMPONENTS (SF##)

- A. Fabric: As indicated in Finish Schedule on Drawings and specified under Section 09 72 00 "Wall Coverings." Fabrics shall be shop cut, stitched together, squared and trimmed to appropriate sizes. All sewing shall be perfectly straight, seams pressed flat.

1. Provide appropriate lining on fabrics as required to avoid core material color showing through.

- B. Edge Profile: Square.

- C. Frame System: Extruded PVC or extruded aluminum as follows:

1. SnapLoc 90; Stretchwall Products, Inc.
2. 10,000 S 1 inch (25 mm) thick with Square Edge; Accutrack Systems, Inc.
3. Fabri-Trak 1 inch (25 mm) Height SE; Fabri-Trak Systems, Inc.
4. Snap-Tex 1 inch (25 mm) Square Track; Snap-Tex.

2.4 CORE MATERIALS

- A. Glass-fiber acoustical infill board insulation:

1. Free of Formaldehyde: Insulation manufactured with 100 percent acrylic binders and no formaldehyde.
2. Low Emitting: Insulation tested according to ASTM D 5116 and shown to emit less than 0.05-ppm formaldehyde.
3. Acoustical Infill: Standard acoustical infill manufactured from 1 inch (25.4 mm) thick unless otherwise indicated, 6 lb. density compressible fiberglass having an NRC value of 0.80, one of the following:
 - a. Knauf Insulation; Acoustical Smooth Board.
 - b. GLT Products; Acoustical Fiberglas Board.
 - c. Accutrack; Acoustical Fiberglas Board Subsurface.

- B. Tackable Infill: Hybrid high/low density fiberglass or mineral fiberboard. Hybrid high/low density fiberglass or mineral fiberboard. Hybrid high/low density fiberglass bearing a minimum 16 pcf (256 kg/m³), density board laminated to a 3 pcf (48 kg/m³) density fiberglass layer. Mineral-Fiber Board bearing a minimum density of 23 pcf (368 kg/m³), plus or minus 3 pcf (48 kg/m³), with perforated surface, in thickness indicated, the following:
 - 1. Non-Hybrid Tackable Board: USG; Micore Brand 300 Board.
 - 2. Hybrid Tackable Board: One of the following:
 - a. Accutrack; Composite Acoustical Fiberglass Board Subsurface.
 - b. GLT Products: Dual Density Fiberglass Board.
- C. Artwork Blocking: Untreated plywood, refer to Section 06 10 53 "Miscellaneous Rough Carpentry."
- D. VOC Content for Core Mounting Adhesive: Not more than 70 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fabric, substrates, and conditions, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of stretched-fabric systems.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Acclimatize Fabric: Before installation, allow fabric to adjust to and become stable at ambient temperature and humidity of spaces where it will be installed.
- B. Install framing members at the areas indicated to receive fabric wall panels around the perimeter of each fabric panel. Install framing members wherever practical, in one continuous piece with smooth edges so as not to show irregularities. All framing members shall be installed, shimmed, plumbed, scribed and trued to align perfectly with adjacent surfaces. All framing members shall be installed in such a way as to prevent them from sagging or moving out of position after fabric has been stretched tightly over them.
- C. Install core materials flush with face of stretched-fabric system track. Core shall be smooth and free from bumps and protrusions. Bond or fasten core materials to substrate by method recommended by stretched-fabric system manufacturer.
 - 1. Install artwork blocking where indicated on the Drawings. Infill the areas between the artwork blocking and the framing members with acoustical infill core material.

- D. Woof and warp yarns shall be stretched perfectly square and plumbed so that the fabric is not distorted and does not pucker or ripple. If sewn seams are required, they shall be squared with a plumb bob and must be true top to bottom without wavering. All fabrics shall be stretched and secured in such a way as not to show the fastening technique. All fabrics shall be blind fastened using manufacturer's proprietary fabric tensioning system framing on all sides of each wall area in and around cut-outs without the use of any gimp, trim, hand sewing, welts or batons. All fabric pattern and grains shall match horizontally and be perfectly level.
- E. Fabric shall be removable in case of damage and easily replaceable without affecting adjacent surfaces.

3.3 CLEANING AND PROTECTION

- A. During installation, protect all existing work from damage. Remove all trimmings and other debris.
- B. Immediately after the installation is completed, thoroughly clean all exposed surfaces and finished materials and restore all damaged surfaces to the complete satisfaction of the Owner and the Architect.
 - 1. Vacuum all exposed fabric surfaces.
 - 2. Trim and remove all loose threads.

3.4 DEMONSTRATION AND TRAINING

- A. Train Owner's permanent maintenance staff in the proper methods of maintaining, removing, installing, and replacing fabric material.

END OF SECTION 09 77 13

SECTION 09 80 10 - ACOUSTIC ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes accessory items installed as part of other construction for the purposes of sound reduction and sound control. Final assemblies will be tested for acoustical performance.
- B. Related Requirements:
 - 1. Section 09 29 00 "Gypsum Board" for gypsum board installation.
 - 2. Section 07 92 00 "Joint Sealants" for sealants.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For all items installed as part of other construction. Include details showing sound tight and light-tight construction.
- C. Samples: For each exposed product.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following product type in this Section:
 - a. Sound Attenuation Blankets.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Product certificates.
- C. Acoustical testing criteria

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 SOUND CONTROL ACCESSORIES

- A. General: Provide sound control accessories as shown on the Acoustical and Architectural drawings.
- B. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
 - b. Grabber Construction Products; Acoustical Sealant GSC.
 - c. Pecora Corporation; AC-20 FTR.
 - d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
 - e. USG Corporation; SHEETROCK Acoustical Sealant.
- C. Sheet Calking for Junction Boxes: Subject to compliance with requirements, provide one of the following:
 - 1. Lowry's "Electrical Box Sealer" (800-772-2521).
 - 2. Tremco Sheet Calking (800-321-7906).
- D. Sheet Calking for Junction Boxes at Fire Rated Assemblies: Subject to compliance with requirements, provide one of the following:
 - 1. Firestop Putty Pads by Hevi-Duty/Nelson (800-331-7325).
 - 2. Specified Technologies Inc. (800-992-1180).
 - 3. HILTO CP-617 (800-879-8000).
- E. Backing Rod: Closed cell neoprene rod or polyethylene film.
- F. Compressible Foam Gaskets: 3/8 inch thickness; 6 pack density compressible foam with one-side high-tack adhesive; Norseal V-730.
- G. Expanding Foam Sealant: Subject to compliance with requirements, provide one of the following:
 - 1. UL Class I Fire Retardant Polycell Expanding Foam by Macklanburg Duncan (800-348-3571).
 - 2. Great Stuff Pro- Gaps & Cracks by Dow (800-800-3626)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install acoustical accessories as part of installation of full assembly.
 - 1. Install sealants, gaskets and calking so that entire assembly is "light tight" at areas of installation.
 - 2. Install accessories to prevent vibration, rattles or other movement not intended as part of the assembly.
 - 3. Do not install items back to back in wall cavities.
- B. Provide ongoing observation and testing as assemblies are installed.
- C. Clean items on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions and requirements of acoustical consultant.

END OF SECTION 09 80 10

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and field application of paint systems on the following interior substrates:
1. Gypsum board.
 2. Steel.
 3. Galvanized metal.
 4. Aluminum (not anodized or otherwise coated).
 5. Aluminum (anodized).
 6. Aluminum (powder-coated).
 7. Wood and hardboard.
 8. ASJ insulation covering.

1.2 DEFINITIONS

- A. General: The following terms apply to this Section. Gloss level shall be determined according to ASTM D 523.
1. Gloss Level 1(Flat, or Matte): Not more than 5 units at 60 degrees and 10 units at 85 degrees.
 2. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees.
 3. Gloss Level 3 (Eggshell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
 4. Gloss Level 4 (Satin or Low Luster): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees.
 5. Gloss Level 5 (Semigloss): 35 to 70 units at 60 degrees.
 6. Gloss Level 6 (Gloss): 70 to 85 units at 60-degrees.
 7. Gloss Level 7 (High Gloss): More than 85 units at 60 degrees.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat, with texture to simulate actual conditions.
1. Provide stepped Samples, defining each separate coat, including primers. Use representative colors when preparing Samples for review. Resubmit until required gloss, color, and texture are achieved.

2. Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
 3. Submit paint samples on hardboard, 12 inches (305 mm) square, of each color and texture required.
- C. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. VOC content.

1.4 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
1. Completed Environmental Product Declaration Reporting Form for the following principal product types in this Section:
 - a. CMU Block Filler.
 - b. Wood-Knot Sealer.
 - c. Primers:
 - 1) Alkali Resistant, Water Based.
 - 2) Latex, for Interior Wood.
 - 3) Bonding, Water Based.
 - 4) Acrylic.
 - d. Latex, Interior, High-Performance Architectural, Gloss Levels 3 and 5.
 - e. Semigloss Dry Fall Coating.
 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 1 gal. (3.8 L) of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications 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. Environmental Product Declarations: For the following product types, obtain products with Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025. Industry-wide EPDs must demonstrate that the manufacturer is a member of the publishing body responsible for the product of the EPD.
 - 1. Primer, Sealer, Latex Interior.
 - 2. Latex, Interior, Gloss Levels 1, 3, and 5.
- C. Sample Installation: Apply sample installation of each paint system indicated and each color and finish selected to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in sample installations unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved sample installations may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Benjamin Moore Family of Products (Benjamin Moore, Coronado, Corotech, Insl-x, LenMar)
 - 2. PPG Paints (PPG)
 - 3. Sherwin-Williams Co. (SW)
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles for the paint category indicated.

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.

2.2 PAINT, GENERAL (PT##)

- A. Material Compatibility: Provide materials for use within each paint system 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. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Low-Emitting Materials: For field applications that are inside the weatherproofing system, 90 percent of paints and coatings shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- C. 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.
- D. Colors and Gloss: As indicated in Finish Schedule on Drawings. Reference to a particular manufacturer's number or color name is used only as a convenience for the Architect in order to establish the Project color and gloss requirements. These references are not intended to describe the required generic paint systems. For generic paint system requirements, refer to the "Interior Paint Schedule" at the end of Part 3, as applicable to the respective conditions of use.
 1. The selection of paint colors and gloss are indicated by manufacturer and color type; designated as "PT##."
 2. 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.).

2.3 PREPARATORY COATS

- A. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.
- B. Primer Sealer, Latex, Interior:
 1. Benjamin Moore; Ultra Spec 500 Interior Latex Primer (N534).
 2. PPG; Speedhide Zero Interior Latex Sealer Quick-Drying (6-4900).
 3. SW; ProMar 200 Zero VOC Interior Latex Primer (B28W02600).
- C. Primer, Alkali Resistant, Water Based:
 1. Benjamin Moore; Super Spec Masonry Int/Ext Acrylic High Build Primer (N068).
 2. PPG; Perma-Crete Interior/Exterior Alkali-Resistant Primer (4-603).

3. SW; Loxon Concrete & Masonry Primer Interior/Exterior Latex (A24W8300).
- D. Primer, Latex, for Interior Wood:
1. Benjamin Moore; Ultra Spec 500 Interior Latex Primer (N534).
 2. PPG; SEAL GRIP Interior Primer/Finish (17-951).
 3. SW; Premium Wall & Wood Interior Latex Primer (B28W08111).
- E. Primer, Bonding, Water Based:
1. Benjamin Moore; Insl-x Stix Bonding Primer (SXA-110).
 2. PPG; SEAL GRIP Interior/Exterior Acrylic Universal Primer/Sealer (17-921).
 3. SW; Adhesion Primer Interior/Exterior Latex (B51W8050).
- F. Primer, Acrylic:
1. Benjamin Moore; Super Spec HP Acrylic Metal Primer (P04).
 2. PPG; Pitt Tech Interior/Exterior Primer/Finish DTM Industrial Primer (90-712).
 3. SW; Pro Industrial Pro-Cryl Universal Primer (B66-310 Series).
- G. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

2.4 WATER-BASED PAINTS

- A. Latex, Interior, Gloss Level 1 (Flat):
1. Benjamin Moore; Ultra Spec 500 Interior Flat (N536).
 2. PPG; SPEEDHIDE zero Interior Zero-VOC Latex Flat (6-4110XI).
 3. SW; ProMar 200 Zero VOC Interior Latex Flat (B30-2600 Series).
- B. Latex, Interior, Gloss Level 3 (Eggshell).
1. Benjamin Moore; Ultra Spec 500 Interior Eggshell (N538).
 2. PPG; SPEEDHIDE zero Interior Zero-VOC Latex Eggshell (6-4310XI).
 3. SW; ProMar 200 Zero Interior VOC Latex Eg-Shel (B20-2600 Series).
- C. Latex, Interior, Gloss Level 5 (Semigloss):
1. Benjamin Moore; Ultra Spec 500 Interior Semi-Gloss (N539).
 2. PPG; SPEEDHIDE zero Interior Zero-VOC Latex Semi-Gloss (6-4510XI).
 3. SW; ProMar 200 Zero VOC Latex Semi-Gloss (B31-2600 Series).
- D. Latex, Interior, High Performance Architectural, Gloss Level 3 (Eggshell):
1. Benjamin Moore; Corotech PreCatalyzed Waterborne Epoxy Eggshell V342.
 2. PPG; Pitt-Glaze WB1 Interior Eggshell Pre-Catalyzed Water-Borne Acrylic Epoxy (16-310).
 3. SW; Pro Industrial Pre-Catalyzed Waterbased Epoxy Eg-Shel (K45W1150 Series).

- E. Latex, Interior, High Performance Architectural, Gloss Level 5 (Semigloss):
1. Benjamin Moore; Corotech PreCatalyzed Waterborne Epoxy SG (V341).
 2. PPG; Pitt-Glaze WB1 Interior Semi-Gloss Pre-Catalyzed Water-Borne Acrylic Epoxy (16-510).
 3. SW; Pro Industrial Pre-Catalyzed Waterbased Epoxy Semi-Gloss (K46W1150 Series).

2.5 INDUSTRIAL MAINTENANCE COATINGS

- A. Semigloss Dry Fall Coating:
1. Benjamin Moore; Latex Dry Fall Semi-Gloss 397, semi-gloss finish; applied at a dry film thickness of not less than 1.4 mils (36 microns). (formula does not exceed 43 grams/liter VOCs).
 2. Subject to requirements, provide the scheduled product, or a similar product, acceptable to the Architect, by one of the following:
 - a. Duron.
 - b. M. A. Bruder & Sons, Inc. (M. A. B. Paint).
 - c. Pittsburgh Paints.
 - d. Sherwin-Williams.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with manufacturer's requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

3.2 PREPARATION

- A. Remove hardware and hardware accessories, cover plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible, provide surface-applied protection before surface preparation and painting.
- B. Before applying paint or other surface treatments, clean substrates of substances that could impair bond of paints. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

- C. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified. Provide barrier coats over incompatible primers or remove and reprime.
1. Gypsum Wallboard: Repair all surfaces in gypsum wallboard with wallboard joint finishing compound or spackling compound, filled out flush and sanded smooth. Clean all surfaces and taped joints of dust, dirt and other contaminants and be sure they are thoroughly dry before applying paint.
 2. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
 3. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
 4. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
 5. Aluminum Substrates: Remove loose surface oxidation.
 6. Anodized Aluminum Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates. Abrade surface to promote adhesion of subsequently applied paints.
 7. Powder-Coated Aluminum Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates. Abrade surface to promote adhesion of subsequently applied paints.
 8. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
 9. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- D. Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tint each undercoat a lighter shade to facilitate identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in Finish Schedule on Drawings.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 4. Extend coatings in exposed surfaces, as required, to maintain system integrity and provide desired protection.
 - a. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint front and back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces. Paint access panels, electrical panels, air diffusing outlets, supply and exhaust grilles, louvers, exposed conduit, primed hardware items, primed outlet covers, primed wall and ceiling cover plates and other items in painted areas to match the areas in which they occur unless otherwise directed by the Architect.
- B. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 - a. 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.
 - b. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
 - c. 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.
 2. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

- C. Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
 - 1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 - 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 - 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
- D. 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.
- E. 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.
- F. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - h. Other items as directed by Architect.
 - 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.
 - a. Color: Flat (gloss level 1), nonspecular, black.
- G. Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 MARKING AND IDENTIFICATION

- A. Mark fire-rated and smoke-rated partitions required to have protective openings or penetrations.
 - 1. Locate markings in accessible concealed floor, floor-ceiling, or attic spaces.
 - 2. Provide markings within 15 feet (4572 mm) of the end of each wall and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the partition.

3. Marking shall include stenciled lettering not less than 3 inches (76 mm) in height with a minimum 3/8 inch (9.5 mm) stroke.
4. Apply markings in a contrasting color with the suggested wording "FIRE AND/OR SMOKE BARRIER---PROTECT ALL OPENINGS", or other wording as approved by the Authority Having Jurisdiction.

3.5 CLEANING

- A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- B. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.
- C. After completing painting operations in each space or area, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection, if any.

3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage from paint application. Correct damage to work of other trades by cleaning, repairing or replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- 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. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 INTERIOR PAINTING SCHEDULE

- A. Gypsum Board Substrates:
 1. Latex System:
 - a. Primer: Sealer, latex, interior.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior (gloss as indicated in Finish Schedule).
 2. High-Performance Architectural Latex System:
 - a. Primer: Sealer, latex, interior.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).
- B. Steel Substrates:

1. High-Performance Architectural Latex System:
 - a. Primer: Acrylic.
 - b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
 - c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).
 2. Semigloss Dry Fall Coating:
 - a. Primer: Interior semigloss dry fall coating.
 - b. Intermediate Coat: Interior semigloss dry fall coating.
 - c. Finish Coat: Interior semigloss dry fall coating.
- C. Steel (Factory-Primed) Substrates:
1. High-Performance Architectural Latex System:
 - a. Primer: Acrylic (applied over factory primer).
 - b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
 - c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).
- D. Galvanized Metal Substrates:
1. High-Performance Architectural Latex System:
 - a. Primer: Acrylic.
 - b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
 - c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).
- E. Aluminum Substrates: Not anodized or otherwise coated.
1. High-Performance Architectural Latex System:
 - a. Primer: Acrylic.
 - b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
 - c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).
- F. Aluminum (Anodized) Substrates:
1. High-Performance Architectural Latex System:
 - a. Primer: Acrylic.

- b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
- c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).

G. Aluminum (Powder-Coated) Substrates:

1. High-Performance Architectural Latex System:

- a. Primer: Acrylic.
- b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
- c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).

H. Wood and Hardboard Substrates:

1. High-Performance Architectural Latex System:

- a. Primer: Acrylic.
- b. Intermediate Coat: Latex, interior, high performance architectural; matching topcoat.
- c. Topcoat: Latex, interior, high performance architectural (gloss as indicated in Finish Schedule).

I. Cotton or Canvas and ASJ Insulation-Covering Substrates: Including pipe and duct coverings. Provide fungicidal agent to render fabric mildew-proof.

1. Latex System:

- a. Primer: Sealer, latex, interior.
- b. Intermediate Coat: Latex, interior.
- c. Topcoat: Latex, interior.

END OF SECTION 09 91 23

SECTION 10 44 00 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes fire extinguishers and fire extinguisher cabinets.

1.2 COORDINATION

- A. Coordinate size of fire-extinguisher cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.3 ACTION SUBMITTALS

- A. Product Data: Submit product data including construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection specialties.
 - 1. Fire Extinguishers: Include rating and classification.
 - 2. Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, panel style.

1.4 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for the following principal product types in this Section:
 - a. Fire Extinguishers.
 - b. Fire Extinguisher Cabinets.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

- B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Standard for Portable Fire Extinguishers."
- C. Listing: Fire extinguishers shall be UL listed with UL Listing Mark for type, rating, and classification of extinguisher.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable 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.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers for each fire extinguisher cabinet and at other locations indicated.
 - 1. Mounting Brackets: Manufacturer's standard steel, designed to secure extinguisher indicated and with plated or baked-enamel finish.
 - a. Provide brackets for extinguishers located and not located in cabinets.
- B. Multipurpose Dry-Chemical Type: UL-rated 4-A:60-B:C, 10-lb. (4.5-kg) nominal capacity, in enameled-steel container.
- C. Located on Drawings by Designation: FE.

2.2 FIRE-EXTINGUISHER CABINETS

- A. General: Provide fire extinguisher cabinets of suitable size for housing fire extinguishers of types and capacities specified.
- B. Cabinet Construction: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.
 - 1. Cabinet Mounting: Recessed unless otherwise indicated.

2. Cabinet Trim Style: Trimless with hidden flange of same metal and finish as box that overlaps surrounding wall finish and that is concealed from view by an overlapping door.
 3. Cabinet Trim Material: Manufacturer's standard steel sheet.
 4. Door Material: Manufacturer's standard #4 stainless steel sheet.
 5. Door Glazing: Manufacturer's standard, as follows:
 - a. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, Class 1 (clear).
 6. Door Style: Manufacturer's standard design vertical duo panel with frame with 1/4 inch (6 mm) thick glass.
 7. Door Construction: Fabricate doors according to manufacturer's standards, of materials indicated, and coordinated with cabinet types and trim styles selected.
 8. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide exposed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 degrees.
- C. Accessories:
1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
- D. Products and Manufacturers: One of the following:
1. Larsens Manufacturing Company; Occult Series Fire Extinguisher Cabinets.
 2. Potter Roemer; Dana Series Fire Extinguisher Cabinets.
 3. JL Industries, Inc.; Embassy Series Fire Extinguisher Cabinets.
- E. Located on Drawings by designation: FEC.

2.3 FINISHES

- A. General: Apply finishes in factory after products are assembled. Protect cabinets with plastic or paper covering, prior to shipment.
- B. Painted Finishes: Provide painted finish to comply with requirements indicated below for extent, preparation and type:
1. Preparation: Clean surfaces of dirt, grease, and loose rust or mill scale.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.2 INSTALLATION

- A. General: Follow manufacturer's printed instructions for installation.
- B. Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
 - 1. Fasten cabinets to structure, square and plumb.

3.3 ADJUSTING AND CLEANING

- A. Adjust cabinet doors to operate freely without binding. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged units.
- B. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

END OF SECTION 10 44 00

SECTION 11 31 00 - APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ice machines.
- B. Related Requirements:
 - 1. Division 22 Sections for water distribution, drainage, and vent piping and plumbing fixtures.
 - 2. Division 26 Sections for electrical services and connections to residential appliances.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data and roughing in diagrams for each type of appliance required indicating compliance with requirements. Include complete operating characteristics, dimensions of individual appliances, finishes for each appliance, and maintenance instructions for each appliance.
- B. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

- A. Embodied Carbon Submittals: Refer to Section 01 81 33 "Sustainable Design Requirements - Embodied Carbon."
 - 1. Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.
 - 2. For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.
- B. Product Certificates: For each type of appliance, from manufacturer.
- C. Field quality-control reports.
- D. Warranties: Sample of special warranties specified in this Section.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of residential appliance from single manufacturer.
- B. UL and NEMA Compliance: Provide electrical components required as part of residential appliances that are listed and labeled by UL and that comply with applicable NEMA standards.
- C. Accessibility: Where residential appliances are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and local regulations.

1.6 DELIVERY

- A. Deliver appliances only after utility rough-in is complete and construction in spaces to receive appliances is substantially complete and ready for installation.

1.7 WARRANTY

- A. Special Warranty, Not A Standard Manufacturer's Warranty: Provide Special Extended Service Agreement in which the manufacturer agrees to repair or replace appliance that fails in materials and workmanship within specified warranty period for the intended light commercial use except as qualified below:
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Icemaker, Sealed System: Full warranty including parts and labor for on-site service on the product.
 - 1. Warranty Period for Sealed Refrigeration System: Five years from date of Substantial Completion.
 - 2. Warranty Period for Other Components: Two years from date of Substantial Completion.
- C. Hot Water/Cold Water Dispenser: Full warranty including parts and labor for on-site service on the product.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 RESIDENTIAL APPLIANCES

- A. Provide product listed in Equipment Schedules and on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's written instructions.
- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- D. Utilities: Refer to the Drawings and Divisions 22 and 26 for plumbing and electrical requirements.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:

1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
 3. Operational Test: After installation, start units to confirm proper operation.
 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- C. An appliance will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.4 ADJUSTING AND CLEANING

- A. Test each item of appliances to verify proper operation. Make necessary adjustments.
- B. Verify that accessories required have been furnished and installed.
- C. Remove packing material from appliances and leave units in clean condition, ready for operation.

END OF SECTION 11 31 00

SECTION 27 00 00 – TECHNOLOGY GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Scope:

1. This section details references, standards, guidelines, scope, requirements, and conditions common to all Division 27 work.
2. Work under this Section and related sections are subject to requirements of Contract Documents, including General Conditions, Supplementary Conditions, and sections under Division 1 General Requirements.

B. Related Documents:

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

C. Description:

1. Throughout the Division 27 Specification Sections, the terms “Architect of Record,” “Owner,” and “Designer” shall refer to “Gensler,” “The Woodlands Township Townhall,” and “4b Technology”, respectively. The “General Contractor” or “GC” shall be responsible for on-site project management, coordination of trades, and project/work phasing. The “Division 27 Contractor” or “Cabling Contractor” is the company selected to provide the materials and labor described within the Division 27 Specification sections and drawings and shall coordinate its efforts with all associated trades to complete the scope of contracted work within the General Contractor specified project sequence and schedule.
2. The intent of drawings and specifications is to describe complete and working, warranted technology infrastructure systems provided, tested, adjusted, and ready for operation.
3. Include incidental details, accessories, hardware, and procedures familiar to the industry not uniquely shown or specified but necessary for properly installing and operating a complete and working system.
4. Check, verify, and coordinate work with drawings and specifications prepared for other trades. Include any modifications, relocations, or adjustments necessary to complete work or to avoid interference with other trades.
5. Included in this contract are connections to equipment provided by others. Refer to Architectural, Electrical, Mechanical, Security, and final shop drawings for equipment being furnished under other sections for exact locations of outlets and various connections required.
6. Information given herein and on drawings is as exact as could be secured but is not guaranteed.
7. Where architectural features govern the work location, refer to architectural drawings for coordination and dimensions.

8. All work shall be "neat and workmanlike" as defined in ANSI/NECA's "Standard Practices for Good Workmanship in Electrical Contracting."

D. Quality Assurance:

1. The Contractor shall comply with all local licensing requirements, laws, and ordinances and shall be responsible for maintaining all required permits for the project's duration.
2. The Contractor shall comply with all bonding, insurance, and safety requirements described within the Contract Documents for the project's duration.
3. Work shall comply with the Owner's insurance underwriters' requirements.
4. Acceptable Contractors for installing the equipment within the Division 27 Specifications must possess personnel with the experience, training, and skill required to install a complete and working communications cabling system. The Contractor may be required to furnish acceptable evidence of having established a minimum of five (5) communications cabling systems similar in size and scope to that proposed under these specifications.
5. Contractor personnel proposed to install any equipment described within the Division 27 Specifications must have demonstrable experience and training on the specific equipment to be provided. The Contractor will be required to furnish acceptable evidence of the manufacturer's current training and experience of having participated in a minimum of five (5) similar system installations on the part of any personnel assigned to this project.
6. Acceptable Manufacturer shall specialize in manufacturing the type of equipment described within the Division 27 Specifications, with a minimum of 10 years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.
7. During the cabling system installation, the Owner, Architect, System Designer, and/or their representative will conduct periodic inspections to verify that the technology infrastructure and structured cabling building are proceeding according to the letter and intent of the Division 27 Specifications. Deficiencies and unapproved deviations from the design will be documented and corrected by the Contractor with no schedule delay and at no additional expense to the Owner.
8. The Division 27 Specification sections intend to describe a level of quality for products and workmanship but not to describe all of the technical requirements essential to the functioning of the cabling system, nor to set forth those requirements adequately covered by applicable codes, industry standards, and accepted communications trade practices. The selected Division 27 Contractor will be expected to be familiar with all applicable codes, industry standards, and accepted communications trade practices as well as their execution to benefit the project and the project Owner.

E. Scope of Work Overview:

1. The brief overview of Division 27 "Scope of Work" below highlights the basic requirements for the project's complete and working communications cabling systems. The contractor shall refer to all related Division 27 specification sections, subsections, drawings, and the overall project construction package(s) for greater detail and requirements as described in the individual parts.
2. The Contractor shall provide for the installation of a complete and working technology infrastructure and structured cabling system to support building systems connectivity.
3. The Contractor shall provide and install all equipment including, but not limited to, free-standing and wall-mounted racks and cabinets, termination hardware, cable runway, wire

- management hardware, equipment grounding, and other miscellaneous equipment within the Technology Rooms as detailed and described on the drawings.
4. The contractor shall also provide, install, and commission Ethernet network switches as described herein and shown in the drawings.
 5. Cable shall be installed within the conduit, cable tray, or cable support accessories such as cable ladder, J-hook assemblies, surface mount raceway, and/or other dedicated support systems under raised access floor or within ceiling spaces. All required cable, termination hardware, and support hardware shall be provided, placed, and tested as noted herein and on the drawings. The Contractor shall provide and install telecommunications rough-in items such as conduits, cable trays, sleeves and cores, poke-thru devices, raceway, and floor/wall device boxes. Bidders must review and understand all site utility, electrical, and architectural plans to identify systems and components provided and installed by others. Irrespective of who installs the rough-in devices, all telecommunications components within the instruments provided by others will be the responsibility of the Division 27 Contractor.
 6. Cross-connects for primary telecommunications shall be provided and installed by the party responsible for activating the communications circuits. The service provider shall provide specified materials for cross-connects (cross-connect wire and manufactured patch cords, both copper and fiber optic). Patching or cross-connects required to activate Ethernet data networks within the premise shall be supplied and installed by the Division 27 contractor.
 7. Horizontal pathways shall be fire-stopped using specified UL-listed systems and shall be completed to the satisfaction of local fire- marshal/inspectors and other Authorities Having Jurisdiction (AHJ).
 8. Universal (voice/data) horizontal station cables originating from within Technology Rooms shall be installed at each outlet and/or workstation location and other technology outlets or device locations as shown on the drawings. Outlets will be primarily mounted within flush-mounted devices on the wall within standard device boxes, surface-mounted or within modular furniture faceplate outlets, or terminated in surface-mount boxes adjacent to security device locations. The universal station cabling shall be UTP-type construction with insulation materials compatible with each installation environment.
 9. A communications grounding backbone system and grounding bus bars shall be provided and installed as determined by the Contractor. Grounding for all equipment racks, cabinets, termination hardware, and related equipment within the Technology Rooms shall be provided and placed by the Cabling Contractor and bonded to the ground bar in each telecommunications space. Grounding and bonding shall comply with TIA 607 and the National Electrical Code with all locally adopted addenda.
 10. All cables, raceways, outlets, and equipment shall be labeled per the associated documents and industry standards. Structured cabling administration and approved labeling scheme shall be as described within or per TIA 606 where not otherwise addressed.
 11. The contractor shall provide and install firestop systems at all fire-rated walls, floors, or other rated systems penetrated for the installation of telecommunications cabling, including those not containing cables. The penetrated wall, partition, or structural element shall be restored to its original fire rating by the application of a U.L. accepted fire stop system to the satisfaction of the AHJ.
 12. The Contractor shall test the entire telecommunications cabling system as specified and required for the acceptance of each individual component and the complete communications cabling system.

13. The Contractor is responsible for ensuring that all cable and equipment being installed in the system are without flaw and that no damage to the cable or equipment occurred in shipment or installation. The Contractor shall replace any defective cables or equipment prior to completion with no additional cost to the Owner and in such a time frame that it does not affect the project schedule. The contractor is responsible for providing all required and specified testing equipment.
14. All products described herein shall be new unless provided by the Owner. All products installed, regardless of origin, shall be tested and labeled by the Contractor.
15. It is the intent of this specification to describe a level of quality for products and workmanship but not to describe all the technical requirements essential to the functioning of the cabling system, nor to set forth those requirements adequately covered by applicable codes, industry standards, and accepted telecommunications trade practices. The selected Contractor will be expected to be familiar with all applicable codes, industry standards, and accepted telecommunications trade practices, as well as their execution to benefit the project and the project Owner.

F. Consideration of BIDS:

1. The General Contractor, Architect, Owner, and/or System Designer will evaluate all proposals and select a bidder based on qualifications, price, quality of the proposal, and demonstrated understanding of the project scope and ability to provide the required quality and quantity of work according to the project schedule.
2. Materials quoted in the Bidders proposal will be reviewed only for compliance with the intent of the design and will not be reviewed for quantities. Quantities of materials required to provide and install a complete and working system as described within the drawings, specifications, and as dictated by accepted industry practice will be provided, installed, or delivered as described herein for the contracted price regardless of quantities of materials quoted in the proposal.

G. Proposal Requirements/Deliverables:

1. The proposal shall include a detailed statement of work describing the Bidder's understanding of the project requirements. Bidders shall provide pricing for all systems, additive and deductive alternates, as well as additive and deductive unit prices per the bidder's instructions provided as a part of the Construction Documents.
2. The proposal shall include a list of all product manufacturers and part numbers that the Bidder proposes to provide, install, furnish, or deliver to the Owner of the project.
3. The proposal shall include a fixed price for all materials, labor, tools, equipment, etc., required to provide and install a complete working system that complies entirely with the drawings, specifications, and all other associated contract documents. If a bid form is provided as part of the bid request, that form shall be filled out and provided as a mandatory part of the bid.
4. Pricing and Unit Prices shall be provided for items identified in the RFP documents on the project with the stated duration of validity. The minimum length of time that prices shall be guaranteed shall be one (1) year or as described within the General Conditions. In the case of products subject to uncontrollable or unforeseen market fluctuations, the proposal shall describe those products and the duration of the price guarantee.
5. Resumes for personnel to be assigned to the project and only those to be assigned to the project shall be included in the proposal. Additionally, the estimator/designer working on this project shall be BICSI Certified RCDD, the on-site Project Manager/Supervisor or

Lead Technician shall be BICSI Certified Level 2 or higher, and any on-site worker shall be a BICSI certified Level 1 or higher technician for the duration of this project. For any manufacturer-certified and warranted system, evidence of current manufacturer-sponsored training and certifications shall be provided for the bidder's Project Manager and Lead Technician.

H. Related Division 27 Sections Include:

1. Section 27 05 26 - Grounding and Bonding for Technology Systems
2. Section 27 05 28 - Hangers and Supports for Technology Systems
3. Section 27 05 53 - Technology Systems Identification
4. Section 27 11 00 - Technology Equipment Room Fittings
5. Section 27 15 00 - Horizontal Cabling
6. Section 27 16 00 – Cabling System Connecting Cords, Devices and Adapters

I. Continuity of Service:

1. No services shall be interrupted or changed without permission from the Architect and Owner. Obtain written permission before work is started.
2. When interruption of services is required, persons concerned shall be notified with at least five working days of notice, and an acceptable time shall be agreed upon.

J. Requirements of Regulatory Agencies:

1. Rules and regulations of Federal, State, and local authorities and utility companies in force at the time of execution of the contract shall become part of this specification.

K. Reference and Standards:

1. ANSI/TIA 568-D.0 through D.4 - Commercial Building Telecommunications Cabling Standard (including applicable Addenda)
2. ANSI/TIA 569-D Commercial Building Standard for Telecommunications Pathways and Spaces
3. ANSI/TIA-598-D Optical Fiber Cable Color Coding
4. ANSI/TIA-606-C Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
5. ANSI-J-STD--607-B Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
6. NFPA 70 - National Electrical Code
7. Local Electrical Code
8. Country, state, and local health, safety, and building codes.
9. UL 444 Communications Cables
10. Standards identified in individual Technical Sections.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Meeting:

1. Division 27 Contractor shall, prior to commencing work, contact the General Contractor, System Designer, and Architect to schedule and conduct a pre-installation meeting. The meeting will demonstrate the Division 27 contractor's review and acknowledgment of understanding the scope of work and specifications, installation methods, Technology Room build-out procedures, proposed labeling scheme, required certifications, testing and acceptance criteria, close-out deliverables, and address any scope of work questions.

B. Pre-Test Meeting:

1. Division 27 Contractor shall, prior to commencing final testing, contact the General Contractor, System Designer, and Architect to schedule and conduct a pre-test meeting. The meeting will cover a review of the Division 27 contractor's proposed test procedures and manufacturer's certification, calibrated and type testers, and proposed test result formats.

1.3 ACTION SUBMITTALS

A. Product Data: Show the following:

1. Note that for satisfying submittal requirements for Division 27, "Product Data" is usually more appropriate than true "Shop Drawings." However, the expression "Shop Drawings" is generally used throughout the specification.
2. Mark general catalog sheets and drawings to indicate specific items submitted.
3. Include proper identification of equipment by name and/or number, as indicated in the specification and shown on drawings.
4. When the manufacturer's reference numbers differ from those specified, provide the correct cross-reference number for each item. Submittals shall be clearly marked and noted accordingly.
5. Submittals shall be submitted as hard copies. Electronic-only submissions are not acceptable.
6. Submittals shall be organized by specification section number and shall have a table of contents and tabs for each piece of equipment or system.
7. When equipment and items specified include accessories, parts, and additional items under one designation, submittals shall be complete and include required components.
8. Submittals that are not complete, permanent, or adequately checked by the Contractor will be returned without review.
9. Product substitutions will not be considered via the submittal process. The contractor's proposed product substitutions must be requested and approved in writing before the Designer accepts submittals.

B. Shop Drawings: Show the following:

1. Submit shop drawings for equipment and systems as requested in respective specification sections. Submittals that are not requested may not be reviewed.
2. Submittals should be grouped to include complete documentation of related systems, products, and accessories in a single submittal. Where applicable, dimensions shall be marked in units to match those specified.
3. Submittals shall be submitted as hard copies. Electronic-only submissions are not acceptable.

4. Include wiring diagrams for electrically powered or controlled equipment.
5. Submit equipment room layouts drawn to scale, including equipment, raceways, accessories, and clearance for access and maintenance.
6. Submit shop drawings or product data as soon as practicable after receiving notice of the award. Submittals must be approved before the installation of materials and equipment.

1.4 CLOSEOUT SUBMITTALS

A. Certificates and Inspections:

1. Refer to Division 01 – for project closeout procedures.
2. Obtain and pay for inspections required by AHJs and deliver certificates approving installations to the Owner unless otherwise directed.
3. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, the Contractor shall certify in writing that the products and materials installed and processes used do not contain asbestos or polychlorinated biphenyls (PCB) using the format in Division 01 Section “Closeout Requirements.”

B. Operation and Maintenance Manuals:

1. Upon completion of work but before final acceptance of the system, submit to the Architect for approval three copies of operation and maintenance manuals in loose-leaf binders. If "one copy" is more significant than 2 inches thick or consists of multiple volumes, submit only one set initially for review. After securing approval, submit 3 copies to the Owner.
2. Manuals shall be organized by specification section number and shall have a table of contents and tabs for each piece of equipment or system.
3. Instruct the Owner's representative in equipment operation and maintenance. Instruction shall include a complete operating cycle on all apparatus.
4. O&M manuals and instructions to the Owner shall be provided prior to the request for final payment.

C. Manuals Shall Include the Following:

1. Copies of shop drawings.
2. Manufacturer's operating and maintenance instructions. Include parts lists of items or equipment. The applicable type or model shall be designated where the manufacturer's data includes several types or models.
3. CD ROMs of O&M data with exploded parts lists where available.
4. Phone numbers and addresses of local parts suppliers and service companies.
5. Internet/WEB page addresses where applicable.
6. Wiring diagrams.
7. Factory and field test records.
8. Additional information, diagrams, or explanations as designated under the respective equipment or systems specification section.

D. Record Documents:

1. Refer to General Conditions of Contract and Division 01 – for project closeout procedures. Prepare a complete set of record drawings in accordance with Division 01.
2. Use a designated set of prints of contract documents as prepared by the Architect/Engineer for mark-up and preparation of record drawings.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Resumes for personnel to be assigned to the project and only those to be assigned to the project.
2. The estimator/designer working on this project shall be BICSI Certified RCDD.
3. The on-site Project Manager/Supervisor or Lead Technician shall be BICSI-certified Level 2 or higher, and any on-site worker shall be a BICSI-certified Level 1 or higher technician for the duration of this project.

1.6 FIELD CONDITIONS

A. Building Access:

1. Arrange for necessary openings in the building to allow all apparatus admittance.

B. Housekeeping and Clean-up:

1. Periodically, as work progresses and/or as directed by the Architect, remove waste materials from the building and leave the area of work broom clean. Upon completion of the job, remove tools, scaffolding, broken and waste materials, etc., from the site.
2. Upon receipt of the final punch list and during resolution of punch list items, work areas shall be kept free of remaining materials, supplies, tools, and refuse. Division 27 contractor shall clean spaces no less frequently than every other working day.
3. All recyclable packing materials and refuse shall be recycled.

1.7 WARRANTY

A. Warranty:

1. Refer to Division 01 Section “Product Requirements” for general Guarantee (Warranty) requirements.
2. Refer to technical sections for Guarantee requirements for each system. Where no guarantee requirements are called out, the guarantee shall be for one year after acceptance by the Owner for equipment, materials, and workmanship to be free from defect.
3. In any case, wherein fulfilling requirements of any guarantee, if Contractor disturbs any work guaranteed under another contract, restore such disturbed work to condition satisfactory to Architect and guarantee such restored work to the same extent as it was guaranteed under such other contract.
4. Guarantees shall include labor, material, and travel time.

PART 2 - PRODUCTS

2.1 UNAUTHORIZED MATERIALS

A. Manufacturers:

1. Materials and products required for this work shall not contain asbestos, polychlorinated biphenyls (PCB), or other hazardous materials identified by the Owner.

B. Product Substitution:

1. Division 27 specifications establish a level of quality and performance of a complete and working system. Pricing, submitting, and delivering products and associated materials and supplies specifically called out within these specifications will, in most circumstances, constitute acceptable products and systems.
2. Consideration of any alternative to products and associated materials and supplies required should include a written request to consider the alternate product or material in compliance with Division 01 Section "Product Requirements" using the form in Division 01 Section "Substitution Request Form." Documentation that the alternate is technically equivalent or superior to the specified product. Documentation of economic benefit to the Owner.
3. Product substitutions shall not be considered acceptable until a written acknowledgment is provided.

B. Acceptable Manufacturers:

1. Products of the manufacturers specified in this document establish the minimum functional, aesthetic, and quality standards required for the work of Division 27.
2. Acceptable Manufacturers shall specialize in manufacturing the type of equipment described within the Division 27 Specifications, with a minimum of 10 years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Verify elevations and measurements prior to installation of materials.

B. Delivery, Storage, and Handling:

1. The Division 27 Contractor is responsible for ensuring that all cable, products, and equipment being installed in the system are without flaw and that no damage to the cable or equipment occurred in shipment or installation. The Cabling Contractor shall replace

- any defective cables or equipment prior to completion with no additional cost to the Owner and in such a time frame that it does not affect the project schedule.
 2. Deliver, store, and protect products to the site under provisions of Division 01.
 3. Maintain factory wrapping or provide cover to protect units from dirt, water, construction debris, and traffic.
 4. Handle by the manufacturer's written instructions. Handle carefully to avoid damage to components, enclosure, and finish.
- C. Floor, Wall, and Ceiling Openings:
1. Where penetrations of fire-rated assemblies are involved, seal penetrations with appropriate fire-stopping systems.
 2. Seal non-fire-rated floor penetrations with non-shrink grout equal to Embecco by Master Builders or urethane caulk, as appropriate
 3. Temporary sleeves, if used to form wall openings, shall be removed prior to installation of permanent materials. Permanent sleeves for wall penetrations shall be specifically manufactured for the purpose unless noted otherwise.
 4. Seal non-rated wall openings with urethane caulk.
- D. Equipment Access:
1. Install raceways, junction and pull boxes, and accessories to permit access to equipment for maintenance. Relocation of raceways or accessories, as required to provide access, shall be provided at no additional cost to the Owner.
 2. Locate communications outlets and equipment to fit details, panels, decorating, or finishes within spaces. The architect reserves the right to make minor position changes to outlet locations before work has been installed.
- E. Equipment Supports:
1. Provide supporting steel not indicated on drawings as required for equipment installation and materials, including angles, channels, beams, and hangers.
 2. Concrete anchors, used for attachment to concrete, shall be steel shell with plug type. Plastic, rawhide, or anchors utilizing lead are not allowed.
 3. Anchors installed to support items from concrete ceilings or structural members shall be submitted and approved by the Structural Engineer prior to execution.
- F. Support Protection:
1. In occupied areas, mechanical rooms, and areas requiring regular maintenance access, specific equipment must be guarded to protect personnel from injury
 2. Provide minimum 1/2" thick Armstrong Armaflex insulation or similar product applied with Armstrong 520 adhesive on lower equipment edges, including bus ducts, cable trays, pull boxes, and electrical supporting devices suspended less than 7 ft above floors, platforms, or catwalks in these areas.
 3. Threaded rods or bolts shall not extend beyond the supporting element and shall be protected as described above.
- G. Acceptance Testing:

1. Refer to related sections in Section 27 15 00 - Horizontal Cabling for testing requirements, procedures, and submittals.

H. Documentation:

1. Upon completion of installation, the Contractor shall provide System Documentation. Documentation shall include Up-to-date Testing Equipment Certificates of Calibration, Acceptance Test Results, Record Drawings, all Approved Submittals, and Manufacturer's Warranty or Certification Documents.
2. Submit System Documentation in accordance with Division 1 "Project Record Documents."
3. Submit documentation within ten (10) working days of the completion of testing of each testing phase (e.g., subsystem, cable type, area, floor, etc.) or ten days prior to scheduled occupancy of a subject area, whichever is sooner. This is inclusive of Test results and draft Record Drawings. Draft drawings may include mark-ups done by hand. Machine-generated (final) copies of Record Drawings shall be submitted within 30 working days of completion of each testing phase.
4. Submit Acceptance Test Results in electronic form for review and distribution. Test results shall be submitted in format(s) native to test instrument(s) used in performing testing
5. Acceptance Test results shall include a description of the sub-system tested, equipment/cable/outlet I.D., reference and test setup, test equipment type/model and serial number(s), equipment location and direction of the test (if applicable), test frequencies/wavelengths, date and operator name(s).
6. Engineer or Owner may request that a 10% random re-test be conducted on the cable system - at no additional cost - to verify documented findings. Tests shall be a repeat of those defined above and in technical sections.
7. If findings contradict documentation submitted by the Contractor, additional testing can be requested to the extent determined necessary by the Engineer or Owner, including 100% re-test. This re-test shall be at no additional cost to the Owner.
8. Documentation - including hard copy and electronic forms of Test Data and Record Drawings - shall become the property of the Owner.

I. Cleaning:

1. After installation is complete, the Contractor shall clean all systems.
2. Vacuum debris from system components, enclosures, junction boxes, and pull boxes prior to testing and again prior to completion.
3. Thoroughly clean equipment of stains, paint spots, dirt, and dust. Remove temporary labels not used for instruction or operation.
4. Technology spaces shall be delivered clean and dust-free. All surfaces and finishes shall be repaired and in an "as new" condition.

END OF SECTION 27 00 00

