Project Manual

March 23, 2015

Stantec Project No. 214100176

Eyler Elementary School

Window/Door Replacement

Airport Community Schools

Carleton, Michigan

DOCUMENT 00 01 01 - PROJECT TITLE PAGE

PROJECT MANUAL

Eyler Elementary School Window/Door Replacement
Airport Community Schools
Carleton, Michigan

Architect Project No. 214100176

Stantec Architecture, Inc.

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BERKLEY, MICHIGAN 48072
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Web Site: www.stantec.com

Issued: March 23, 2015

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SECTION 00 01 10 - TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

Division 00 - Procurement and Contracting Requirements

AIA and CSI forms and pre-printed documents referenced in the specifications are not included in this Project Manual, but are hereby made a part of the Contract Documents, Copies may be viewed at the office of the Architect. AIA forms and pre-printed documents may be obtained from distributors listed at http://www.aia.org/groups/aia/documents/pdf/aias076340.pdf. CSI forms and pre-printed documents may be obtained from https://webportal.csinet.org/Purchase/SearchCatalog.aspx.

GENERAL REQUIREMENTS SUBGROUP

Division 01 - General Requirements

FACILITY CONSTRUCTION SUBGROUP

Division 02 - Existing Conditions

Division 03 - Concrete

(Not Used)

Division 04 - Masonry

(Not Used)

Division 05 - Metals

(Not Used)

Division 06 - Wood, Plastics, and Composites

Division 07 - Thermal and Moisture Protection

Division 08 - Openings

Division 09 - Finishes

(Not Used)

Division 10 - Specialties

(Not Used)

Division 11 - Equipment

(Not Used)

Division 12 - Furnishings

Division 13 - Special Construction

(Not Used)

Division 14 - Conveying Equipment

(Not Used)

Divisions 15 through 49

(Not Used)

END OF SECTION 00 01 10

SECTION 00 11 16 – ADVERTISEMENT FOR BIDS

OWNER: Airport Community Schools
11332 Grafton Rd
Carleton, MI 48117

PROJECT: Eyler Elementary School Window/Door Replacement

LOCATION: Eyler Elementary School
1335 Carleton Rockwood Rd.
Carleton, MI 48117

PROJECT DESCRIPTION:

EYLER ELEMENTARY
Project work includes window and door replacement, new marble sills, new roller shades and typical patch and repair around new window and door installation.

ARCHITECT: Stantec Architecture
2338 Coolidge
Berkley, MI 48072
(248) 336-4700

BIDDING DOCUMENTS:

1. Bidding documents consist of plans and specifications as prepared by Stantec Architecture, Berkley, Michigan.
2. Electronic bidding documents may be obtained on or after March 23 at the following locations:

   Stantec Architecture
   mike.baker@stantec.com

   Airport Community Schools
   http://airportschools.com/

   Buy4Michigan:
   https://www.buy4michigan.com/bso/login.sdo

Bidding documents are on file and may be examined at the following locations:

F.W. Dodge Co. 36060 Industrial Rd Livonia, MI 48150 Ph: 734-464-2959	Construction News Service 1773 R. W. Berends Road Wyoming, MI 49519 Ph: 616-530-3940
Builders Exchange – Lansing 1240 E. Saginaw St. Lansing, MI 48906 Ph: 517-372-8930	Construction Association of Michigan 43636 Woodward Ave. Bloomfield Hills, MI 48302 Ph: 248-972-1000
Builders Exchange - Grand Rapids 4461 Cascade Rd SE Grand Rapids, MI 49546 Ph: 616-949-8650	Builders Exchange – Kalamazoo 3431 Kilgore Rd. Kalamazoo, MI 48034 Ph: 269-349-2507

PRE-BID MEETING:

1. A pre-bid meeting will be held at the location and time indicated below.

   Location: Eyler Elementary School
   1335 Carleton Rockwood Rd.
   Carleton, MI 48117

   Date/Time: (Tuesday), March 31, 2015; 4:00 PM

BIDS:

1. The Owner will receive unified proposals for complete fulfillment of the work as described by the bidding documents.
2. Bids shall be sealed in an envelope bearing the words “PROPOSAL” and the project name as described above. Bids shall be delivered to the following location no later than the date indicated below.

   Location: Airport Community Schools
   11332 Grafton Rd
   Carleton, MI 48117
   Date/Time: (Tuesday), April 14, 2015; 2:00 PM local time

3. Bids will be publicly opened and read at the location and time indicated below.

   Location: Airport Community Schools
   11332 Grafton Rd
   Carleton, MI 48117
   Date/Time: (Tuesday), April 14, 2015; 2:05 PM local time

4. The Owner reserves the right to reject any and all proposals, either in part or in whole, and to waive any irregularities. The Owner will not open, consider or accept any late bids.
5. All bids must include completed Equal Opportunity Statement, Familial Disclosure Form and Affidavit of Compliance Iran. No exceptions for bids that are missing any of the forms.
6. Any bid may be withdrawn or modified by written request made by the Contractor, provided such request is received at the address shown in paragraph 2 above prior to the date and time established for the receipt of bids. Bids not so withdrawn shall constitute a firm offer to provide the services contained herein and shall remain firm for acceptance for 60 days after the time designated for receipt of bids.
7. It is the intent of the Owner to award a Contract and issue a “Notice to Proceed” on April 21, 2015.

INTERVIEWS:

1. Bidders are advised that the two (2) lowest bidders may be interviewed on April 15 or 16. The candidates will be contacted by the Owner’s representative to schedule interview times. Failure to participate in the interview process will result in rejection of the bid.

BONDS:

1. All bids shall be accompanied by a bid bond executed by a Surety Company acceptable to the Owner, or a cashier’s check in the amount of at least 5% of the sum of the proposal payable to the Owner.
2. Successful bidders will be required to furnish a U.S. Treasury Listed Company Performance and Payment Bond for bids in excess of $50,000 in the amount of 100% of their bid. The cost of the bond shall be included in each proposal.

Dan Fahnestock
Airport Community Schools
Carleton, Michigan

END OF SECTION 00 01 11

SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

1.1 DEFINITIONS

A. All definitions set forth in the General and Supplementary Conditions of the Contract for Construction are applicable to these Instructions to Bidders.

B. Bidding documents include the Instructions to Bidders, Bid Form and Contract, and the Contract Documents including any addenda.

C. Addenda are written or graphic instruments issued prior to the execution of the contract which may modify or interpret the bidding documents, including Drawings and the Project Manual by additions, deletions, clarifications or corrections.

1.2 DOCUMENT INTERPRETATION

A. Each bidder shall examine the bidding documents carefully and not later than **2:00 PM, April 9, 2015**, shall make written request to Mike Baker, Stantec Architects at mike.baker@stantec.com for interpretation or correction of any ambiguities or inconsistencies which are discovered.

B. Only a written interpretation or correction, issued as an addendum shall be binding. No explanations or interpretations requested or made orally will be considered binding.

C. No addendum shall be issued later than two (2) days prior to the bid date. Addenda shall be issued to all contractors on Owner's plan holder list and posted on the district website http://airportschools.com/

1.3 PRODUCT OR MANUFACTURER APPROVAL REQUESTS

A. Bidders wishing to base their bids on a material, product or manufacturer other than those specified in the Project Documents shall submit a request for prior approval.

1.4 BIDDING PROCEDURE

A. Each bidder, by submitting a bid, represents that the bidder has read and understands the bidding documents, has visited the sites and is familiar with all the existing conditions affecting the execution of the work in accordance with the contract documents.

B. The Owner will receive sealed Proposals for the Work as herein set forth at the place and until the time as stated in the Advertisement for Bid, a copy of which is bound herewith in these Specifications.

C. This is a lump sum bid.

D. All bids must be in **duplicate** on the Bid Form provided in these bidding documents. Each Proposal must be delivered in an opaque sealed envelope showing the bidders name and the project name. Proposals submitted by telephone or fax will not be accepted. Modifications by telephone or fax to previously submitted proposals will not be accepted.

E. No bid shall be withdrawn for a period of 60 days from the date of the bid. Bids may be withdrawn or resubmitted prior to the time of bids being due.

F. A principal duly authorized to make contracts on behalf of the bidder shall sign all bid proposals.

G. Any stipulations of Voluntary Alternates or qualifications made by the bidder in or accompanying the proposal as a condition for the acceptance of the Contract may not be considered in the award of the contract and may cause the rejection of the entire proposal.

H. The Owner reserves the right to reject any and/or all bids in whole or in part and to waive any informality therein. The Owner reserves the right to accept that bid which in its opinion is in the best interest of the Owner.

1.5 QUALIFICATIONS OF BIDDERS

A. The Owner may request the two (2) lowest bidders to submit information necessary to satisfy the Owner that the Bidder is adequately prepared to fulfill the contract. Such information may include past performance records list of available personnel, plant and equipment, description of work which will be done simultaneously with the Owners project, financial statement, or any other pertinent information. This information will be used in determining whether a bidder is qualified, responsible and reliable to perform the work required.

1.6 PERFORMANCE AND PAYMENT BOND

A. Successful bidders for work will be required to provide Payment and Performance Bonds issued by sureties approved by the U.S. Department of Treasury and licensed to do business in Michigan. Sureties must be acceptable to Owner.

1.7 APPLICABLE LAWS

A. This Project is not tax exempt. The bidder shall include in his proposal and make payment of all applicable rates, use, employment and other applicable taxes.

B. Contractor will comply with all Federal, State and Municipal laws, rules and regulations in the performance of the work and the employment of persons. All applicable construction codes and fire safety requirements shall be followed. Contractor shall obtain all necessary licenses and permits and pay all fees, taxes and other charges required in performance of the work and furnish upon the Owners request evidence of compliance with the above.

END OF SECTION 00 01 20

BID FORM
TO
Eyler Elementary School
Window/Door Replacement

Name of bidder: _____

Address (Complete): _____

Contact Person:_____

Phone: _____ Fax: _____

Owner: Airport Community Schools
11332 Grafton Rd
Carleton, MI 48117

The undersigned, having familiarized themselves with the existing conditions and limitations affecting the cost of the work and with the Contract Documents, including and Addenda thereto on file at the Offices of Stantec architecture, hereby proposes to perform everything required and to provide and furnish all of the labor, materials, necessary tools, expendable equipment, and all utility and transportation services necessary to perform and complete in a workmanlike manner, all work required in connection with the Eyler Elementary School Window/Door Replacement, all in accordance with the above listed documents, therefore, as prepared by Stantec Architecture, Berkley, Michigan, including Addenda Numbers ___, ___, ___, ___, and ___, issued thereto, for the sum of:

Lump Sum _____ $_____
(Words) (Figures)

The undersigned agrees to start Project ____ calendar days after “Notice to Proceed” and complete the scope of work within ____ calendar days after start of project.

It being understood that each of the items is to be furnished to accomplish the purpose for which it was intended; and the prices set out constitute full payment for the specified work and for every risk, hazard or condition encountered which may be different from what was indicated, expected or anticipated.

The prices listed above are to include overhead and profit. For authorized changes in the work involving additions to or deductions from the contract price, the bidder agrees to perform or delete such authorized work at net cost to him plus the following percentage of net cost. Percentages shall be considered to be all direct costs. Taxes, Social Security payments and insurance premiums shall not be considered direct costs.

For General Contractors own forces – Maximum 10%
For work under subcontract – Maximum 7%

The Owner reserves the right to reject any and/or all bids and to waive any informality should it be deemed in its best interest to do so.

TIME

The Owner prefers the work to be completed by August 28, 2015. The bidder agrees to list the number of calendar days required to complete the scope of work on the bid form.

Respectfully submitted,

Name of bidder: _____

Address: _____

_____

Signature of bidder: _____

Name (Printed) _____

Title: _____

Phone: _____ Fax: _____

E-mail _____

END OF SECTION 00 41 00

SECTION 00 41 03 – FAMILIAL DISCLOSURE FORM

All bidders must complete the following disclosure form in compliance with MCL 380.1267 and attach this information to the bid.

By the attached sworn and notarized statement, we are disclosing the following familial relationship(s) that exists between the Owner or any employee of the bidder and any member of the Board, Intermediate School Board, or Board of Directors, or the Superintendent of the School District, immediate Superintendent of the Intermediate School District, or Chief Executive Officer of the Intermediate School District.

Disclose any familial relationship and complete the form below in its entirety:

The following are familial relationships as described above (provide employee name, family contact name, family contact person and familial relationship or NONE).

NAME OF BIDDER (COMPANY): _____

SIGNATURE: _____

NAME: _____
(typed or printed)

TITLE: _____

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

On this _____ day of _____, 2009, before me, a Notary Public in and for said county, personally appeared _____, agent of the said firm _____ _____, and who acknowledged the same to be his/her free act and deed as such agent.

_____

Notary Public, _____County, MI
My Commission Expires:_____

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AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT
Michigan Public Act No. 517 of 2012

The undersigned, the owner or authorized officer of the below named contractor (the "Contractor"), pursuant to the compliance certification requirement provided in the **Airport Community Schools**' (the "School District") Request For Bids For **Elyer Elementary School Window/Door Replacement Project** (the "RFB"), hereby certifies, represents and warrants that the Contractor (including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event Contractor is awarded a contract as a result of the aforementioned RFB, the Contractor will not become an "Iran linked business" at any time during the course of performing the Work or any services under the contract.

The Contractor further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or 2 times the amount of the contract or proposed contract for which the false certification was made, whichever is greater, the cost of the School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a request for proposal for three (3) years from the date the it is determined that the person has submitted the false certification.

CONTRACTOR: _____

BIDDER'S FIRM NAME _____

BY (SIGNATURE) _____

PRINTED NAME AND TITLE

STATE OF MICHIGAN)
)SS
COUNTY OF)

Subscribe and sworn before me on this _____ Seal:

day of _____, 20 , a Notary Public

in and for _____ County,

_____

My Commission expires_____ _____

Notary Public

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SECTION 00 52 00 - AGREEMENT FORM

The Agreement shall be executed on AIA Document Number A101 "Standard Form of Agreement between Owner and Contractor where the basis of payment is a Stipulated Sum", 2007 edition. A sample of this form is available from the Architect for your inspection.

END OF SECTION 00 52 00

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SECTION 00 72 00 - GENERAL CONDITIONS

The General Conditions of the Contract are set forth in the American Institute of Architects Document A201, entitled "General Conditions of the Contract for Construction", dated 2007, containing Articles 1 through 15 and are hereby made part of this Specification to the same extent as if bound herein.

The General Conditions shall become a part of this Contract and shall apply to the Contractor and all Subcontractors. Copies of the General Conditions may be examined or obtained from the Owner.

END OF SECTION 00 72 00

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SECTION 00 73 00 - SUPPLEMENTARY CONDITIONS

The following supplements modify, change, delete from or add to the "General Conditions of the Contract for Construction", AIA Document A-201-2007. Where an Article of the General Conditions is modified or any Paragraph, Sub-paragraph, or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Sub-paragraph, or Clause shall remain in effect.

Article 1: General/Provisions:

1.2.1 Add the following paragraphs:

1.2.1.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities.

1. The Agreement.
2. Addenda, with those of later date having precedence over those of earlier date.
3. The Supplementary Conditions.
4. The General Conditions of the Contract for Construction.
5. Drawings and Specifications.

1.2.1.2 In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. The location of materials and products called out as a part of the Work within the Construction Documents, which consist of drawings and specifications, may be indicated within the drawings or specifications or their addenda. The choice of “call out” location is at the discretion of the Architect and his Consultants. It is the Contractor’s responsibility to review the specifications and drawings, compare the Construction Documents between and within themselves, and to bid the better quality/greater quantity. Ancillary materials and products listed or indicated in the specifications for a product are to be provided as part of the specified Work when the ancillary materials and products are not indicated in the drawings and addenda. Ancillary materials and products listed or indicated in the drawings for a product are to be provided as part of the indicated Work when the ancillary materials and products are not indicated in the specifications and addenda.

Article 3: Contractor:

3.3.4 Add the following paragraph:

The Contractor expressly recognizes that the Architect does not owe him any duty to supervise or direct his work as to protect the Contractor from the consequences of his own acts or omissions.

3.4 Labor and Materials

Add the following paragraphs 3.4.1.1, 3.4.2.1, 3.4.3.1, 3.4.3.2 to 3.4

3.4.1.1 The Contractor shall certify in writing that no materials used in the work contain lead or asbestos materials in them in excess of amounts allowed by Local/State standards, laws, codes rules and regulations; the Federal Environmental Protection Agency (EPA) standards and/or the Federal Occupational Safety and Health Administration (OSHA) standards, whichever is most restrictive. The Contractor shall provide this written certification as part of submittals under Section 01 77 00, Project Closeout.

3.4.2.1 No request for the substitution of products in place of those specified shall be considered after the Contract has been executed.

3.4.3.1 Smoking and chewing of tobacco products is prohibited in enclosed new construction.

3.4.3.2 No glass bottles shall be brought on the construction site or Owner's property by any construction personnel.

Article 4: Administration of The Contract:

4.2.10.1 The Architect may appoint an employee or other person to assist him during the construction. These representatives will be instructed to assist the Contractor in interpreting the Contract Documents; however, such assistance shall not relieve the Contractor from any responsibility as set forth by the Contract Documents.

The fact that the Architect's Representative may have allowed work not in accordance with the Contract Documents shall not prevent the Architect from insisting that the faulty work be corrected to conform with the Contract Documents and the Contractor shall correct same.

15.1.5.2.1 A guide for average climatological conditions shall be the bulletin "Local Climatological Data", published by the Department of Commerce. No request for an extension of time due to weather conditions shall be considered unless accompanied by Weather Bureau documentary evidence showing by comparison that such weather is abnormal to any of the past five (5) years.

15.1.6 Delete in its entirety and in its place insert “The Contractor waives Claims against the Owner for consequential damages arising out of or relating to this Contract. This waiver includes damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work. This waiver is applicable, without limitation, to all consequential damages due to Owner’s termination in accordance with Article 14. Nothing contained in this Subparagraph 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

Delete these paragraphs and subsequent subparagraphs 15.3, 15.3.1, 15.3.2, 15.3.3, 15.4, 15.4.1, 15.4.1.1, 15.4.2, 15.4.3.

Article 7: Changes in the Work:

7.3.3.5 Add the following:

The total Contractor mark-up for overhead and profit on any Change Order shall not exceed 10%. On work performed by a subcontractor and supervised by the Contractor, the total Contractor mark-up for overhead and profit for any change order shall not exceed 7%.

Article 8: Time:

Article 8: Time:

Revise subparagraph 8.1.2 as follows:

8.1.2 The date of the commencement of the Work is based on a “Notice to Proceed” on April 21, 2015 issued by the Owner to the selected bidder. Work on site may not commence until close of school after June 9, 2015.

Add the following subparagraph:

8.2.4 **The date of Substantial Completion shall be August 28, 2015.**

Add the following subparagraph:

8.3.4 On-Site Work Hours: Work shall be generally performed on the existing building during normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday.

8.3.1 Delete the phrase "or by delay authorized by the Owner pending mediation and arbitration". Add the following sentence to the end of the subparagraph "Extensions of time shall be granted only because of delay preventing the execution of the major items of work critical to the schedule for completion of the Work."

Add the following subparagraph:

8.3.4 Extensions of time will be granted only for loss of scheduled work days, not for loss of calendar days.

Add the following subparagraph:

8.3.5 The Contractor shall include in his base bid proposal all overhead and profit necessary to complete the project. No additional overhead or profit will be paid for extensions of time granted for loss of scheduled work days.

Add the following paragraph 8.3.6

8.3.6 In the event that the Owner has specified a stipulated completion date, the provisions of 8.3.1 through 8.3.3 do not apply. However, in the event of delay(s) fully beyond the Contractor's control, the Owner may authorize by change order reimbursement for additional costs to accelerate the construction in order to maintain the stipulated completion date.

Article 9: Payments and Completion:

9.1.2 Add the following subparagraph:

In any contract where the total contract price at time of execution of the contract is $400,000.00 or more and the contract provides for retainage of greater than five percent of periodic contract payments, the school district shall deposit the retainage in an interest-bearing account, and interest earned on such retainage funds shall be paid to the General Contractor upon completion of the contract.

9.3.1 Add the following sentence:

The form of application for payment shall be AIA Document G702, (Notarized) Application for Certification of Payment, Supported by AIA Document G703, Continuation sheet.

9.6 Progress Payments

9.6.1 Substitute the following paragraph:

After the Architect has issued a certificate for payment, the Owner shall make payments on account of the contract as follows:

Interim Payment: No later than fifteen (15) days following the end of the period covered by the application for payment, not less than ninety-five percent (95%) of the value based on the contract prices for labor and material incorporated in the work and of materials suitably stored at the site thereof unto the date of application for payment, as estimated by the Architect, less the aggregates of previous payments.

9.10 Final Completion and Final Payment:

9.10.1 Add the following sentence:

Final payment shall be due thirty days after final completion provided the conditions set forth in Par. 9.10.2 have been fulfilled.

Article 10: Protection of Persons And Property:

10.2.2 Add the following subparagraph:

10.2.2.1 The Contractor shall comply with and provide for, in all trenching work which will exceed a depth of five feet, trench safety systems that meet current Occupational Safety And Health Administration (OSHA) Standards. The Contractor shall be responsible for incorporating into his base bid the cost of these trench safety systems. All requirements shall be in accordance with detailed drawings and specifications.

10.2.2.2 The Contractor shall comply with Federal and State Regulations to verify use of only "lead free" and "asbestos free" materials.

Article 11: Insurance And Bonds:

11.1.1 Delete subparagraph 11.1.1 and substitute the following:

11.1.1 The Contractor shall purchase and maintain, in a company or companies licensed to do business in the state in which the project is located, such insurance as will protect him, the Owner, and Architect, from claims set forth below which may arise out of, or result from, the Contractor's operations under the Contract, whether such operations be by himself, or by any Sub-Contractor, or be anyone directly or indirectly employed by any of them, or

by anyone for whose acts any of them may be liable (Sub-paragraphs .1 through 7 shall remain unchanged). Contractual liability shall be the same limits as #2 under 11.1.2 below.

11.1.1.9 Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises operations
2. Independent Contractor's Protective
3. Products and Completed Operations
4. Contractual-Including Specified Provisions for the Contractor's Obligations under Paragraph 3.18
5. Owned, Non-Owned and Hired Vehicles
6. Broad Form Coverage for Property Damage
7. Personal Injury

11.1.2 Substitute the following: The insurance required by sub-paragraph 11.1.1 shall be written for not less than any limits of liability indicated below.

1.	a.	Workmen's Compensation - Statutory	
	b.	Employer's Liability	$100,000.00
2.		Comprehensive General Liability:	
	a.	Bodily Injury:	
		Each Occurrence	$250,000.00
		Aggregate	$500,000.00
	b.	Property Damage:	
		Each Occurrence	$500,000.00
		Aggregate	$500,000.00
		-or-	
	c.	Combined Coverage Limit	$1,000,000.00
3.		Automobile Liability:	
	a.	Bodily Injury:	
		Each Person	$500,000.00
		Each Occurrence	$500,000.00
	b.	Property Damage:	
		Each Occurrence	$250,000.00
	-or-		
	c.	Combined Coverage Limit	$750,000.00

4. Independent Contractors Liability - Same limit as #2 above.
5. Products and Completed Operations - Same limits as #2 above, commencing with issuance of final certificate of payment and remaining in effect for one (1) year.
6. Property Damage Liability Insurance will provide X, C and U coverage, as applicable.
7. Umbrella Excess Liability - $1,000,000.00

11.1.3 Add the following:
Furnish one copy of certificates herein required for each copy of the agreement; specifically set forth evidence of all coverage required by sub-paragraph 11.1.2.

11.1.3.1 Add the following:

The form of the certificate shall be AIA Document G715 and ACORD form 25-S. Furnish to the owner copies of any endorsements that are subsequently issued amending coverage or limits.

Add the following:

Article 11.1.5 Workers' Compensation Insurance Coverage.

A. Definitions:

Certificate of coverage ("certificate")- A copy of a certificate of insurance, a certificate of authority to self-insure issued by the commission, or a coverage agreement, showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project - includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

Persons providing services on the project ("subcontractor" in paragraph 406.096) - includes all persons or entities performing all or part of the services the Contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the Contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to the project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

B. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Michigan Labor Code for all employees of the Contractor providing services on the project, for the duration of the project.

C. The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.

E. The Contractor shall obtain from each person providing services on a project, and provide the governmental entity:

(1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

(2) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

F. The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

G. The Contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

H. The Contractor shall post on each project site a notice, in the text, form and manner prescribed by the Michigan Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

I. The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

(1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Michigan Labor Code for all of its employees providing services on the project, for the duration of the project;

(2) provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

(3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(4) obtain from each other person with whom it contracts, and provide to the Contractor:

(a) a certificate of coverage, prior to the other person beginning work on the project; and

(b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificates of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the governmental entity that all employees of the Contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the governmental entity to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity.

11.3 Property Insurance:

11.3.1 Delete and substitute the following:

11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. Such insurance shall be in a company or companies against which the Owner has no reasonable objection. This insurance shall include the interests of the Owner, the Contractor, Sub-Contractors and Sub-Subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "All Risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief. If not covered under the All Risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off of the site or in transit when such portion of the Work are to be included in an application for payment under Sub-paragraph 9.3.2. If this insurance is written with stipulated amounts deductible under the terms of the policy, the Contractor shall pay the difference attributable to deductions in any payments made by the insurance carrier or claims paid by this insurance.

11.3.1.1 Delete this clause.

11.3.1.2 Delete this clause.

11.3.1.3 Delete this clause.

11.3.4 Delete this Subparagraph.

11.3.6 Delete the first sentence and substitute the following:

Before an exposure to loss may occur, the Contractor shall file with the Owner a copy of each policy that includes insurance coverages required by this Paragraph 11.4.

11.3.6 Delete the last word of this subparagraph and insert the word "Owner".

11.3.7 Modify Subparagraph 11.4.7 by substituting "Contractor" for "Owner" at the end of the first sentence.

11.3.8 Modify Subparagraph 11.4.8 by substituting "Contractor" for "Owner" as fiduciary; except that at the first reference to "Owner" in the first sentence, the word "this" should be substituted for "Owner's."

11.3.9 Modify Subparagraph 11.4.9 by substituting "Contractor" for "Owner" each time the latter word appears.

11.3.10 Modify Subparagraph 11.4.10 by substituting "Contractor" for "Owner" each time the latter word appears.

11.4 Performance Bond And Payment Bond:

11.4.1 Delete Par. 11.5.1 and substitute the following:

11.4.1 CONTRACT SECURITY: Performance and Payment Bonds shall be required for all work where the Contract exceeds $25,000.00. After award of contracts by Owner, the successful Bidder, at Bidder's expense, must deliver to the Owner an executed Performance and Payment Bond in an amount of 100% of the accepted bid as security for the faithful performance of the Contract and payment of all persons performing labor and furnishing materials in connection with this Contract. Bonding Company must be licensed, listed, and approved in the State of Michigan (State Board of Insurance). Bonding Company shall provide such other information as necessary to document net worth, stability, total bonding capacity, and projects under coverage, etc., with adequate financial capacity for this Project. If the Contract sum exceeds the underwriting limitation of the Surety on the most recent list of acceptable sureties, the Contractor shall provide the Owner with evidence that the excess is protected by re-insurance or co-insurance in a form and amount acceptable to the Owner. Such bonds shall meet the requirements of applicable state law.

Add the following paragraph:

11.5 Antitrust Violations:

"Vendors (Contractor) hereby assigns to purchaser (Owner) any and all claims for overcharges associated with the contract (Contract) which arise under the antitrust laws of the United States, 15 U.S.C.A. Sec. 1 et seq (1973").

END OF SECTION 00 73 00

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SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 PROJECT DESCRIPTION

A. The Project consists of window and exterior door replacement at Eyler Elementary School, as shown on Contract Documents prepared by Stantec Architecture Inc., dated March 23, 2015.

B. The Work consists of exterior window, window sill, blinds and door replacement and associated patching/repair requirements as indicated in the drawings and specifications. Window and door removal will be by Owner's contractor as indicated in 1.3.A. Marble sill and blind removal is by window/door contractor.

1.3 WORK UNDER OTHER CONTRACTS

A. DESCRIPTION: Owner's Abatement Contractor will remove all existing windows and doors indicated for replacement as well as associated asbestos materials, leaving a clear rough opening for the installation of the windows. Abatement contractor is responsible for securing the window opening after removal.

1.4 WORK PHASE SEQUENCE

A. The Work will be conducted in phases to provide the least possible interference to the activities of the Owner's personnel and to permit an orderly transfer of personnel and equipment to the new facilities.

1. Contractor shall follow the Owner's Abatement Contractor and may coordinate work sequence with Owner or Abatement Contractor for new window and door installation. For reference purposes a previous similar building in the district, windows were removed in approximately one week.

1.5 CONTRACTOR USE OF PREMISES

A. General: Limit use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
2. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times. Coordinate use of these areas with Owner for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
3. Schedule a meeting with the Owner to discuss work that will interfere with Owner's operations at the construction site or at adjacent Owner sites. Interferences include but are not limited to planned power interruptions or standardized testing schedules. For unplanned, unforeseen/nonemergency power interruptions that become necessary as the work progresses, deliver written notice at least 72 hours in advance of the interruption to the Owner. Where 72 hours advance notice is not possible, meet with Owner to discuss the interference/interruption.

B. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.6 OWNER OCCUPANCY

A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1.7 OWNER-FURNISHED ITEMS

A. The Owner will furnish and install door hardware cores, exit devices, and electric strikes for the replacement doors. The Work includes providing support systems to receive Owner's equipment, and service and utility connections as required for the intended use of the item(s).

1. The Owner will arrange and pay for delivery of Owner-furnished items in accordance with the Contractor's Construction Schedule, and will inspect deliveries for damage.
2. If Owner-furnished items are damaged, defective or missing, the Owner will arrange for replacement. The Owner will also arrange for manufacturer's field services, and the delivery of manufacturer's warranties and bonds to the Contractor.
3. The Contractor is responsible for designating the delivery dates of Owner-furnished items in the Contractor's Construction Schedule and for receiving, unloading and handling Owner- furnished items at the site. The Contractor is responsible for protecting Owner-furnished items from damage, including damage from exposure to the elements, and to repair or replace items damaged as a result of his operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION [(Not Applicable)]

END OF SECTION 01 11 00

SECTION 01 25 13 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made both prior to receipt of bids and after as herein specified.

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.

D. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor prior to the deadline for submission of Bidders' question as stated in the Invitation to Bid are considered requests for substitutions. The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents.
2. Revisions to Contract Documents requested by the Owner or Architect.
3. Specified options of products and construction methods included in Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

C. 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.

D. 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.

1.4 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received before the deadline for submission of Bidders' question as stated in the Invitation to Bid. Substitution requests received after that time will not be considered. Requests received after commencement of the Work may be considered or rejected at the discretion of the Architect. Handle requests for substitutions, made both prior to and after receipt of Bids, the same way, unless otherwise indicated below or in the specific specification Section. Where submittal requirements are listed in specification Sections, comply with the submittal requirements within the specification Sections instead of those indicated below.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

    a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    b. Product Data, including drawings and descriptions of products, fabrication and installation procedures.
    c. Samples, where applicable or requested.
    d. Certificates and qualification data, where applicable or requested.
    e. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include elements such as size, weight, durability, performance and visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    f. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
    g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    h. Research reports evidencing compliance with building code in effect for Project, from ICC-ES or other agency acceptable to authority having jurisdiction.
    i. A statement indicating the substitution's effect on the Anticipated Project Schedule and Contract Construction Schedule after award of contract compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
    j. Cost information, including a proposal of the net change, if any, from the specified product or assembly, or the contract sum.
    k. Certification by the Bidder or Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.

B. 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. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.

    1. Acceptance of the proposed substitution will be in the form of an Addendum which lists all prior approved products prior to award of Contract and Construction Change Directive or Architect’s Supplemental Instruction after the award of Contract**.**

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: The Bidder's or Contractor's substitution request will be received and considered by the Architect when all of the mandatory conditions are satisfied and one or more of the optional conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

    1. Mandatory Conditions:

        a. Submitted as required prior to bidding or immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
        b. Extensive revisions to Contract Documents are not required.
        c. Proposed changes are in keeping with the general intent of Contract Documents.
        d. The request is timely, fully documented and properly submitted.

2. Optional Conditions:

   a. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
   b. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
   c. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
   d. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
   e. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Bidder or Contractor certifies that the substitution will overcome the incompatibility.
   f. The specified product or method of construction cannot be coordinated with other materials, and where the Bidder or Contractor certifies that the proposed substitution can be coordinated.
   g. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Bidder or Contractor certifies that the proposed substitution provide the required warranty.
   h. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

B. Substitutions for Convenience: The Bidder's or Contractor's substitution request will be received and considered by the Architect when all of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Submitted as required prior to bidding. Requests received after that time will be processed by the Architect at a fixed charge of $250. This charge will apply regardless of whether the request is approved or not.
2. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
3. Extensive revisions to Contract Documents are not required.
4. Proposed changes are in keeping with the general intent of Contract Documents and will produce indicated results.
5. The request is timely, fully documented and properly submitted including payment of the fixed charge.
6. Requested substitution will not adversely affect Contractor's construction schedule.
7. Requested substitution has received necessary approvals of authorities having jurisdiction.
8. Requested substitution is compatible with other portions of the Work.
9. Requested substitution has been coordinated with other portions of the Work.
10. Requested substitution provides specified warranty.
11. 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

2.2 FAILURE OF TIMELY ORDER

A. The Contractor is responsible for assuring the timely order of all materials specified. If a specified material, or color of material cannot be delivered by the Contract completion date, due to failure to order the material in a timely manner, the Contractor shall be responsible for supplying an equal or better material. The Architect shall be the sole determinant of the approved substitute material. The Contractor shall also be charged an amount equal to 5 percent of the value of the specified material. This amount shall be credited to the Owner through a change order to the Contract. The word "material", as used in this section, includes all items specified in the specifications or shown on the drawings.

PART 3 - EXECUTION (Not Applicable)

2338 Coolidge Highway

Berkley, Michigan 48072

248.336.4700

248.336.4701 fax

PRODUCT AND MATERIAL SUBSTITUTION REQUEST FORM

(This substitution request form may be used for Pre-Bid Substitution Requests or Post-Bid Substitution Requests as specified in Divisions 1 Section -"Product Substitutions".)

Project:

To:

Substitution Request Number:

cc:

From:

Re:

Date:

A/E Project Number:

Contract For:

Substitution approval is an acceptance of only the manufacturer and product for general conformance with the design concept reflected in the Contract Documents. The A/E has made no attempt to verify specific performance data, or to check the details of the proposed substitution as to special features, capacities, physical dimensions or code and/or regulatory compliance, all of which remain the responsibility of the person/entity submitting the proposed substitution.

Specification Title:

Description:

Section:

Page:

Article/Paragraph:

Proposed Substitution:

Manufacturer:

Address:

Phone:

Trade Name:

Model Number:

Installer:

Address:

Phone:

History: [] New product [] 2-5 years old [] More than 10 years old

Differences between proposed substitution and specified product:

Point-by-point comparative data attached – REQUIRED BY A/E

Reason for not providing specified item:

Similar Installation:

Project:

Architect:

Address:

Owner:

Date Installed:

Proposed substitution affects other parts of work: [] No [] Yes - Explain:

PRODUCT AND MATERIAL SUBSTITUTION REQUEST FORM

(Continued)

Savings to Owner for accepting substitution: ($)

Proposed substitution changes Contract Time: No Yes If yes: Days added: or Days deducted:

Supporting Data Attached: [] Drawings [] Product Data [] Samples [] Tests [] Reports Other:

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs, related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted:

Signed by:

Firm:

Address:

Telephone:

Attachments:

A/E's REVIEW AND ACTION

[] Substitution rejected – Use specified materials.

[] Substitution Request received too late – Use specified materials.

[] Substitution approved – Make submittals in accordance with Division 1 Section "Submittals".

[] Substitution approved as noted – Make submittals in accordance with Division 1 Section "Submittals".

Signed by: Date:

Additional Comments: [] Contractor [] Subcontractor [] Supplier [] Manufacturer [] A/E

END OF SECTION 01 25 13

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SECTION 01 26 00 – MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
2. Division 1 Section "Application for Payment" for administrative procedures governing applications for payment.
3. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect on AIA form G710, Architect's Supplemental Instructions, or on a similar form of the Architect’s choosing.

1.4 CHANGE ORDER PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.

1. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.
2. Unless otherwise indicated in the proposal request, within 20 days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
3. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Furnish survey data to substantiate quantities and costs on Providers' letterheads, including, but not limited to, Subcontractors' letterheads.
4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
5. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the 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 Contract Time.
2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Furnish survey data to substantiate quantities and costs on Providers' letterheads, including, but not limited to, Subcontractors' letterheads.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Comply with requirements in Section "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

C. Proposal Request Form: Use AIA Document G 709 for Change Order Proposal Requests.

1.5 ALLOWANCES

A. Allowance Adjustment: Base each Change Order Proposal Request for an allowance cost adjustment solely on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in the purchase amount only where indicated as part of the allowance.
2. When requested, prepare explanations and documentation to substantiate the margins claimed.
3. Submit substantiation of a change in scope of work claimed in the Change Orders related to unit-cost allowances.
4. The Owner reserves the right to establish the actual quantity of work-in-place by independent quantity survey, measure, or count.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.7 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor on AIA Form G701, as provided in the Conditions of the Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 26 00

SECTION 01 29 00 – APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. The Contractor's Construction Schedule and Submittal Schedule are included in Division 1 Section "Submittals".

1.3 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

    a. Contractor's construction schedule.
    b. Application for Payment form.
    c. List of subcontractors.
    d. Schedule of allowances.
    e. Schedule of alternates.
    f. List of products.
    g. List of principal suppliers and fabricators.
    h. Schedule of submittals.

2. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 10 days before the date scheduled for submittal of the initial Application for Payment.
3. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
4. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
5. Identification: Include the following Project identification on the Schedule of Values:

    a. Project name and location.
    b. Name of the Architect.
    c. Project number.
    d. Contractor's name and address.
    e. Date of submittal.

6. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

    a. Generic name.
    b. Related Specification Section.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that have affected value.
    g. Dollar value.
    h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

7. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
8. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
9. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
10. Margins of Cost: Show line items for indirect costs, and margins on actual costs and list individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost.
11. Overhead and Profit: Show separate line item value for overhead and profit.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values.

12. Schedule Updating: List Change Orders as a separate line item 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 shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

   1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement. Modification to payment application times shall occur if agreed to by all concerned parties at the pre-construction meeting.

C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.

D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

   1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
   2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.

   1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.

F. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontractors or sub-subcontractors and suppliers for the construction period covered by the previous application.

   1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
   2. When an application shows completion of an item, submit final or full waivers.
   3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.

      a. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

1.) Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.

b. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Schedule of principal products.
6. Schedule of unit prices.
7. Submittal Schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations and licenses from governing authorities for performance of the Work.
12. Initial progress report.
13. Report of pre-construction meeting.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Administrative actions and submittals that shall proceed or coincide with this application include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Start-up performance reports.
7. Change-over information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. Advice on shifting insurance coverages.
11. Final progress photographs.
12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to Owner.
6. Certified property survey.
7. Proof that taxes, fees and similar obligations have been paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish and similar elements.
10. Change of door locks to Owner's access.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01 29 00

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SECTION 01 33 00 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for the submittals schedule, and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, Request for Interpretation (RFI), and other submittals.

B. Administrative Submittals: Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits.
2. Performance and payment bonds.
3. Insurance certificates.

C. Related Division 01 Sections:

1. "Applications for Payment" for submitting Applications for Payment and the Schedule of Values.
2. “Materials and Equipment” for submitting Product List Schedule.
3. "Project Closeout" for submitting operation and maintenance manuals.
4. "Project Closeout" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action. Submittals may be rejected for not complying with requirements.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

C. RFI: Request from Construction Manager or Contractor seeking interpretation or clarification of the Contract Documents and not involving change in Contract Sum or Contract Time.

1. Improper RFI: RFI not prepared in accordance with requirements of this Section, including requirements for graphic solution, where appropriate.
2. Frivolous RFI: RFI that requests information that is clearly indicated on or reasonably inferable from the Contract Documents.

1.4 SUBMITTALS SCHEDULE

A. Submittals Schedule: Prepare and submit a schedule of submittals in Portable Document Format (PDF), arranged in chronological order by dates required by approved Construction Schedules. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by the Architect and Consultants, and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate Submittals Schedule with the List of Subcontracts, Schedule of Values, and approved Construction Schedules.
2. Initial Submittal: Submit initial Submittals Schedule for Architect’s review within ten (10) days of date established by the Notice to Proceed. Include submittals required during the first ninety (90) days of construction activities. List critical path submittals required to maintain orderly progress of

the Work and those required early because of long lead times for submittals preparation and review, purchasing, manufacturing/fabrication, and shipment of products to the Project site

3. Final Submittal: Submit final Submittals Schedule together with final submittal of Contractor's original Construction Schedule for concurrent review and approval by the Owner and Architect.

   a. Submit updated Submittal Schedules to reflect changes in current status and timing for submittals or changes in approved updated Construction Schedules.

4. Format: Arrange the following submittals schedule information chronologically 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 dates for the Architect and Consultants' final release or approval.
   g. Scheduled dates for purchasing of products.
   h. Scheduled dates for manufacturing/fabrication.
   i. Scheduled dates for shipment of products.
   j. Scheduled dates for installation of products.
   k. Associated construction activity or event numbers.

B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

   a. When revisions are made, distribute 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 construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will <not> be provided by Architect for Contractor's use in preparing submittals.

   1. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
   2. Contractor shall execute a data licensing agreement in the form of Stantec's "Electronic Exchange Agreement."

B. Submittals: Prepare and submit electronic Action Submittals and electronic Informational Submittals required by individual Specification Sections. Submit electronic documents in the Portable Document Format (PDF).

   1. Submit electronic submittals to the Architect and Project Design Consultants in the method indicated by the Architect.
   2. Architect will return annotated PDF electronic submittal files. Annotate and retain one copy of each submittal file as an electronic Project record document file.

C. Completeness: Submittals shall be complete in every respect and shall be in sets. Each Submittal shall be clearly marked to show each item, component and optional feature proposed to be incorporated into the Project.

   1. Options: Identify options requiring selection by the Architect or Consultants.
   2. Submittals that are incomplete may be returned without action. Incomplete submittal packages returned without action or for additional information are not subject to delay claims.

D. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
3. Verify that each item and the submittal for it conform in all respects with the specified requirements.
4. Verify all field measurements and conditions prior to submission.
5. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
6. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

7. Pre-Selected Products and Colors:

    a. The Material Legend of the pre-selected products and colors for this Project is included on the Drawings. If substitute products are allowed, the colors of the substitute products must be a close match to the specified “design standard” colors, as judged solely by the Architect.

8. Color Selections: Where pre-selected colors are not indicated, specific items are identified in individual specification sections which require color/finish selections to be made by the Architect and/or Consultant from color chart or sample submittals. The Submittals Schedule prepared by Contractor shall identify these required color/finish submittals. The Architect will make coordinated selections of colors/finishes for the building interior, present the resulting color concepts to the Owner for approval, and prepare the actual Color Schedule for the Work.

    a. Submittals requiring color selection must be submitted by Contractor and approved by Architect for conformance with Contract Documents prior to the start of the color selection process. When the submittals have been approved for conformance with Contract Documents, the process for color selection, presentation of color concepts, Owner’s review and approval, and Color Schedule preparation will begin.
    b. After approval of all interior-color-related submittals for conformance with Contract Documents, the Contractor shall allow sixty (60) days for the color selections, Owner’s approval process, and Architect’s preparation of the Color Schedule.

9. By affixing the Contractor’s signature to each submittal cover sheet, certify that this coordination has been performed.

E. Delegated Design Services: 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.
2. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper 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.

    a. 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.

F. Deviations: Highlight, encircle, or otherwise identify deviations from requirements in the Contract Documents on the submittals, including minor variations and limitations. Submittals with deviations that are not clearly identified will be deemed not to be in conformance with the Contract Documents.

G. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4 inches x 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Each submittal shall be certified by the Contractor and submitted utilizing transmittal form.
3. Include the following information on the label for processing and recording action taken.

    a. Project name.
    b. Date.
    c. Name and address of Architect.

d. Name and address of Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Category and type of submittal.
i. Submittal purpose and description.
j. Number and title of appropriate Specification Section with Specification paragraph number or drawing designation and generic name for each of multiple items.
k. Drawing number and detail references, as appropriate.
l. Location(s) where products are to be installed, as appropriate.
m. Related physical samples submitted directly.
n. Indication of full or partial submittal.
o. Transmittal number, numbered consecutively.
p. Submittal and transmittal distribution record.
q. Remarks.

4. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
5. Name file with submittal number or other unique identifier, including revision identifier.

   a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

6. Provide means for insertion to permanently record Contractor's review and approval markings and review action taken by the Architect and Consultants.
7. Use for Construction: Use only final submittals with mark indicating review action taken by Architect in connection with use for construction.

H. Submittals Processing Time: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals. The Architect shall take action with such reasonable promptness as to not cause delays in the Work.

1. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
2. If an intermediate submittal is necessary, process it in same manner as the initial submittal.
3. Allow two weeks for reprocessing each submittal.
4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing or to allow for resubmittal, if necessary.
5. Due to the time constraints for the construction of the Project, submit the following submittals for critical path items and long lead items within sixty (60) days after issuance of the Notice to Proceed in an orderly sequence; no consideration will be given to partial lists submitted from time to time. Allow not less than fifteen (15) days for review by Architect and Consultants following their receipt of a submittal; this additional time for review must be factored into the Submittals Schedule:

   a. Structural steel framing.
   b. Steel joist framing.
   c. Steel decking.
   d. Cold-formed metal framing.
   e. Metal stairs.
   f. Wood architectural cabinets.
   g. Standing seam metal roof panels system.
   h. Single-ply membrane roofing system.
   i. Hollow metal doors and frames.
   j. Aluminum-framed entrances and storefronts.
   k. Door hardware.
   l. Glazing.
   m. Glazed aluminum curtain walls.
   n. Foodservice equipment.
   o. Manufactured wood casework.
   p. Elevator.
   q. Forced-draft cooling tower.
   r. Any other Submittal determined by the Contractor required to maintain the Project schedule.

6. Submit all other Submittals required by the Contract Documents within one-hundred-and-twenty (120) days from issuance of the Notice to Proceed; no consideration will be given to partial lists submitted from time to time.
7. Submittals returned for corrections or modifications shall be resubmitted within twenty-one (21) days of Contractor's receipt.
8. Where it is demonstrated that the Contractor has neglected to submit product data and shop drawings on a timely basis or to place his orders for materials and labor early enough to conform to materials and labor requirements, colors, etc., such failure shall not be deemed as legitimate cause for delays.

I. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

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

J. 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 marked "No Exceptions", "Exceptions Noted" or "Make Corrections Noted".

a. The Architect's review of the Contractor's submittal will be limited to examination of an initial submission and one resubmittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect.

1) Contractor shall reimburse Owner for Architect's account for time spent in processing additional submittals at rate of 2.5 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Architect's personnel engaged on Project and portion of costs mandatory and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.
2) Cost will be deducted from Contractor's retention as a deduct Change Order.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."
2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

C. Cost Correlation: At the head of the schedule, provide a two item cost correlation line, indicating "precalculated" and "actual" costs. On the line show dollar-volume of Work performed as of the dates used for preparation of payment requests.

1. Refer to Section "Applications for Payment" for cost reporting and payment procedures.

D. **D**istribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute 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 construction activities.

E. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.7 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect and Owner at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and start-ups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.8 SHOP DRAWINGS (ACTION SUBMITTAL)

A. Submit Project-specific information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included.
3. Fabrication and installation drawings.
4. Roughing-in and setting diagrams.
5. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
6. Shopwork manufacturing instructions.
7. Templates and patterns.
8. Schedules.
9. Design calculations.
10. Compliance with specified standards.
11. Notation of coordination requirements.
12. Notation of dimensions established by field measurement.
13. Relationship and attachment to adjoining construction clearly indicated.
14. Seal and signature of professional engineer if specified (delegated design).

C. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 inches by 11 inches but no larger than 36 inches by 48 inches.

D. Initial and intermediate submittals: Submit one correctable translucent reproducible print and one blue- or black-line print for the Architect's review; the reproducible print will be returned.

E. Final Submittal: Submit one correctable translucent reproducible print and two blue-line or black-line prints for the Architect's review; the reproducible print and one blue-line or black-line will be returned. The Contractor shall provide necessary final copies to be included in maintenance manuals.

1. One copy maintained as a "Record Document".

F. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

G. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

1. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.9 PRODUCT DATA (ACTION SUBMITTAL)

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information, as applicable:

a. Manufacturer's printed recommendations.
b. Manufacturer’s product specifications.
c. Manufacturer’s printed installation instructions.
d. Standard color charts.
e. Manufacturer’s catalog cuts.
f. Mill reports.
g. Standard product operating and maintenance manuals.
h. Compliance with recognized trade association standards.
i. Compliance with recognized testing agency standards.
j. Application of testing agency labels and seals.
k. Notation of dimensions verified by field measurement.
l. Notation of coordination requirements.

2. Submit Product Data before or concurrently with Samples.
3. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

B. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.

C. Submittals: Submit 2 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.

1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

D. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

1. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.10 SAMPLES (ACTION SUBMITTAL)

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, small cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:

a. Generic description of the Sample.
b. Sample source.
c. Product name or name of manufacturer.
d. Compliance with recognized standards.
e. Availability and delivery time.
f. Specification paragraph number and generic name of each item.

2. 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 the final submittal and the actual component as delivered and installed.

a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

B. Preliminary Submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

1. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

C. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

1. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
2. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

a. Sample sets may be used to obtain final acceptance of the construction associated with each set.

D. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1. 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.
2. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.11 CONTRACTOR'S ACTION

A. Review each submittal and check for coordination with other Work and for compliance with the Contract Documents. Note any corrections and field-verified dimensions. Mark each submittal with Contractor's action stamp on a "Submittal Cover Sheet" before submitting to Architect for review and approval.

B. Contractor's Action Stamp: Stamp each submittal with a uniform, self-explanatory review action stamp. Include Project name, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1.12 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each architectural submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.
2. Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
3. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior written approval from the Architect.
4. Incomplete submittals are not acceptable, will be considered to be non-responsive, and will be returned without review action.
5. Submittals not required by the Contract Documents may not be reviewed and may be discarded without Architect's review.

B. Action Submittals: Architect will review each submittal and make marks to indicate corrections or modifications required. Architect will return each submittal with a uniform, self-explanatory review action stamp on a submittal review comments sheet that will indicate what action shall be taken by Contractor. Architect's review is only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Approval of a specific item does not indicate approval of an assembly of which the item may be a component. Review does not constitute acceptance of deviations from the Contract Documents unless such deviations are clearly and prominently identified as such. Final Action code by Architect governs. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Release: Where submittals are marked "No Exceptions," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Final-But-Restricted Release: When submittals are marked "Exceptions Noted" or "Make Corrections Noted", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Returned for Resubmittal: When submittal is marked "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

    a. Do not permit submittals marked "Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

4. Not Approved: When submittal is marked "Not Approved" with or without any review comments, the Work covered by such submittal is deemed by Architect to be in substantial non-compliance with the Contract Documents and does not merit correction/revision comments. The Contractor shall prepare a new submittal complying with the Contact Documents and resubmit without delay.

    a. Architect will include a brief statement explaining nature of the non-compliance.

5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "No Exceptions".

1.13 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Certificates and Certifications: 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. Electronic Submittals: Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
b. Paper Submittals: Provide a notarized statement that includes signature of entity responsible for preparing certification.

2. Test and Inspection Reports.

B. Architect will review each submittal for information and will not return it, or will not approve and return it if it does not comply with the Contract Documents. Architect will forward each informational submittal to appropriate party.

C. Subcontractor 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. 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.

D. Qualification Data: Prepare 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.

E. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

F. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

G. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

H. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

K. Preconstruction Test Reports: Prepare 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.

L. Compatibility Test Reports: Prepare 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.

M. Field Test Reports: Prepare 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.

N. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. 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.

O. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section “Operation and Maintenance Data. ”

Q. Design Data: Prepare 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.

R. Manufacturer's Instructions: Prepare printed and published information that documents manufacturer's recommendations, guidelines, and procedures for installing and 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.

S. Manufacturer's Field Reports: Prepare 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.

T. Insurance Certificates and Bonds: Prepare 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.

1.14 REQUEST FOR INTERPRETATION (RFI)

A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

B. Content of the RFI: Include a detailed, legible description of 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. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. 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.

C. Submit on the form at the end of this Section or on a software-generated form with substantially the same specified content. The Architect shall review the Contractor's “Request For Interpretation” form for acceptance, if requested for use. The RFI form is to be consistent through-out the duration of the project.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow an average of five (5) working days for Architect's response for each RFI. RFI’s received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following unnecessary and frivolous RFI’s will be returned without action:

    b. Requests for approval of submittals.
    c. Requests for approval of substitutions.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFI’s or inaccurately prepared RFI’s.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFI’s that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within 10 days of receipt of the RFI response.

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

E. RFI Log: Prepare, maintain, and submit a tabular log of RFI’s organized by the RFI number. Submit log weekly. Use CSI Log Form 13.2B or a software log with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFI’s that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect’s response was received.

F. Improper of Frivolous RFI:

1. Will be returned unanswered, will be removed from RFI log, and number assigned shall be assigned to subsequent RFI.
2. Contractor’s request, after notification by Architect that RFI is improper or frivolous, RFI will be processed with processing costs charged to Contractor as follows:

    a. Contractor shall reimburse Owner for Architect’s account for time spent in processing improper and frivolous RFI at rate of 2.5 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Architect’s personnel engaged on Project and portion of costs mandatory, and customary contributions and benefits related thereto, including employment taxes

and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.

b. Cost will be deducted from Contractor's retention as a deduct Change Order.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

REQUEST FOR INTERPRETATION
(R.F.I.)

PROJECT:

CONTRACTOR:

ARCHITECT: Stantec Architecture, Inc.

THIS IS A FIELD AND/OR OFFICE REQUEST FOR INTERPRETATION TO SUPPLEMENT THE DESIGN DATA DEPICTED ON THE DRAWINGS OR IN THE SPECIFICATIONS. CHANGES TO THE CONTRACT DOCUMENTS, THE CONTRACT SUM, OR THE TIME FOR CONTRACT PERFORMANCE THAT MAY RESULT FROM THE REPLY TO THIS RFI SHALL BE PROCESSED IN ACCORDANCE WITH THE CHANGES CLAUSE OF THE CONTRACT, IF APPROPRIATE.

QUESTION:

Submitted by : _____

Drawing/Specification: _____

PROPOSED OR SUGGESTED SOLUTION:

Copies to:
_____
_____
_____
_____
_____
_____
_____
_____

Date:

R.F.I. No.:

END OF SECTION 01 33 00

ELECTRONIC EXCHANGE AGREEMENT

THIS AGREEMENT is made and entered into effective Month Day, 2015 (the "Agreement Date") by and between:

OWNER COMPANY NAME (the "OWNER ")

Name: OWNER COMPANY NAME

Address: Owner street address, including city, prov/state and zip or post code

Phone: Phone Number extension here or delete Fax: Fax Number

Representative: Owner representative and title

CONTRACTOR COMPANY NAME (the "CONTRACTOR")

Name: CONTRACTOR COMPANY NAME

Address: Contractor street address, including city, prov/state and zip or post code

Phone: Phone Number extension here or delete Fax: Fax Number

Representative: Contractor representative and title

PROJECT NAME (the "PROJECT"):

Enter project name, location and number if desired

WHEREAS, Stantec and its consultants have prepared for this Name of Client, computer-aided drawings for the construction of the Project including a Building Information Model ("BIM") and/or other electronic data (hereinafter referred to jointly as "Electronic Data") – graphic or non-graphic in nature, which do not constitute part of the Contract Documents as described under the Contractor's Contract with the Owner.

WHEREAS, Contractor has requested that it be provided with the Electronic Data for contractor's use(s) solely on this project. Stantec agrees to provide Electronic Data to support the following (check all that apply):

- ☐ Construction Modeling
- ☐ Clash Detection
- ☐ Timeline Simulations
- ☐ Logistics planning
- ☐ Quantity extraction / Cost Estimating
- ☐ Shop Drawings
- ☐ Bidding
- ☐ Other click and insert other uses here or delete if not applicable

NOW, THEREFORE, to effect the arrangement to transfer Electronic Data to Contractor, the Parties agree as follows:

That the Contractor may use the Electronic Data to assist it solely in connection with the uses stated above and no changes are to be made without Stantec's prior written consent.

That the Electronic Data is being provided to Contractor in the following format(s) (check all that apply):

3 Dimensional Format(s):

- ☐ Revit version enter version year or delete if not applicable (.rvt)
- ☐ Navisworks version enter version year or delete if not applicable (.nwc/.nwd/.nwf)
- ☐ Design Review (.dwf)
- ☐ IFC enter format type or delete if not applicable
- ☐ Other click and insert other uses here or delete if not applicable

2 Dimensional Format(s):

- ☐ AutoCAD version enter version year or delete if not applicable (.dwg)
- ☐ Design Review (.dwf)
- ☐ Other click and insert other uses here or delete if not applicable

The Contractor acknowledges that Stantec may change the software version and/or build for any application(s) used to create Electronic Files as needed at any time. Stantec will not supply alternate versions or formats unless agreed to in writing.

It is understood that any Electronic Data provided including BIM information is not a substitute for final hard copy Construction Documents. The Electronic Data is not complementary to the final Construction Documents and it is understood that Electronic Data can not be relied upon to be coordinated, accurate, complete, and can not be relied upon to represent correct quantities. Contractor also acknowledges that subsequent BIM updates may contain significant changes that might conflict with legacy models and therefore be incompatible. It is understood that BIM is a developing technology and that the Electronic Data supplied under this agreement was prepared for Stantec's design purposes and not for the Contractor's uses, and that Contractor will not use the Electronic Data as a substitute for its traditional processes and own technology. Stantec makes no representation about the electronic data that can be relied upon by the Contractor or user for any purpose.

The Contractor recognizes that Stantec's Electronic Data development does not follow the Contractor's schedule for their intended use of the files. Therefore, after the first exchange of Electronic Data, the Contractor may request updated files from Stantec no sooner than enter number of weeks weeks from first exchange and not more frequently than enter number of weeks weeks thereafter. It is at Stantec's sole discretion to provide updated files outside of this established schedule.

The Contractor recognizes that the condition of the BIM may warrant a live work session with Stantec to explain changes or conditions in the model that may impact the Contractor's ability to use the model for those purposes listed above or that it might impact the design of the project. In each such case Contractor agrees to participate in said work session and share the changes to the BIM model and its observations it has made through the use of the Electronic Data.

The Contractor agrees that Stantec's title block on each drawing contained with the Electronic Data must be deleted, and this Agreement grants no right to reproduce the title block.

Under no circumstances shall the providing of the Electronic Data be deemed a sale of a product or good, and neither the Owner nor Stantec or their Consultants make any warranties, express or implied, including warranty of fitness for a particular purpose or warranty of merchantability or other any other warranty.

It is understood that the automated conversion of information and data from the system and format used by Stantec to an alternate system or format cannot be accomplished without the risk of introducing inexactitudes, anomalies, and/or errors. Contractor also understands the inherent risk of data loss or corruption from the use and/or storage of Electronic Data. Contractor also understands that the Electronic Data may be incomplete and/or uncoordinated with other portions of the project design, or that it might change through the term of the Project, and Contractor must verify all information as contained in the Contract Documents before it uses it for any purpose. Contractor also understands that this agreement or the Contractor's use of the Electronic Data does not relieve it of its other contractual responsibilities under the Construction Contract, that it remains fully responsible for its shop drawings and other submittals, and remains responsible to ensure that the electronic design data is in conformity with the design shown on the contract documents to the extent necessary to properly prepare its shop drawings or perform its work. Contractor remains fully responsible for determining its own means, methods, sequences and procedures of construction, and is not entitled to rely upon any information or assumptions related to means, methods, sequences or procedures assumed by Stantec, project engineers or other designers in developing the BIM, whether the information or assumptions are shared with the Contractor or not. Contractor agrees to assume all risks associated with the use, conversion or storage of the Electronic Data.

Contractor also recognizes that changes or modifications to Stantec's instruments of professional service introduced by anyone other than Stantec may result in adverse consequences which cannot be predicted nor controlled and understood.

Therefore, and in consideration of the Owner's agreement to deliver their instruments of professional service in machine readable form, Contractor agrees, to the fullest extent permitted by law, to defend, hold harmless and indemnify the Owner and Stantec and their consultants, and each of their officers, employees, and affiliated and successor companies from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, whether asserted as a breach of contract, breach of warranty, negligence, misrepresentation or other tort, or otherwise, arising out of or in any way connected with the use, conversion, modification, misinterpretation, misuse, or reuse by the Contractor or others for whom the Contractor is responsible of the Electronic Data provided by Stantec under this Agreement.

Contractor agrees not to reverse-engineer, or use in any way, the BIM or its contents (including Revit families or objects) provided by Stantec except to use specifically for this project and only for the uses described herein. Contractor will not export or share the Electronic Data or any unique or novel aspects of Stantec's model's or Stantec's BIM process with any third party, in full or in part, for any reason other than to fulfill the project requirements set forth in this Agreement or in the Contractor's prime agreement with the Owner.

The Contractor agrees to require its subcontractors who use any of the Electronic Data to sign acceptance of the terms of this agreement as though they/it were the Contractor, by agreement with the Contractor for the benefit of the Owner, Stantec and their officers, employees, and consultants.

Use of any medium or files containing the described Electronic Data by any party (the "user") constitutes acceptance of the terms of this Agreement by the user as though the user were the Contractor described in this Agreement.

This Agreement does not constitute an agreement with Stantec or create any cause of action of any kind in favor of the Contractor, its subcontractor, suppliers or any third party against Stantec or the Owner. This Electronic Exchange Agreement is made solely for the benefit of the Owner, the Contractor, Stantec and its consultants, and no other party is an intended beneficiary of this Agreement.

CONTRACTOR COMPANY NAME

By: Name and Title of signor IF NOT KNOWN select delete to clear this field for printing.

Signature _____

SECTION 01 35 16 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes special procedures for alteration work.

1.3 DEFINITIONS

A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.

B. Consolidate: To strengthen loose or deteriorated materials in place.

C. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.

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

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

H. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

K. Retain: To keep existing items that are not to be removed or dismantled.

L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.4 COORDINATION

A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.

1. Schedule construction operations in sequence required to obtain best Work results.
2. Coordinate sequence of alteration work activities to accommodate the following:

a. Owner's continuing occupancy of portions of existing building.
b. Owner's partial occupancy of completed Work.
c. Other known work in progress.
d. Tests and inspections.

3. Detail sequence of alteration work, with start and end dates.
4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
5. Use of elevator and stairs.
6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.

B. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near circulation patterns. Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

1.5 PROJECT MEETINGS FOR ALTERATION WORK

A. Preliminary Conference for Alteration Work: Before starting alteration work, conduct conference at Project site.

1. Attendees: In addition to representatives of Owner, Architect, and Contractor, Owner's insurer, testing service representative, specialists, and chemical-cleaner manufacturer(s) shall be represented at the meeting.
2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:

a. Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
b. Fire-prevention plan.
c. Governing regulations.
d. Areas where existing construction is to remain and the required protection.
e. Hauling routes.
f. Sequence of alteration work operations.
g. Storage, protection, and accounting for salvaged and specially fabricated items.
h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
i. Qualifications of personnel assigned to alteration work and assigned duties.
j. Requirements for extent and quality of work, tolerances, and required clearances.
k. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.

3. Reporting: Record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at weekly intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner, Architect, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.
2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.

a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
c. Review present and future needs of each entity present, including review items listed in the "Preliminary Conference for Alteration Work" Paragraph in this article and the following:

1) Interface requirements of alteration work with other Project Work.
2) Status of submittals for alteration work.
3) Access to alteration work locations.
4) Effectiveness of fire-prevention plan.
5) Quality and work standards of alteration work.
6) Change Orders for alteration work.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.6 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.

1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to Owner where directed.

1.7 INFORMATIONAL SUBMITTALS

A. Alteration Work Subschedule:

1. Submit alteration work subschedule within seven days of date established for commencement of alteration work.

B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.

C. Alteration Work Program: Submit 30 days before work begins.

D. Fire-Prevention Plan: Submit 30 days before work begins.

1.8 QUALITY ASSURANCE

A. Specialist Qualifications: An experienced firm regularly engaged in specialty work similar in nature, materials, design, and extent to alteration work as specified in each Section and that has completed a minimum of five recent projects with a record of successful in-service performance that demonstrates the firm's qualifications to perform this work.

1. Field Supervisor Qualifications: Full-time supervisors experienced in specialty work similar in nature, material, design, and extent to that indicated for this Project. Supervisors shall be on-site when specialty work begins and during its progress. Supervisors shall not be changed during Project except for causes beyond the control of the specialist firm.

a. Construct new mockups of required work whenever a supervisor is replaced.

B. Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.

C. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.

D. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with Owner's fire-protection equipment and requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.

E. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

1.9 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Salvaged Materials:

1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

B. Salvaged Materials for Reinstallation:

1. Repair and clean items for reuse as indicated.
2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label 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 unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.

C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.

D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.

1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F (3 deg C) or more above the dew point.

E. Storage Space:

1. Owner will arrange for limited on-site location(s) for free storage of salvaged material. This storage space does not include security and climate control for stored material.
2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

1.10 FIELD CONDITIONS

A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs and preconstruction video recordings.

B. Discrepancies: Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

C. Owner's Removals: Before beginning alteration work, verify in correspondence with Owner that designated items have been removed.

D. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by 12 inches (300 mm) or more.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.

1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
3. Erect temporary barriers to form and maintain fire-egress routes.

4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
5. Contain dust and debris generated by alteration work, and prevent it from reaching the public or adjacent surfaces.
6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.

B. Temporary Protection of Materials to Remain:

1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.

C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

D. Utility and Communications Services:

1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.

E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.

1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:

1. Comply with NFPA 241 requirements unless otherwise indicated.
2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.

    a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:

1. Obtain Owner's approval for operations involving use of open-flame or welding or other high-heat equipment. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.

3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
6. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:

    a. Train each fire watch in the proper operation of fire-control equipment and alarms.
    b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
    c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
    d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
    e. Maintain fire-watch personnel at Project site until 60 minutes after conclusion of daily work.

C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.

1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

3.3 PROTECTION DURING APPLICATION OF CHEMICALS

A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.

B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.

C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.

D. Neutralize alkaline and acid wastes and legally dispose of off Owner's property.

E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

3.4 GENERAL ALTERATION WORK

A. Have specialty work performed only by qualified specialists.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation photographs and/or video recordings.

D. Perform surveys of Project site as the Work progresses to detect hazards resulting from alterations.

E. Notify Architect of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.

1. Do not proceed with the work in question until directed by Architect.

END OF SECTION 01 35 16

SECTION 01 42 19 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

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

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.

D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provide means furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

J. Project site is the space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on

the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's MASTERFORMAT numbering system.

1. Text Subordination: Portions of the Specification may be subordinated to other portions in the following manner:

a. Certain Sections may be subordinate to other Sections or parts of other Sections. When that occurs, the degree of subordination is described in those Sections.
b. Paragraphs and lines of text are subordinate to article titles.
c. Paragraphs and lines of text that are indented from the left hand margin are subordinate to the preceding text that is either not indented or indented by a lesser amount.

2. Underscoring, Bold Letters and Bold Numbers are used strictly to assist the reader in scanning for key words. No emphasis or relative importance is intended for text where underscoring, bold letters and bold numbers are used.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where 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 the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Architect for a decision before proceeding.

1. 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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to 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, the Contractor shall obtain copies directly from the publication source.
2. The Architect reserves the right to require the Contractor to submit copies of standards as necessary for enforcement of requirements.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed, but not ensured, to be accurate and up to date as of the date of Contract Documents. If an abbreviation, or name, is not on the following list, refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

AA	Aluminum Association 900 19th St., NW, Suite 300 Washington, DC 20006	www.aluminum.org (202) 862-5100
AABC	Associated Air Balance Council 1518 K St., NW Washington, DC 20005	www.aabchq.com (202) 737-0202
AAMA	American Architectural Manufacturers Assoc. 1540 E. Dundee Road, Suite 310 Palatine, IL 60067	www.aamanet.org (847) 303-5664
AAN	American Association of Nurserymen 1250 I St., NW, Suite 500 Washington, DC 20005	(see ANLA) (202) 789-2900
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St., Suite 249 Washington, DC 20001	www.aashto.org (202) 624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Dr. Research Triangle Park, NC 27709-2215	www.aatcc.org (919) 549-8141
ABMA	American Bearing Manufacturers Assoc. 1200 19th St., Suite 300 Washington, DC 20036	www.abma-dc.org (202) 367-1155
ABMA	American Boiler Manufacturers Association 950 North Glebe Rd., Suite 160 Arlington, VA 22203	www.abma.com (703) 522-7350
ACI	American Concrete Institute P.O. Box 19150 Detroit, MI 48219	www.aci-int.org (248) 848-3700
ACIL	American Council of Independent Laboratories 1629 K St., NW Washington, DC 20006	www.acil.org (202) 887-5872
ACPA	American Concrete Pipe Association 8618 Westwood Center Dr., Suite 105 Vienna, VA 22182	www.concrete-pipe.org (972) 506-7216

ADC	Air Diffusion Council 11 South LaSalle St., Suite 1400 Chicago, IL 60603	www.flexibleduct.org (312) 201-0101
AFBMA	Anti-Friction Bearing Manufacturers Assoc. (Now ABMA)	
AFPA	American Forest and Paper Association 1111 19th St., NW, Suite 800 Washington, DC 20036	(See AF&PA) (202) 463-2700
AF&PA	American Forest & Paper Association	www.afandpa.org
AGA	American Gas Assoc. 1515 Wilson Blvd. Arlington, VA 22209	www.aga.org (202) 824-7000
AGC	Associated General Contractors of America	www.agc.org (703) 548-3118
AHA	American Hardboard Assoc. 1210 W. Northwest Highway Palatine, IL 60067	www.ahardbd.org (847) 934-8800
AHAM	Association of Home Appliance Manufacturers 20 N. Wacker Dr., Suite 1500 Chicago, IL 60606	www.aham.org (202) 872-5955
AI	Asphalt Institute Research Park Dr. P.O. Box 14052 Lexington, KY 40512-4052	www.asphaltinstitute.org (859) 288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006	www.e-architect.com (202) 626-7300
AIA	American Insurance Assoc. 1130 Connecticut Ave., NW, Suite 1000 Washington, DC 20036	www.aiadc.org (202) 828-7100
AIHA	American Industrial Hygiene Assoc. 3141 Fairview Park Drive, Suite 777 Falls Church, VA 22042	www.aiha.org (703) 207-3561
AISC	American Institute of Steel Construction One East Wacker Dr., Suite 3100 Chicago, IL 60601-2001	www.aisc.org (800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute 1101 17th St., NW Washington, DC 20036-4700	www.steel.org (202) 452-7100
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy, Suite 140 Englewood, CO 80112	www.aitc-glulam.org (303) 792-9559
ALA	American Laminators Association 419 Norton Building Seattle, WA 98104-1584	(See LMA) (206) 622-0666

ALI	Associated Laboratories, Inc. c/o HOH Chemicals 500 S. Vermont St. Palatine, IL 60067	www.associatedlabs.org (800) 685-0026
ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875	www.alsc.org (301) 972-1700
AMCA	Air Movement and Control Assoc. 30 W. University Dr. Arlington Heights, IL 60004-1893	www.amca.org (847) 394-0150
ANLA	American Nursery & Landscape Association (Formerly: AAN – American Association of Nurserymen)	www.amac.org (202) 789-2900
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036	www.ansi.org (202) 293-8020
AOAC	AOAC International 2200 Wilson Blvd., Suite 400 Arlington, VA 22201-3301	www.aoac.org (703) 522-3032
AOSA	Association of Official Seed Analysts 201 N. 8th St., Suite 400 P.O. Box 81152 Lincoln, NE 68501-1151	www.aosaseed.com (402) 476-3852
APA	APA-The Engineered Wood Association (Formerly American Plywood Assoc.) P.O. Box 11700 Tacoma, WA 98411	www.apawood.org (253) 565-6600
API	American Petroleum Institute 1220 L St., NW Washington, DC 20005	www.api.org (202) 682-8000
ARI	Air-Conditioning and Refrigeration Institute 4301 Fairfax Dr., Suite 425 Arlington, VA 22203	www.ari.org (703) 524-8800
ARMA	Asphalt Roofing Manufacturers Assoc. Public Information Department 1156 – 15th Street, N.W., Suite 900 Washington, DC 20005	www.asphaltroofing.org (202) 207-0917
ASA	Acoustical Society of America Suite 1NO1 2 Huntington Quadrangle Melville, NY 11747 – 4502	http://asa.aip.org (516) 576-2360
ASC	Adhesive and Sealant Council 7974 Old Georgetown Road, Suite 500 Bethesda, Maryland 20814	www.ascouncil.org (301) 986-9700
ASCA	Architectural Spray Coaters Association 895 Doncaster Drive Paulsboro, NJ 08066	www.ascassoc.com (856) 848-6120
ASCE	American Society of Civil Engineers 345 East 47th St. New York, NY 10017-2398	www.asce.org (703) 295-6300 (800) 548-2723

ASHE	American Society for Healthcare Engineering One North Franklin, 28th Floor Chicago, IL 60606	www.ashe.org (312) 422-3800 (800) AHA-2626
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305	www.ashrae.org (404) 636-8400 (800) 527-4723
ASME	American Society of Mechanical Engineers International 345 East 47th St. New York, NY 10017	www.asme.org (800) 843-2763 (212) 591-7722
ASPA	American Sod Producers Assoc. (Now TPI)	
ASPE	American Society of Plumbing Engineers 8614 Catalpa Avenue, Suite 1007 Chicago, IL 60656-1116	www.aspe.org (773) 693-2773
ASSE	American Society of Sanitary Engineering P.O. Box 40362 Bay Village, OH 44140	www.asse-plumbing.org (440) 835-3040
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr. West Conshohocken, PA 19428	www.astm.org (610) 832-9585
ATIS	Alliance for Telecommunications Industry Solutions 1200 G St., NW, Suite 500 Washington, DC 20005	www.atis.org (202) 628-6380
AWCMA	American Window Covering Manufacturers Assoc. (Now WCMA)	
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165	www.awinet.org (571) 323-3636
AWPA	American Wood Preservers' Assoc. P.O. Box 286 Woodstock, MD 21163-0286	www.awpa.com (817) 326-6300
AWPB	American Wood Preservers' Bureau (This organization is now defunct.)	
AWS	American Welding Society 550 LeJeune Rd., NW Miami, FL 33126	www.aws.org (800) 443-9353 (305) 443-9353
AWWA	American Water Works Assoc. 6666 W. Quincy Ave. Denver, CO 80235	www.awwa.org (800) 926-7337 (303) 794-7711
BANC	Brick Association of North Carolina P.O. Box 13290 Greensboro, NC 27415-3290	 (910) 273-5566

BHMA	Builders Hardware Manufacturers Assoc. 355 Lexington Ave., 17th Floor New York, NY 10017-6603	www.buildershardware.com (212) 297-2122
BIA	Brick Institute of America 11490 Commerce Park Dr. Reston, VA 22091-1525	www.bia.org (703) 620-0010
BIFMA	The Business and Institutional Furniture Manufacturer's Association International 2680 Horizon Dr., SE, Suite A1 Grand Rapids, MI 49546-7500	www.bifma.com (616) 285-3963
CAGI	Compressed Air and Gas Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851	www.cagi.org (216) 241-7333
CAUS	Color Association of the United States 315 West 39th Street, Studio 507 New York, NY 10018	www.colorassociation.com (212) 947-7774
CBM	Certified Ballast Manufacturers Assoc. 1422 Euclid Ave., Suite 402 Cleveland, OH 44115-2851	 (216) 241-0711
CCC	Carpet Cushion Council P.O. Box 546 Riverside, CT 06878	www.carpetcushion.org (203) 637-1312
CCFSS	Center for Cold-formed Steel Structures	www.umr.edu/~ccfss (573) 341-4471
CDA	Copper Development Association Inc. 260 Madison Av., 16th Floor New York, NY 10016	www.copper.org (212) 251-7200 (800) 232-3282
CFFA	Chemical Fabrics & Film Association, Inc. c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851	www.chemicalfabricsandfilm.com (216) 241-7333
CGA	Compressed Gas Assoc. 1725 Jefferson Davis Highway, Suite 1004 Arlington, VA 22202-4100	www.cganet.com (703) 412-0900
CGSB	Canadian General Standards Board	www.pwgsc.gc.ca/cgsb (819) 956-0425
CIMA	Cellulose Insulation Manufacturers Association	www.cellulose.org (888) 881-2462
CISCA	Ceiling and Interior Systems Construction Assoc. 579 W. North Ave., Suite 301 Elmhurst, IL 60126	www.cisca.org (630) 584-1919
CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Rd., Suite 419 Chattanooga, TN 37421	www.cispi.org (423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute 1776 Massachusetts Ave., NW, Suite 500 Washington, DC 20036	www.chainlinkinfo.org (301) 569-2583

CPA	Composite Panel Association (Formerly: National Particleboard Association)	www.pbmdf.com (301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association	www.cppa-info.org (800) 510-2772
CRI	Carpet and Rug Institute P.O. Box 2048 Dalton, GA 30722-2048	www.carpet-rug.com (800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Rd. Schaumburg, IL 60173-4758	www.crsi.org (847) 517-1200
CSA	CSA International (Formerly: IAS – International Approval Services)	www.csa-international.org (416) 747-4000
CSI	Construction Specifications Institute	www.csinet.org (800) 689-2900
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)	www.cti.org (281) 583-4087
CTIOA	Ceramic Tile Institute of America 12061 West Jefferson Blvd. Culver City, CA 90230 – 6219	www.ctia.org (310) 574-7800
DHI	Door and Hardware Institute 14170 Newbrook Dr. Chantilly, VA 22021-2223	www.dhi.org (703) 222-2010
DIPRA	Ductile Iron Pipe Research Assoc. 245 Riverchase Parkway East, Suite O Birmingham, AL 35244	www.dipra.com (205) 402-8700
DLPA	Decorative Laminate Products Assoc. 13924 Braddock Rd. Centreville, VA 22020	 (800) 684-3572
ECSA	Exchange Carriers Standards Assoc. (Now ATIS)	
EIA/TIA	Electronic Industries Alliance/Telecommunications Industry 2001 Pennsylvania Ave., NW Washington, DC 20006-1813	www.eia.org (703) 907-7500
EIMA	EIFS Industry Manufacturers Assoc. 2759 State Road 580, Suite 112 Clearwater, FL 34621	www.eifsfacts.com (800) 294-3462 (770) 968-7945
EJMA	Expansion Joint Manufacturers Assoc. 25 N. Broadway Tarrytown, NY 10591	www.ejma.org (914) 332-0040
ETL	ETL SEMKO Testing Laboratories, Inc. 420 North Dorothy Drive Richardson, Texas 75081	www.etlsemko.com (972) 238-5591
FCI	Fluid Controls Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851	www.fluidcontrolsinstitute.org (216) 241-7333

FCICA	Floor Covering Installation Contractors Assoc. (Formerly Floor Covering Installation Board) P.O. Box 948 Dalton, GA 30722-0948	(706) 226-5488
FGMA	Flat Glass Marketing Assoc. (Now GANA)	
FM	Factory Mutual 1151 Boston-Providence Turnpike P.O. Box 9102 Norwood, MA 02062	(See FMG) (617) 762-4300
FMG	FM Global (Formerly: FM – Factory Mutual System)	www.fmglobal.com (401) 275-3000
FTI	Facing Tile Institute P.O. Box 8880 Canton, OH 44711	 (216) 488-1211
GA	Gypsum Association 810 First St., NE, Suite 510 Washington, DC 20002	www.gypsum.org (202) 289-5440
GANA	Glass Association of North America (Formerly: FGMA – Flat glass Marketing Association) 3310 SW Harrison St. Topeka, KS 66611-2279	www.glasswebsite.com/gana (785) 271-0208
GRI	Geosynthetic Research Institute	www.drexel.edu/gana (215) 895-2343
GTA	Glass Tempering Division of Glass Association of North America (See GANA)	
HEI	Heat Exchange Institute 1300 Sumner Ave. Cleveland, OH 44115-2851	www.heatexchange.org (216) 241-7333
HI	Hydraulic Institute 9 Sylvan Way Parsippany, NJ 07054-3802	www.pumps.org (888) 786-7744 (973) 267-9700
HI	Hydronics Institute P.O. Box 218 35 Russo Place Berkeley Heights, NJ 07922	www.gamanet.org (908) 464-8200
HMA	Hardwood Manufacturers Assoc. 400 Penn Center Blvd. Pittsburgh, PA 15235	www.hardwood.org (412) 829-0770
HPVA	Hardwood Plywood and Veneer Assoc. 1825 Michael Farraday Dr. P.O. Box 2789 Reston, VA 22090-0789	www.hpva.org (703) 435-2900
HPW	H.P. White Laboratory, Inc.	www.hpwhite.com (410) 838-6550
IBD	Institute of Business Designers 341 Merchandise Mart Chicago, IL 60654	 (312) 467-1950

ICEA	Insulated Cable Engineers Association, Inc. P.O. Box 440 South Yarmouth, MA 02664	www.icea.net (508) 394-4424
ICRI	International Concrete Repair Institute (The)	www.icri.org (703) 450-0116
IEC	International Electrotechnical Commission (Available from ANSI) 11 West 42nd St., 13th Floor New York, NY 10036	www.iec.ch 41-22-919-02-11 (212) 642-4900
IEEE	Institute of Electrical and Electronic Engineers 345 E. 47th St. New York, NY 10017	www.ieee.org (212) 419-7900
IESNA	Illuminating Engineering Society of North America 120 Wall St., Floor 17 New York, NY 10005-4001	www.iesna.org (212) 248-5000
IGCC	Insulating Glass Certification Council c/o ETL Testing Laboratories, Inc. P.O. Box 2040 Route 11, Industrial Park Cortland, NY 13045	www.igcc.org (315) 646-2234
ILI	Indiana Limestone Institute of America Stone City Bank Building, Suite 400 Bedford, IN 47421	www.iliai.com (812) 275-4426
IMSA	International Municipal Signal Assoc. 165 E. Union St. Newark, NY 14513 – 0539	www.imsafety.org (315) 331-2182
IRI	Industrial Risk Insurers P.O. Box 5010 85 Woodland St. Hartford, CT 06102-5010	www.industrialrisk.com (800) 243-8308 (860) 520-7300
ISA	Instrument Society of America P.O. Box 12277 67 Alexander Dr. Research Triangle Park, NC 27709	www.isa.org (919) 549-8411
ITS	Intertek Testing Services	www.itsglobal.com (800) 345-3851
KCMA	Kitchen Cabinet Manufacturers Assoc. 1899 Preston White Dr. Reston, VA 22091-4326	www.kcma.org (703) 264-1690
LGSI	Light Gage Structural Institute P.O. Box 866301 Plano, TX 75086-6301	www.loseke.com (972) 370-0967
LIA	Lead Industries Association, Inc. 295 Madison Ave. New York, NY 10017	www.leadinfo.com (212) 578-4750
LMA	Laminating Materials Association (Formerly: ALA – American Laminators Association)	www.lma.org (201) 664-2700

LPI	Lightning Protection Institute 3365 N. Arlington Heights Rd., Suite J Arlington Heights, IL 60004	www.lightning.org (847) 577-7200 (800) 488-6864
LSGA	Laminated Safety Glass Association (See GANA)	
MBMA	Metal Building Manufacturer's Assoc. c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851	www.mbma.com (216) 241-7333
MCA	Metal Construction Association	www.metalconstruction.org (312) 201-0193
MCAA	Mechanical Contractors Association of America 1385 Piccard Dr. Rockville, MD 20850-4329	www.mcaa.org (301) 869-5800
MFMA	Maple Flooring Manufacturers Assoc. 60 Revere Dr., Suite 500 Northbrook, IL 60062	www.maplefloor.org (847) 480-9138
MFMA	Metal Framing Manufacturers Association	www.sba.com (312) 644-6610
MGPHO	Medical Gas Professional Healthcare Organization, Inc.	www.mgpho.org (877) 238-5157
MHIA	Material Handling Industry of America	www.mhia.org (800) 345-1815
MIA	Marble Institute of America 30 Eden Alley, Suite 201 Columbus, OH 43215	www.marble-institute.com (614) 228-6194
MIA	Masonry Institute of America 386 Beech Avenue, Suite #4 Torrance, CA 90501	www.masonryinstitute.org (310) 328-4400
ML/SFA	Metal Lath/Steel Framing Assoc. (A Division of the NAAMM) 11 South LaSalle St., Suite 1400 Chicago, IL 60603	(See SSMA) (312) 201-0101
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park St., NE Vienna, VA 22180-4602	www.mss-hq.com (703) 281-6613
NAA	Tree Care Industry Association (formerly National Arborist Assoc.) 3 Perimeter Road, Unit 1 Manchester, NH 03103	www.natlab.com (800) 733-2622
NAAMM	National Association of Architectural Metal Manufacturers 11 South LaSalle St., Suite 1400 Chicago, IL 60603	www.naamm.org (312) 332-0405
NAAMM	North American Association of Mirror Manufacturers (See GANA)	

NAIMA	North American Insulation Manufacturers Assoc. 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314	www.naima.org (703) 684-0084
NAMI	National Accreditation and Management Institute, Inc.	(304) 258-5100
NAPA	National Asphalt Pavement Assoc. NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413	www.hotmix.com (888) HOT-MIXX
NAPF	National Association of Plastic Fabricators (Now DLPA)	
NAPM	National Association of Photographic Manufacturers (See PIMA)	
NBGQA	National Building Granite Quarries Assoc., Inc. c/o Rock of Ages 369 N. State St. Concord, NH 03301	www.nbgqa.com (800) 557-2848 (603) 225-8397
NBHA	National Builders Hardware Assoc. (Now DHI)	
NCMA	National Concrete Masonry Assoc. 2302 Horse Pen Rd. Herndon, VA 22071-3499	www.ncma.org (703) 713-1900
NCPI	National Clay Pipe Institute P.O. Box 759 253-80 Center St. Lake Geneva, WI 53147	www.ncpi.org (414) 248-9094
NCRPM	National Council on Radiation Protection and Measurements 7910 Woodmont Ave., Suite 400 Bethesda, MD 20814 - 3095	www.ncrp.com (301) 657-2652
NCSPA	National Corrugated Steel Pipe Association 13140 Coit Road, Suite 320 LB120 Dallas, Texas 75240	www.ncspa.org (972) 850-1907
NCTA	National Cable Television Association	www.ncta.com (202) 775-3669
NEBB	National Environmental Balancing Bureau	www.nebb.org (301) 977-3698
NEC	National Electrical Code (Available from NFPA)	
NECA	National Electrical Contractors Assoc. 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-5372	www.necanet.org (301) 657-3110
NEII	National Elevator Industry, Inc. 1677 County Road 64 P.O. Box 838 Salem, New York 12865 - 0838	www.neii.org (518) 854-3100

NELMA	Northeastern Lumber Manufacturers Assoc. 272 Tuttle Rd. P.O. Box 87A Cumberland Center, ME 04021	www.nelma.org (207) 829-6901
NEMA	National Electrical Manufacturers Assoc. 2101 L St., NW, Suite 300 Washington, DC 20037	www.nema.org (703) 841-3200
NETA	International Electrical Testing Assoc. P.O. Box 687 Morrison, CO 80465-1526	www.netaworld.org (303) 697-8441
NFPA	National Fire Protection Assoc. One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101	www.nfpa.org (617) 770-3000 (800) 344-3555
NFPA	National Forest Products Assoc. (Now AF&PA)	
NFRC	National Fenestration Rating Council	www.nfrc.org (301) 589-6372
NGA	National Glass Association	www.glass.org (703) 442-4890
NHLA	National Hardwood Lumber Assoc. P.O. Box 34518 Memphis, TN 38184-0518	www.natlhardwood.org (800) 933-0318 (901) 377-1818
NKCA	National Kitchen Cabinet Assoc. (Now KCMA)	
NLGA	National Lumber Grades Authority 103-4400 Dominion St. Burnaby, BC V5G 4G3 CANADA	www.nlga.org (604) 524-2393
NOFMA	National Oak Flooring Manufacturers Assoc. P.O. Box 3009 Memphis, TN 38173-0009	www.nofma.org (901) 526-5016
NPA	National Particleboard Assoc. 18928 Premiere Ct. Gaithersburg, MD 20879-1569	(See CPA) (301) 670-0604
NPCA	National Paint and Coatings Assoc. 1500 Rhode Island Ave., NW Washington, DC 20005	www.paint.org (202) 462-6272
NRCA	National Roofing Contractors Assoc. O'Hare International Center 10255 W. Higgins Rd., Suite 600 Rosemont, IL 60018-5607	www.nrca.net (800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association	www.nrmca.org (888) 846-7622
NSA	National Stone Association	www.aggregates.org (800) 342-1415

NSF	NSF International (Formerly National Sanitation Foundation) 3475 Plymouth Rd. P.O. Box 130140 Ann Arbor, MI 48113-0140	www.nsf.org (800) 673-6275 (734) 769-8010
NSSEA	National School Supply and Equipment Assoc. 8300 Colesville Rd., Stc. 250 Silver Spring, MD 20910	www.nssea.org (301) 495-0240
NTMA	National Terrazzo and Mosaic Assoc. 3166 Des Plaines Ave., Suite 132 Des Plaines, IL 60018	www.ntma.com (800) 323-9736 (703) 779-1022
NWMA	National Woodwork Manufacturers Assoc. (Now NWWDA)	
NWWDA	National Wood Window and Door Assoc. 1400 E. Touhy Ave., #G54 Des Plaines, IL 60018	(See WCMA) (708) 299-5200 (800) 223-2301
PATMI	Power Actuated Tool Manufacturers' Institute, Inc. 1603 Boone's Lick Road St. Charles, MO 63301	www.patmi.org (636) 947-6610
PCA	Portland Cement Assoc. 5420 Old Orchard Rd. Skokie, IL 60077-1083	www.portcement.org (847) 966-6200
PCI	Precast/Prestressed Concrete Institute 175 W. Jackson Blvd. Chicago, IL 60604	www.pci.org (312) 786-0300
PDCA	Painting and Decorating Contractors of America	www.pdca.com (800) 332-7322
PDI	Plumbing and Drainage Institute c/o Sol Baker 1106 W. 77th St., South Dr. Indianapolis, IN 46260	www.pdionline.org (800) 589-8956 (508) 230-3516
PEI	Porcelain Enamel Institute 3700 Mansell Road, Suite 220 Alpharetta, Georgia 30022	www.porcelainenamel.com (770) 281-8980
PGI	PVC Geomembrane Institute 205 North Mathews Avenue Urbana, Illinois 61801	//pgi-tp.ce.uiuc.edu (217) 333-3929
PIMA	Photographic & Imaging Manufacturers Association (Formerly: NAPM – National association of Photographic Manufacturers)	www.pima.net (914) 698-7603
PIMA	Polyisocyanurate Insulation Manufacturers Association 515 King Street, Suite 420 Alexandria, Virginia 22314	www.pima.org (703) 684-1136
RCSC	Research Council on Structural Connections	www.boltcouncil.org (800) 644-2400
RFCI	Resilient Floor Covering Institute 401 East Jefferson Street, Suite 102 Rockville, MD 20850	www.rfci.com (301) 340-8580

RIS	Redwood Inspection Service 405 Enfrente Dr., Suite 200 Novato, CA 94949	www.calredwood.org (415) 382-0662
RMA	Rubber Manufacturers Assoc. 1400 K St., NW Washington, DC 20005	www.rma.org (800) 220-7620 (202) 682-4800
SAE	SAE International 400 Commonwealth Dr. Warrendale, PA 15096-0001	www.sae.org (724) 776-4841
SDI	Steel Deck Institute P.O. Box 9506 Canton, OH 44711	www.sdi.org (847) 462-1930
SDI	Steel Door Institute 30200 Detroit Rd. Cleveland, OH 44145-1967	www.steeldoor.org (440) 889-0010
SEFA	Scientific Equipment and Furniture Assoc. 1028 Duchess Dr. McLean, VA 22102	www.sefalabfurn.com (843) 689-6878
SGCC	Safety Glazing Certification Council c/o ETL Testing Laboratories U.S. Route 11, Industrial Park P.O. Box 2040 Cortland, NY 13045	www.sgcc.org (315) 646-2234
SHLMA	Southern Hardwood Lumber Manufacturers Assoc. (Now HMA)	
SIGMA	Sealed Insulating Glass Manufacturers Assoc. 401 N. Michigan Ave. Chicago, IL 60611	www.sigmaonline.org/aigma (312) 644-6610
SJI	Steel Joist Institute 1205 48th Avenue North, Suite A Myrtle Beach, SC 29577-5424	www.steeljoist.org (803) 449-0487
SMA	Screen Manufacturers Assoc. 2850 South Ocean Boulevard, #114 Palm Beach, Florida 33480 - 6205	www.smacentral.org (561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Assoc. 4201 Lafayette Center Dr. P.O. Box 221230 Chantilly, VA 22022-1230	www.smacna.org (703) 803-2980
SPFA	Spray Polyurethane Foam Alliance	www.sprayfoam.org (800) 523-6154
SPI	The Society of the Plastics Industry	www.plasticsindustry.org (202) 974-5200
SPIB	Southern Pine Inspection Bureau 4709 Scenic Highway Pensacola, FL 32504-9094	www.spib.org (850) 434-2611

SPRI	SPRI (Formerly Single Ply Roofing Institute) 175 Highland Ave. Needham, MA 02194	www.spri.org (781) 444-0242
SSIUS	Specialty Steel Industry of North America 3050 K St., NW Washington, DC 20007	www.ssina.com (800) 982-0355 (202) 342-8630
SSMA	Steel Stud Manufacturers Association (Formerly: ML/SFA – Metal Lath/Steel Framing Association)	www.ssma.com (312) 456-5590
SSPC	SSCP: The Society for Protective Coatings	www.sspc.org (800) 837-8303
SSPC	Steel Structures Painting Council (The Society for Protective Coatings) 40 24th Street, 6th Floor Pittsburgh, PA 15222 - 4656	www.sspc.org (412) 281-2331
SSPMA	Sump and Sewage Pump Manufacturers Assoc. P.O. Box 647 Northbrook, IL 60065-0647	www.sspma.org (708) 559-9233
STI	Steel Tank Institute 570 Oakwood Rd. Lake Zurich, IL 60047	www.steeltank.com (847) 438-8265
SWI	Steel Window Institute c/o Thomas Associates, Inc. 1300 Sumner Ave. Cleveland, OH 44115-2851	www.steelwindows.com (216) 241-7333
SWPA	Submersible Wastewater Pump Assoc. 1866 Sheridan Road, Suite 201 Highland Park, IL 60035-2545	www.swpa.org (847) 681-1868
SWRI	Sealant, Waterproofing, and Restoration Institute	www.swrionline.org (816)472-7974
TCA	Tile Council of America 511 Westinghouse Rd. Pendleton, SC 29670 P.O. Box 1787 Clemson, SC 29633	www.tileusa.com (864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance	www.tiaonline.org (703) 907-7700
TIMA	Thermal Insulation Manufacturers Assoc. (Now NAIMA)	
TPI	Truss Plate Institute 583 D'Onofrio Dr., Suite 200 Madison, WI 53719	www.tpinst.org (608) 833-5900
TPI	Turfgrass Producers International (Formerly American Sod Producers Assoc.) 1855-A Hicks Rd. Rolling Meadows, IL 60008	www.turfgrasssod.org (847) 705-9898 (800) 405-8873
UFAC	Upholstered Furniture Action Council	www.ufac.org (336) 885-5065

UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062-2096	www.ul.com (800) 704-4050 (847) 272-8800
UNI	Uni-Bel PVC Pipe Assoc. 2655 Villa Creek Dr., Suite 155 Dallas, TX 75234	www.uni-bell.org (972) 243-3902
USITT	United States Institute for Theatre Technology, Inc.	www.culturenet.ca/usitt (800) 938-7488
USP	U.S. Pharmacopeia (Formerly U.S. Pharmacopoeial Convention) 12601 Twinbrook Pkwy Rockville, MD 20852	www.usp.org (800) 822-8772 (301) 881-0666
WA	Wallcoverings Assoc. 401 N. Michigan Ave. Chicago, IL 60611-4267	www.wallcoverings.org (312) 644-6618
WASTEC	Waste Equipment Technology Association	www.wastec.org (800) 424-2869
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281	www.wclib.org (800) 283-1486 (503) 639-0651
WCMA	Wood Components Manufacturer's Association P.O. Box 662 Lindstrom, MN 55045	www.woodcomponents.org (651) 332-6332
WCMA	Window Covering Manufacturers Assoc. 355 Lexington Ave., 17th Floor New York, NY 10017	www.windowcoverings.org (800) 506-4653 (212) 661-4261
WIC	Woodwork Institute of California 3164 Industrial Blvd. P.O. Box 980247 West Sacramento, CA 95798-0247	www.wicnet.org (916) 372-9943
WMMPA	Wood Molding & Millwork Producers Assoc. P.O. Box 25278 Portland, OR 97225	www.wmmpa.com (800)550-7889 (530) 661-9591
WRI	Wire Reinforcement Institute 942 Main Street, Suite 300 Hartford, CT 06103	www.wirereinforcementinstitute.org (800) 552-4974
WSC	Water Systems Council 1101 30th Street N.W., Suite 500 Washington, D.C. 20007	www.watersystemscouncil.org (202) 625-4387
WSFI	Wood and Synthetic Flooring Institute (Now MFMA)	
WWCCA	Western Wall and Ceiling Contractors' Assoc. (Formerly Western Lath, Plaster, Drywall Industries Assoc.) 2286 North State College Boulevard Fullerton, CA 92831	www.wwcca.org (800) 903-WALL
WWPA	Western Wood Products Assoc. Yeon Building 522 SW 5th Ave. Portland, OR 97204-2122	www.wwpa.org (503) 224-3930

WWPA	Woven Wire Products Assoc. 1641 East Higgins Lake Drive Roscommon, MI 48653	www.wovenwire.org (517) 821-6621

F. Federal Government Agencies: Names and titles of Federal Government standards- or specification-producing agencies are often abbreviated. The following abbreviations and acronyms referenced in the Contract Documents indicate names of standards- or specification-producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

CE	Corps of Engineers (U.S. Department of the Army) Chief of Engineers General Information Referral 20 Massachusetts Ave., NW Washington, DC 20314	www.usace.army.mil (202) 761-0660
CFR	Code of Federal Regulations (Available from the Government Printing Office) 732 N. Capitol St., NW Washington, DC 20401 (Material is usually published first in the "Federal Register.")	www.gpoaccess.gov (202) 512-0000
CPSC	Consumer Product Safety Commission East West Towers 4330 East-West Hwy Bethesda, MD 20814	www.cpsc.gov (800) 638-2772
CS	Commercial Standard (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	www.commerce.gov (202) 512-0000
DOC	Department of Commerce 14th St. and Constitution Ave., NW Washington, DC 20230	www.doc.gov (202) 482-2000
DOT	Department of Transportation 400 Seventh St., SW Washington, DC 20590	www.dot.gov (202) 366-4000
EPA	Environmental Protection Agency 401 M St., SW Washington, DC 20460	www.epa.gov (202) 260-2090
FAA	Federal Aviation Administration (U.S. Department of Transportation) 800 Independence Ave., SW Washington, DC 20591	www.faa.gov (202) 366-4000
FCC	Federal Communications Commission 1919 M St., NW Washington, DC 20554	www.fcc.gov (202) 418-0190
FDA	Food and Drug Administration 5600 Fishers Lane Rockville, MD 20857	www.fda.gov (888) 463-6332

FHA	Federal Housing Administration (U.S. Department of Housing and Urban Development) 451 Seventh St., SW Washington, DC 20410	www.hud.gov (202) 708-1112
FS	Federal Specification Unit (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407	 (202) 755-0325
GSA	General Services Administration F St. and 18th St., NW Washington, DC 20405	www.gsa.gov (202) 708-5082
HUD	Department of Housing and Urban Development	www.hud.gov (202) 708-1112
LBNL	Lawrence Berkeley National Laboratory	www.lbl.gov (510) 486-5605
MIL	Military Standardization Documents (U.S. Department of Defense) Defense Printing Service 700 Robbins Ave., Building 4D Philadelphia, PA 19111	 (215) 697-2179
NIST	National Institute of Standards and Technology (U.S. Department of Commerce) Building 101, #A1134 Rte. I-270 and Quince Orchard Rd. Gaithersburg, MD 20899	www.nist.gov (301) 975-6478
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Ave., NW Washington, DC 20210	www.osha.gov (202) 693-1999
PS	Product Standard of NBS (U.S. Department of Commerce) Government Printing Office Washington, DC 20402	www.commerce.gov (202) 512-0000
RUS	Rural Utilities Service (Formerly Rural Electrification Administration) (U.S. Department of Agriculture) 14th St. and Independence Ave., SW Washington, DC 20250	(See USDA) (202) 720-9560
TRB	Transportation Research Board	www.nas.edu/trb (202) 334-2934
USDA	U.S. Department of Agriculture 14th St. and Independence Ave., SW Washington, DC 20250	www.usda.gov (202) 720-2791
USPS	U.S. Postal Service 475 L'Enfant Plaza, SW Washington, DC 20260-0010	www.usps.com (202) 268-2000

G. Governing Regulations/Authorities.

1. The Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

1.5 SUBMITTALS

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

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 42 19

SECTION 01 60 00 – MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.

1. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."
2. Since the Owner is a governmental entity or an organization which may be exempted from the sales and use taxes on certain tangible personal property, the Contractor shall be responsible for:

a. Determining whether such governmental entity or organization is exempt from such taxes under the Contract Documents.
b. Determining whether your purchase of any tangible personal property for use in the performance of this contract is exempt.
c. Obtaining any sales tax exemption certificate from the Owner.
d. Properly issuing any sales tax exemption certificate to a seller or supplier that the sale of any item of tangible personal property qualifies for an exemption.Maintaining any records required by the laws of the State of Michigan or by any valid rules and/or regulations of the Comptroller of Public Accounts of the State of Michigan. Payment of any legally assessed penalties or fines for improper use of any exemption Certificate.

1.3 DEFINITIONS

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

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
2. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
3. 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.
4. Comparable Products: Product that is demonstrated and approved through submittal process 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.
5. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of nor living within the United States and its possessions.
6. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
7. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 SUBMITTALS

A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.

B. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:

1. Related Specification Section number.
2. Generic name used in Contract Documents.
3. Proprietary name, model number and similar designations.
4. Manufacturer's name and address.
5. Supplier's name and address.
6. Installer's name and address.
7. Projected delivery date, or time span of delivery period.

C. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

1. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

D. Completed Schedule: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

E. Architect's Action: The Architect will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:

1. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the 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.

C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

D. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

E. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

1. Name of product and manufacturer.
2. Model and serial number.
3. Capacity.
4. Speed.
5. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the 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 the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
2. Semiproprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
3. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
4. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning substitutions to obtain approval for use of an unnamed product.
5. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

6. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

    a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

7. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
8. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.

    a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning substitutions for selection of a matching product in another product category, or for noncompliance with specified requirements.

9. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

    1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 60 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for cutting and patching.

B. Extent of cutting and patching work is generally not specifically shown on Drawings. Include cutting and patching work as indicated by provisions of this Section.

1. Cut holes and openings in, or remove portions of, existing construction necessary for connection of new architectural elements, mechanical and electrical utilities and services, equipment and supports.
2. Patch around mechanical and electrical penetrations.
3. Patch floors, walls, and ceilings damaged by demolition operations, including removal of indicated mechanical and electrical items, and indicated wall-, floor-, and ceiling-mounted items. Patch and patch paint openings in walls, floors and ceilings created by demolition and removal operations.
4. Patch and repair blemishes and holes in existing construction surfaces left in place, and scheduled to be exposed, that have been damaged due to construction operations.

C. Materials removed and not indicated to be turned over to Owner or indicated for reuse, as well as rubble and debris resulting from these operations, are property of Contractor.

D. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1. Requirements of this Section also apply to mechanical and electrical installations, as well as Work specified in Divisions 2 through 33. Refer to Division 22, Division 23, and Division 26 Sections for other requirements and limitations applicable to cutting and patching plumbing, mechanical, and electrical installations.

1.3 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching is to be performed.
5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

    a. Foundation construction.
    b. Bearing and retaining walls.
    c. Structural concrete.
    d. Structural steel.
    e. Lintels.
    f. Structural decking.
    g. Miscellaneous structural metals.
    h. Equipment supports.
    i. Piping, ductwork, vessels and equipment.
    j. Structural systems of special construction in Division 13.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

    a. Shoring, bracing, and sheeting.
    b. Primary operational systems and equipment.
    c. Air or smoke barriers.
    d. Water, moisture, or vapor barriers.
    e. Membranes and flashings.
    f. Fire protection systems.
    g. Noise and vibration control elements and systems.
    h. Control systems.
    i. Communication systems.
    j. Conveying systems.
    k. Electrical wiring systems.
    l. Special construction specified by Division 13 Sections.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

    a. Matched-veneer woodwork.
    b. Preformed metal panels.
    c. Window wall system.
    d. Acoustical ceilings.
    e. Finished wood flooring.
    f. Carpeting.
    g. Aggregate wall coating.
    h. Wall covering.
    i. HVAC enclosures, cabinets or covers.

1.6 WARRANTY

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

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

1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
2. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
4. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance. Remove abandoned anchors and other extraneous items. Patch hole where each item was removed
4. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.
5. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.
6. Patch fire-rated assemblies using safing materials between the penetrating element and fire-rated assembly. Use safing materials that will not reduce the fire-rating of the existing assembly.
7. Patch assemblies to maintain acoustical barrier performance using joint sealing materials between the penetrating element and assembly. Use latex acoustical sealants complying with Division 7 Section "Joint Sealants."

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29

SECTION 01 77 00 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 33.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request (exceptions on the first item below will not be allowed).

1. If required, prepare Operating and Maintenance Instructions and Manuals and Demonstration and Training Videos for the areas of the building changing possession at the time of Substantial Completion. **Operating and Maintenance Instructions and Manuals and Demonstration and Training Videos must be given to the Owner prior to the issuance of the Certificate of Substantial Completion.**
2. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documents for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
3. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
4. Advise Owner of pending insurance change-over requirements.
5. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
6. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
7. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
8. Submit to Owner one copy of the Material Safety Data Sheet Manual.
9. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
10. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
11. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested, and assured by the Contractor in writing, that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
5. Submit consent of surety to final payment.
6. Submit Notice of Termination for erosion and sediment control.
7. Submit a final liquidated damages settlement statement.
8. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.
3. Should the Architect perform reinspections, due to failure of the Work to comply with the claims of status of completion made by the Contractor, the Owner shall compensate the Architect for additional services; and the Owner shall deduct the amount of the compensation from the final payment to the Contractor.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with colored erasable pencil; use other colors to distinguish between variations in separate categories of the Work; use the following color code:

a. Red for Architectural Work.
b. Blue for Structural Work.
c. Green for Plumbing Work.
d. Orange for HVAC Work.
e. Brown for Electrical Work.
f. Black for other written notations.

2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
3. Note related Change Order numbers where applicable.

4. At completion of project, transfer all Project Record Data to one complete set of mylar sepias using mylar compatible colored pencils or ink. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Deliver one complete set of mylar sepias of all drawings to the Architect for the Owner's records. The cost of printing the mylar sepias shall be paid by the Contractor.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

G. Record Electronic Drawings: Comply with the following:

1. Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected Electronic Drawings of the Contract Drawings, as follows:

   a. Format: The same CAD or BIM program, version, and operating system as the original Contract Drawings.
   b. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.
   c. Refer instances of uncertainty to Architect for resolution.
   d. Architect will furnish Contractor one set of Electronic Drawings of the Contract Drawings for use in recording information. By receipt of the Electronic Drawings of the Contract Drawings from the Architect, the Contractor acknowledges and agrees to the following:

      1) Electronic Drawings released to the Contractor are for the express purpose of documenting changes or deviations from the original Contract Drawings dated March 23, 2015 and creating Record Electronic Drawings. Record Electronic Drawings are prepared by the Contractor, not the Architect.
      2) The Architect makes no representations as to the accuracy or completeness of Electronic Drawings or Record Electronic Drawings as they relate to the Contract Drawings.
      3) The Architect makes no representation as to the compatibility of Electronic Drawings with the hardware or software of the Contractor or others.

   e. Organize electronic information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each electronic file.

f. Identification: As follows:

1) Project name.
2) Date.
3) Designation "PROJECT RECORD DRAWINGS."
4) Name of Architect.
5) Name of Contractor.

g. Number of Copies: Submit copies of Record Electronic Drawings as follows:

1) Submit two sets of Record Electronic Drawing electronic files, two sets of Record Electronic Drawing plots, and two copies printed from record plots. Plot and print each Drawing, whether or not changes and additional information were recorded. Contractor shall be responsible for all reproduction costs.
2) Electronic Media: CD-ROM.

h. Upon completion of the Work, submit Record Electronic Drawing files, plots, and prints to the Architect for the Owner's records.

H. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2 inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Recommended "turn around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.

PART 2 - PRODUCTS

2.1 CLEANING AGENTS

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

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning.
11. Warranties and bonds.

12. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shut down.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
2. Remove labels that are not permanent labels.
3. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
4. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
5. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
6. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01 77 00

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SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section requires the selective removal and subsequent offsite disposal of the following:

1. Removal of doors and frames indicated "remove."
2. All procedures described in this Section may not apply to this Project.

B. Removal work specified elsewhere:

1. Cutting nonstructural concrete floors and masonry walls for piping, ducts, and conduits is included with the work of the respective mechanical and electrical specification sections in Divisions 22, 23, and 26.
2. Cutting holes in roof deck for installation of new rooftop mechanical equipment is specified in Division 23.

C. Related work specified elsewhere:

1. Remodeling construction work and patching are included within the respective Sections of specifications, including removal of materials for reuse and incorporation into remodeling or new construction.
2. Relocation of pipes, conduits, ducts, and other mechanical and electrical work is specified in other Divisions.

1.3 DEFINITIONS

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

B. Remove and Salvage: Carefully detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Carefully 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 removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

1.4 MATERIALS OWNERSHIP

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

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

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

1.5 PREINSTALLATION MEETING

A. Pre-Demolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of existing construction to be selectively demolished.
2. Review structural load limitations of existing structure.

3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review areas where Owner's hazardous material abatement contractor is performing selective demolition.

1.6 INFORMATIONAL SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Qualification Data: For refrigerant recovery technician.

C. 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.

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

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
5. Coordination with work performed by Owner's hazardous material abatement contractor.

E. Inventory: Submit a list of items to be removed and salvaged, or removed and reinstalled, and deliver to Owner or store in a protected area prior to start of selective demolition.

F. Pre-Demolition digital photographs or video of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with Owner's Representative prior to start of Work.

G. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition operations.

1.7 CLOSEOUT SUBMITTALS

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

B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 QUALITY ASSURANCE

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

1.9 PROJECT CONDITIONS

A. Occupancy: Owner will occupy portions of the building immediately adjacent to areas of Selective Demolition. Conduct Selective Demolition Work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.

B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur by Owner's removal and salvage operations prior to start of Selective Demolition Work.

C. Notify the Architect immediately if an unforeseen hidden field condition is uncovered or a discrepancy between existing conditions and the Drawings is found that conflicts with intended final product and/or requires modifications to layout of new construction before commencing selective demolition work.

D. Partial Demolition and Removal: Owner maintains first right of salvage. Items indicated to be removed but of salvageable value to Contractor, and not required to be salvaged for Owner, may be removed from structure as Work progresses. Transport salvaged items from site as they are removed.

1. Storage or sale of removed items on site will not be permitted.

E. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to Selective Demolition Work.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of building.
2. Erect temporary covered passageways as required by authorities having jurisdiction.
3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or Work to remain. Responsibility for all aspects of shoring, in concept and in execution, shall reside with the Contractor doing the Work.
4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
5. Protect floors with suitable coverings when necessary.
6. Construct temporary insulated dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks.
7. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
8. Remove protections at completion of Work.

F. Damages: Promptly repair damages caused to adjacent and surfaces by selective demolition operations. Areas and surfaces that are damaged by selective demolition work shall be patched, repaired, and refinished, or replaced to match existing undamaged adjacent areas and surfaces at no expense to the Owner.

G. Traffic: Conduct Selective Demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

H. Flame Cutting: Do not use cutting torches for removal until work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.

I. Explosives: Use of explosives will not be permitted.

J. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.

1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
2. Maintain fire protection services during Selective Demolition operations.

K. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: All selective demolition work shall be performed in compliance with all applicable codes, laws, and regulations, and with the Owner's requirements. Comply with governing EPA notification regulations before commencing selective demolition work. Comply with environmental, hauling, and disposal regulations of the EPA and of authorities having jurisdiction.

B. Life Safety Code Requirements: Comply with governing Building and Life Safety Code regulations applicable to construction areas involving selective demolition operations. Provide and maintain proper means of egress for construction areas same as required for occupied areas per Code during the selective demolition and construction periods. Selectively demolished items and materials storage shall not infringe on clear paths of egress for construction personnel.

C. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

3.2 EXAMINATION

A. Prior to commencing selective demolition work, examine all areas in which Work is to be performed. The existing building information shown is compiled from record drawings furnished by the Owner. Review record documents of existing construction provided by the Owner. These documents are not 'as-built' drawings and actual conditions/dimensions may vary from what is indicated. The Owner does not guarantee that existing conditions are same as those indicated in available record documents. Verify all conditions and dimensions prior to commencing selective demolition Work. Notify the Architect immediately if a hidden field condition is uncovered or a discrepancy in the Contract Documents is found that conflicts with the intended final product and requires modifications to the layout.

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

C. Verify that affected utilities have been disconnected and capped before commencing selective demolition Work.

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 the Architect.

E. Perform an engineering survey of condition of the existing building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure during selective demolition operations.

1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition work.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction digital photographs or videos, and equipment placement templates.

1. Inventory and record the condition of items to be removed and salvaged. Provide digital photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.4 PREPARATION

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

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to construction personnel and damage to adjacent portions of existing building to remain.

1. Provide protection to ensure safe passage of construction personnel around selective demolition areas.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to existing structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.

B. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.

1. Cease operations and notify Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
2. Cover and protect furniture, equipment, and fixtures from soilage or damage when Selective Demolition Work is performed in areas where such items have not been removed.
3. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.

a. Where Selective Demolition occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4 inch studs, 5/8 inch drywall (joints taped) on occupied side, 1/2 inch fire-retardant plywood on demolition side. Fill partition cavity with sound-deadening insulation.
b. Provide weatherproof closures for exterior openings resulting from Selective Demolition Work.

3.5 DEMOLITION

A. General: Perform Selective Demolition Work in a systematic manner. Use such methods as required to complete Work indicated on Drawings in accordance with demolition schedule and governing regulations. Do not proceed with Selective Demolition Work where shoring is required, until engineering analysis, drawings and reports have been completed and submitted to Architect/Engineer.

1. Selective demolition work required is not limited to that indicated within the Contract Documents. Alter existing construction that interferes with new work to the extent of the interference. The intent is to remove architectural, mechanical, plumbing, and electrical items as required to facilitate new construction. Cut and later patch all holes and openings in existing construction necessary for connection of new work and for the passage or connection of any mechanical, plumbing, and electrical utilities and services.
2. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
3. 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.
4. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
5. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.
6. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
7. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
8. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
9. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
10. Demolish foundation walls to a depth of not less than 12 inches below existing ground surface. Demolish and remove below-grade wood or metal construction. Break up below-grade concrete slabs.

11. Completely fill below-grade areas and voids resulting from Selective Demolition Work. Provide fill consisting of approved earth, gravel, or sand, free of trash and debris, stones over 6 inches in diameter, roots, or other organic matter.
12. Promptly dispose of selectively demolished and non-salvageable items and materials off the Project site in a safe and lawful manner.

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 the Owner.
4. Transport items to Owner's storage area designated by the Owner.
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 cleaned and reinstalled in their original locations after selective demolition operations are complete.

E. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative, rearrange Selective Demolition schedule as necessary to continue overall job progress without undue delay.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts. Neatly trim openings to dimensions indicated.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

E. Acoustical Panel Ceilings: Remove acoustical ceiling panels from metal ceiling suspension grid to minimize panel breakage. Disassemble metal suspension grid into separate metal track components and remove.

1. Immediately place removed ceiling panels and suspension grid components into separate containers for recycling and store in a secured area.

3.7 SALVAGED MATERIALS

A. Salvaged Items: Owner maintains first right of salvage. When directed by Architect or Owner, carefully remove indicated items, clean, store, and turn over to Owner and obtain receipt.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
2. Burning of removed materials is not permitted on project site.

3.9 CLEANUP AND REPAIR

A. General: Upon completion of Selective Demolition Work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by Selective Demolition Work.

3.10 SELECTIVE DEMOLITION SCHEDULE

A. Existing Items to Be Removed: As indicated on the Demolition Plans and in Demolition Keynotes.

B. Existing Items to Be Removed and Salvaged: As indicated on the Demolition Plans and in Demolition Keynotes.

C. Existing Items to Be Removed and Reinstalled: As indicated on Demolition Plans, in the Demolition Keynotes, and on the Drawings.

D. Existing Items to Remain: As indicated on the Drawings.

END OF SECTION 02 41 19

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SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Wood blocking and nailers.

1.3 DEFINITIONS

A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise indicated.

B. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. NELMA - Northeastern Lumber Manufacturers Association.
2. NLGA - National Lumber Grades Authority.
3. SPIB - Southern Pine Inspection Bureau.
4. WCLIB - West Coast Lumber Inspection Bureau.
5. WWPA - Western Wood Products Association.

1.4 SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

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

B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.
4. Powder-actuated fasteners.
5. Expansion anchors.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

B. Source Limitations for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product through one source from a single producer.

1.6 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

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

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2 inch nominal (38 mm actual) thickness or less, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1, Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated with inorganic boron (SBX)..

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and one of the following:

a. Ammoniacal, or amine, copper quat (ACQ).
b. Copper bis (dimethyldithiocarbamate) (CDDC).
c. Copper azole, Type B or C (CBA-B or CBA-C).

B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood. Do not use material that is warped or does not comply with requirements for untreated material.

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

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

1. Wood nailers, blocking, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sleepers, blocking, and similar concealed members in contact with masonry or concrete.
3. Wood framing members less than 18 inches (460 mm) above grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where required by authorities having jurisdiction, for all furring, blocking, nailers, and other types of rough carpentry provided at building interior, and where otherwise indicated, provide fire-retardant-treated materials that comply with performance requirements in AWPA U1, Use Category UCFA for interior wood and Use Category UCFB for exterior wood. Identify fire-retardant-treated wood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber and ASTM D 5516, for plywood.

2. Use treatment that does not promote corrosion of metal fasteners.
3. Use Exterior type for exterior locations and where indicated.

2.4 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber with 19 percent maximum moisture content and any of the following species:

1. Mixed southern pine; SPIB.
2. Hem-fir or Hem-fir (north); NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or Spruce-pine-fir; NELMA, NLGA, WCLIB, or WWPA.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 2 grade; SPIB.
2. Hem-fir or Hem-fir (north), Construction or 2 Common Standard or 3 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or Spruce-pine-fir, Construction or 2 Common Standard or 3 Common grade; NELMA, NLGA, WCLIB, or WWPA.

2.5 FASTENERS

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

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
2. Where rough carpentry is of wood-preservative-treated material, provide stainless steel fasteners.

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

C. Power-Driven Fasteners: CABO NER-272.

D. Wood Screws: ASME B18.6.1.

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

F. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).

G. 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.

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

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2.6 MISCELLANEOUS MATERIALS

A. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

B. Do not use materials with defects that impair quality of rough carpentry or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

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

D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in the International Building Code.

E. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.

1.2 DIMENSION WOOD LUMBER ITEMS INSTALLATION

A. Install nailers, blocking, and similar dimension wood lumber items where indicated and where necessary for attachment of supported work. Fabricate rough carpentry components to the shapes indicated and cut as required for true line and level of attached work. Coordinate locations of dimension wood lumber items with other supported work involved.

B. Attach dimension wood lumber items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.

3.5 WOOD SLEEPER, 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. Build anchor bolts into masonry during installation of masonry work.

END OF SECTION 06 10 00

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Interior trim.
2. Natural stone window stools.
3. Shop finishing interior woodwork.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood furring, blocking, and shims required for installing woodwork and concealed within other construction before woodwork installation.

1.3 SUBMITTALS

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

B. Product Data: For plywood, and finishing materials and processes.

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

C. Shop Drawings: Comply with AWS Section 1 – Submittals, and, in addition, the following:

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

D. Samples for Verification: Comply with AWS Section 1 – Submittals, and, in addition, the following:

1. Wood-veneer-faced panel products with or for transparent finish: 12 by 12 inches (305 by 305 mm), for each species and cut. Include at least one face-veneer seam and finish as specified.
2. Natural stone materials: 6 inches (150 mm) square.

E. Product Certificates: Signed by manufacturers of woodwork certifying that products furnished comply with requirements.

F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed architectural woodwork 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. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of interior architectural woodwork.

D. Quality Standard: Unless otherwise indicated, comply with Architectural Woodwork Institute, Architectural Woodwork Manufacturers Association of Canada, Woodwork Institute “Architectural Woodwork Standards” (AWS) for grades of interior architectural woodwork, construction, finishes, and other requirements.

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

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 PROJECT CONDITIONS

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

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

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

1.7 COORDINATION

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of the AWS quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Species and Cut for Transparent Finish: Match existing.

C. Wood Products: Comply with the following:

1. Hardwood Plywood and Face Veneers: HPVA HP-1, 7-ply, minimum Veneer Core.

D. Formaldehyde Emission Levels: Comply with formaldehyde emission requirements of each voluntary standard referenced below:

1. Hardwood Plywood: HPMA FE.

E. Natural Stone: Marble, complying with ASTM C 503/C 503M.

1. Match existing color and finish.

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 or that is warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.

2.3 INSTALLATION MATERIALS

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

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

C. Latex-Portland Cement Mortar: ANSI A118.4.

1. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

2.4 FABRICATION, GENERAL

A. Interior Woodwork Grade: AWS Grade: Custom, unless otherwise indicated.

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

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

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

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

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

2.5 INTERIOR TRIM FOR TRANSPARENT FINISH

A. Quality Standard: Comply with AWS Section 6 – Interior & Exterior Millwork.

B. For trim items wider than available lumber, use veneered construction. Do not glue for width.

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

D. Wood Species and Cut: Match existing transparent-finished architectural woodwork located in same area of building.

2.6 NATURAL STONE WINDOW STOOLS

A. Thickness: Match existing.

B. Color and Finish: Match existing.

C. Edge Profile: Match existing.

D. Fabricate in segments as large as possible to minimize number of joints.

2.7 SHOP FINISHING

A. Quality Standard: Comply with AWS, unless otherwise indicated.

1. Grade: Provide finishes of same grades as items to be finished.

B. General: Shop finish transparent finished interior architectural woodwork at fabrication shop as specified in this Section.

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.

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

1. AWS Finish System 5: Conversion varnish.
2. Staining: Match approved sample for color.
3. Wash Coat for Stained Finish at Closed-Grain Wood: Apply a vinyl wash coat before staining and finishing to woodwork made from closed-grain wood, or to any woodwork made from wood with a combination of end-grain wood and any other grain.
4. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
5. Sheen: Satin, 30-50 gloss units.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.

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

3.2 INSTALLATION

A. Quality Standard: Install woodwork to comply with AWS for the items specified in Part 2 of this Section for type of woodwork involved.

B. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

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

D. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with recommendations of chemical treatment manufacturer, including those for adhesives used to install woodwork.

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

F. Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches (1500 mm) long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Install trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

G. Window Stools:

1. Wipe stone with damp cloth to remove dirt and dust before installing.
2. Place setting bed of latex-cement mortar on top of existing masonry.
3. Anchor securely to existing masonry as indicated on drawings.
4. Install window stools with no more than 1/8 inch in 96 inch (3 mm in 2400 mm) sag, bow, or other variation from a straight line.
5. Apply sealant to joints.

H. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in shop.

3.3 ADJUSTING AND CLEANING

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

B. Clean, lubricate, and adjust hardware.

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

END OF SECTION 06 40 23

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SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Formed Products:

a. Formed wall sheet metal fabrications.

B. Related Sections:

1. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.

1.3 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.

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

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:

1. Identification of material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
4. Details of termination points and assemblies, including fixed points.
5. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.

6. Details of special conditions.
7. Details of connections to adjoining work.
8. Detail formed flashing and trim at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Sheet Metal Flashing: 12 inches (300 mm) long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.
3. Accessories and Miscellaneous Materials: Full-size Sample.
4. Anodized Aluminum Samples: Samples to show full range to be expected for each color required.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. Surface: Smooth, flat.
2. Clear Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

C. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, dead soft, fully annealed.

1. Finish: 2D (dull, cold rolled).
2. Surface: Smooth, flat.

2.2 UNDERLAYMENT MATERIALS

A. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D 4397.

B. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

C. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C).
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C).
3. Products: Subject to compliance with requirements, provide one of the following:

a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
c. Henry Company; Blueskin PE200 HT.
d. Metal-Fab Manufacturing, LLC; MetShield.
e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

D. Slip Sheet: Building paper, 3-lb/100 sq. ft. (0.16-kg/sq. m) minimum, rosin sized.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

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

E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.

D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.

G. Do not use graphite pencils to mark metal surfaces.

2.5 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches (150 mm) beyond each side of wall openings. Form with 2-inch- (50-mm-) high, end dams where flashing is discontinuous. Fabricate from the following materials:

1. Stainless Steel: 0.016 inch (0.40 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

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

3.2 UNDERLAYMENT INSTALLATION

A. General: Install underlayment as required.

B. Polyethylene Sheet: Install polyethylene sheet with adhesive for anchorage to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped and taped joints of not less than 2 inches (50 mm).

C. Felt Underlayment: Install felt underlayment with adhesive for temporary anchorage to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm).

D. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
5. Install sealant tape where indicated.
6. Torch cutting of sheet metal flashing and trim is not permitted.
7. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

1. Coat back side of uncoated aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.

D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws,] metal decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal joints as shown and as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of each form and type of joint sealer is indicated below and supplemental information shall be found on the drawings.

B. This Section includes joint sealers for the following locations:

1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:

a. Perimeter joints between materials and frames of doors and windows.
b. Other joints as indicated.

2. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:

a. Perimeter joints of exterior openings.
b. Perimeter joints between interior wall surfaces and frames of doors and windows.
c. Other joints as indicated.

C. Sealants for glazing purposes are specified in Division 8 Section "Glazing."

1.3 SYSTEM PERFORMANCE

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.4 SUBMITTALS

A. Product Data from manufacturer's for each joint sealer product required, including instructions for joint preparation and joint sealer application.

B. Samples for verification purposes of each type and color of joint sealer required. Install joint sealer samples in 1/2 inch wide joints formed between two 6 inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealers.

C. Certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

D. Qualification data complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project name, addresses, names of Architects and Owners, plus other information specified.

E. Product test reports for each type of joint sealers indicated, evidencing compliance with requirements specified.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an Installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to that of this Project.

B. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

C. Pre-Installation Conference: Conduct conference at Project site to comply with requirements of the Division-1 section covering this activity.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 deg F (4.4 deg C).
2. When joint substrates are wet due to rain, frost, condensation or other causes.

B. Joint Width Conditions: Do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.

C. Joint Substrate Conditions: Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

A. Sequence installation of joint sealers to occur not less than 21 or more than 30 days after completion of waterproofing, unless otherwise indicated.

1.9 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Installer's Warranty: Written warranty, signed by Installer agreeing to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

C. Special Manufacturer's Warranty: Written warranty, signed by elastomeric sealant manufacturer agreeing to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

D. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide a color of exposed joint sealer as selected by Architect from manufacturer's standard colors.

2.2 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class and Uses.

B. One-Part Nonsag Urethane Sealant for Use NT: Type S; Grade NS; Class 25; and Uses NT, M, A, and, as applicable to joint substrates indicated, O.

1. Application: Joints in vertical surfaces and nontraffic horizontal surfaces.

C. Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:

1. One-Part Nonsag Urethane Sealant for Use NT:

a. MasterSeal NP 1, BASF Construction Chemicals – Building Systems 800-433-9517 www.buildingsystems.basf.com
b. Chem-Calk 900, Bostik, Inc. 800-726-7845 www.bostik-us.com
c. Chem-Calk 2639, Bostik, Inc. 800-726-7845 www.bostik-us.com
d. Permapol RC-1, Products Research & Chemical Corp.
e. Sikaflex-15LM, Sika Corporation, USA 800-933-7452 usa.sika.com
f. Vulkem 116, Tremco, Incorporated 800-852-9068 www.tremco.com
g. DyMonic, Tremco, Incorporated 800-852-9068 www.tremco.com

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backings of material and type which 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. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonwaxing, nonextruding strips of flexible, nongassing plastic foam of material indicated below; nonabsorbent to water and gas; and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Install only closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer, for cold-applied sealants only.

C. Elastomeric Tubing Joint-Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, capable of remaining resilient at temperatures down to -26 deg F (-15 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Provide nonstaining, chemical cleaners of type which are acceptable to manufacturer of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.

C. Masking Tape: Provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellants; water; surface dirt and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic 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 sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications and conditions indicated.

C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

1. Install joint-fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
2. Do not leave gaps between ends of joint fillers.
3. Do not stretch, twist, puncture or tear joint fillers.
4. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.

5. Install bond breaker tape between sealants and joint-fillers, compression seals or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.

D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 6A in ASTM C 962, unless otherwise indicated.
2. Provide flush joint configuration per Figure 6B in ASTM C 962, where indicated.
3. Use masking tape to protect adjacent surfaces of recessed tooled joints.
4. Provide Recessed joint configuration per Figure 6C in ASTM C 962, of recess depth and at locations indicated.

3.4 CLEANING

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

3.5 PROTECTION

A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

END OF SECTION 07 92 00

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SECTION 08 25 50 FRP FLUSH DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fiberglass reinforced polyester (FRP) flush doors with aluminum frames.

1.2 RELATED SECTIONS

A. Section 08 71 00 - Door Hardware.

1.3 REFERENCES

A. AAMA 1503 - Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

B. ANSI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.

C. ASTM B 117 - Operating Salt Spray (Fog) Apparatus.

D. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.

E. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

F. ASTM D 256 - Determining the Pendulum Impact Resistance of Notched Specimens of Plastics.

G. ASTM D 543 - Evaluating the Resistance of Plastics to Chemical Reagents.

H. ASTM D 570 - Water Absorption of Plastics.

I. ASTM D 638 - Tensile Properties of Plastics.

J. ASTM D 790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

K. ASTM D 1308 - Effect of Household Chemicals on Clear and Pigmented Organic Finishes.

L. ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics.

M. ASTM D 1623 - Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.

N. ASTM D 2126 - Response of Rigid Cellular Plastics to Thermal and Humid Aging.

O. ASTM D 2583 - Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

P. ASTM D 5420 – Impact Resistance of Flat Rigid Plastic Specimens by Means of a Falling Weight

Q. ASTM D 6670 - Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products.

R. ASTM E 84 - Surface Burning Characteristics of Building Materials.

S. ASTM E 90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

T. ASTM E 283 - Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

U. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

V. ASTM E 331 - Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

W. ASTM F 476 - Security of Swinging Door Assemblies.

X. ASTM F 1642 – Standard Test Method for Glazing Systems Subject to Air Blast Loading.

Y. NWWDA T.M. 7-90 – Cycle Slam Test Method

Z. SFBC PA 201 - Impact Test Procedures.

AA. SFBC PA 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

AB. SFBC 3603.2 (b)(5) - Forced Entry Resistance Test.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

B. Air Infiltration: For a single door 3’-0” by 7’-0”, test specimen shall be tested in accordance with ASTM E 283 at pressure differential of 6.24 psf. Door shall not exceed 0.90 cfm per linear foot of perimeter crack.

C. Water Resistance: For a single door 3’-0” by 7’-0”, test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.

D. Indoor air quality testing per ASTM D 6670: GREENGUARD Environmental Institute Certified including GREENGUARD for Children and Schools Certification.

E. Swinging Door Cycle Test, Doors and Frames, ANSI A250.4: Minimum of 25,000,000 cycles.

F. Cycle Slam Test Method, NWWDA T.M. 7-90: Minimum 5,000,000 Cycles.

G. Swinging Security Door Assembly, Doors and Frames, ASTM F 476: Grade 40.

H. Salt Spray, Exterior Doors and Frames, ASTM B 117: Minimum of 500 hours.

I. Sound Transmission, Exterior Doors, STC, ASTM E 90: Minimum of 25.

J. Thermal Transmission, Exterior Doors, U-Value, AAMA 1503: Maximum of 0.29 BTU/hr x sf x degrees F. Minimum of 55 CRF value.

K. Surface Burning Characteristics, FRP Doors and Panels, ASTM E 84:

1. Flame Spread: Maximum of 200, Class C.
2. Smoke Developed: Maximum of 450, Class C.

L. Surface Burning Characteristics, Class A Option On Interior Faces of FRP Exterior Panels and Both Faces of FRP Interior Panels, ASTM E 84:

1. Flame Spread: Maximum of 25.
2. Smoke Developed: Maximum of 450.

M. Impact Strength, FRP Doors and Panels, Nominal Value, ASTM D 256: 15.0 foot-pounds per inch of notch.

N. Tensile Strength, FRP Doors and Panels, Nominal Value, ASTM D 638: 14,000 psi.

O. Flexural Strength, FRP Doors and Panels, Nominal Value, ASTM D 790: 21,000 psi.

P. Water Absorption, FRP Doors and Panels, Nominal Value, ASTM D 570: 0.20 percent after 24 hours.

Q. Indentation Hardness, FRP Doors and Panels, Nominal Value, ASTM D 2583: 55.

R. Gardner Impact Strength, FRP Doors and Panels, Nominal Value, ASTM D 5420: 120 in-lb.

S. Abrasion Resistance, Face Sheet, Taber Abrasion Test, 25 Cycles at 1,000 Gram Weight with CS-17 Wheel: Maximum of 0.029 average weight loss percentage.

T. Stain Resistance, ASTM D 1308: Face sheet unaffected after exposure to red cabbage, tea, and tomato acid. Stain removed easily with mild abrasive or FRP cleaner when exposed to crayon and crankcase oil.

U. Chemical Resistance, ASTM D 543. Excellent rating.

1. Acetic acid, Concentrated.
2. Ammonium Hydroxide, Concentrated.
3. Citric Acid, 10 percent.
4. Formaldehyde.
5. Hydrochloric Acid, 10 percent.
6. Sodium hypochlorite, 4 to 6 percent solution.

V. Compressive Strength, Foam Core, Nominal Value, ASTM D 1621: 79.9 psi.

W. Compressive Modulus, Foam Core, Nominal Value, ASTM D 1621: 370 psi.

X. Tensile Adhesion, Foam Core, Nominal Value, ASTM D 1623: 45.3 psi.

Y. Thermal and Humid Aging, Foam Core, Nominal Value, 158 Degrees F and 100 Percent Humidity for 14 Days, ASTM D 2126: Minus 5.14 percent volume change.

1.5 SUBMITTALS

A. Comply with Section 01 33 00 - Submittals.

B. Product Data: Submit manufacturer's product data, including description of materials, components, fabrication, finishes, and installation.

C. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections, and details, indicating dimensions, tolerances, materials, fabrication, doors, panels, framing, hardware schedule, and finish.

D. Samples:

1. Door: Submit manufacturer's sample of door showing face sheets, core, framing, and finish.
2. Color: Submit manufacturer's samples of standard colors of doors and frames.

E. Test Reports: Submit certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.

F. Manufacturer's Project References: Submit list of successfully completed projects including project name and location, name of architect, and type and quantity of doors manufactured.

G. Maintenance Manual: Submit manufacturer's maintenance and cleaning instructions for doors, including maintenance and operating instructions for hardware.

H. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Continuously engaged in manufacturing of doors of similar type to that specified.
2. Door and frame components from same manufacturer.
3. Evidence of a compliant documented quality management system.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Deliver doors cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors.

C. Inspect doors on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect. Remove and replace damaged items that cannot be repaired as directed.

D. Store doors at building site under cover. Place units on minimum 4-inch- (100-mm-) high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If door packaging becomes wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to permit air circulation.

1.8 WARRANTY

A. Warrant doors, frames, and factory-installed hardware against failure in materials and workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.

B. Warranty Period: Ten years starting on date of shipment. In addition, a limited lifetime (while the door is in its specified application in its original installation) warranty covering failure of corner joinery, core deterioration, delamination or bubbling of door skin.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Special-Lite, Inc., 800-821-6531 www.special-lite.com. Subject to compliance with requirements, provide the named product, or a comparable product by one of the following:

1. Ceco Door Products 888-232-6366 www.cecodoor.com
2. Chem-Pruf Door Company, Ltd. 800-444-6924 www.chempruf.com
3. Commercial Door Systems 215-244-9080 www.commercialdoorsystems.com
4. Corrim Company 920-231-2238 www.corrim.com
5. Kawneer Company, Inc. 770-449-5555 www.kawneer.com
6. Tiger Door by Overly Door Company 800-979-7300 tiger.overly.com
7. Vale Doors 610-586-6500 www.valedoors.com

2.2 FRP FLUSH DOORS

A. Basis-of-Design: Special-Lite Model SL-17 Flush Doors with SpecLite3 fiberglass reinforced polyester (FRP) face sheets.

B. Door Opening Size: As indicated on the Drawings.

C. Construction:

1. Door Thickness: 1-3/4 inches.
2. Stiles and Rails: Aluminum extrusions made from prime-equivalent billet that is produced from 100 percent reprocessed 6063-T6 alloy recovered from industrial processes, minimum of 2-5/16-inch depth.
3. Corners: Mitered.
4. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom integral to standard tubular shaped stiles and rails reinforced to accept hardware as specified.
5. Securing Internal Door Extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.
6. Furnish extruded stiles and rails with integral reglets to accept face sheets. Lock face sheets into place to permit flush appearance.
7. Rail caps or other face sheet capture methods are not acceptable.
8. Extrude top and bottom rail legs for interlocking continuous weather bar.

9. Meeting Stiles: Pile brush weatherseals. Extrude meeting stile to include integral pocket to accept pile brush weatherseals.
10. Bottom of Door: Install SL-301 Integral Adjustable Bottom Brush.
11. Glue: Use of glue to bond sheet to core or extrusions is not acceptable.

D. Face Sheet:

1. Material: SpecLite3 FRP, 0.120-inch thickness, finish color throughout.
2. Protective coating: Abuse-resistant engineered surface. Provide FRP with SpecLite3 protective coating, or equivalent.
3. Texture: Pebble.
4. Color: As selected by Architect from manufacturer's standard range.
5. Adhesion: The use of glue to bond face sheet to foam core is prohibited.

E. Core:

1. Material: Poured-in-place polyurethane foam. Drop in glued cores will not be acceptable.
2. Density: Minimum of 5 pounds per cubic foot.
3. R-Value: Minimum of 9.

F. Cutouts:

1. Manufacture doors with cutouts for required vision lites, louvers, and panels.
2. Factory install vision lites, louvers, and panels.

G. Hardware:

1. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.
2. Factory install hardware.

2.3 MATERIALS

A. Aluminum Members:

1. Aluminum extrusions made from prime-equivalent billet that is produced from 100 percent reprocessed 6063-T6 alloy recovered from industrial processes: ASTM B 221.
2. Sheet and Plate: ASTM B 209.
3. Alloy and Temper: As required by manufacturer for strength, corrosion resistance, application of required finish, and control of color.

B. Components: Door and frame components from same manufacturer.

C. Fasteners:

1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
2. Compatibility: Compatible with items to be fastened.
3. Exposed Fasteners: Screws with finish matching items to be fastened.

2.4 FABRICATION

A. Sizes and Profiles: Required sizes for door and frame units, and profile requirements shall be as indicated on the Drawings.

B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.

C. Assembly:

1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
2. Remove burrs from cut edges.

D. Welding: Welding of doors or frames is not acceptable.

E. Fit:

1. Maintain continuity of line and accurate relation of planes and angles.

2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

2.5 ALUMINUM DOOR FRAMING SYSTEMS

A. Tubular Framing:

1. Size and Type: SL-250 2-inch by 5-inch Heavy Wall Tube per elevations.
2. Materials: Aluminum extrusions made from prime-equivalent billet that is produced from 100 percent reprocessed 6063-T6 alloy recovered from industrial processes, 1/8-inch minimum wall thickness.
3. Applied Door Stops: 0.625-inch high, with screws and weatherstripping. Door stop shall incorporate pressure gasketing for weathering seal. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head.
4. Frame Members: Box type with 4 enclosed sides. Open-back framing is not acceptable.
5. Caulking: Caulk joints before assembling frame members.
6. Joints:
   a. Secure joints with fasteners.
   b. Provide hairline butt joint appearance.
7. Field Fabrication: Field fabrication of framing using stick material is not acceptable.
8. Applied Stops: For side, transom, and borrowed lites and panels. Applied stops shall incorporate pressure gasketing for weathering seal. Reinforce with solid bar stock fill for frame hardware attachments.
9. Hardware:
   a. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and hardware schedule.
   b. Factory install hardware.
10. Anchors:
    a. Anchors appropriate for wall conditions to anchor framing to wall materials.
    b. Door Jamb and Header Mounting Holes: Maximum of 24-inch centers.
    c. Secure head and sill members of transom, side lites, and similar conditions.
11. Side Lites:
    a. Factory preassemble side lites to greatest extent possible.
    b. Mark frame assemblies according to location.
12. Finish:
    a. Clear Anodized.

2.6 HARDWARE

A. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.

B. Factory install hardware.

C. Hardware Schedule: As specified in Section 08 71 00.

1. Concealed adjustable bottom brush. Install door manufacturer’s multidirectional adjustable bottom with double nylon brush weatherstripping. Door bottom must be concealed and adjust to accommodate irregular tapered floor conditions.

D. Finish: As specified in Section 08 71 00.

E. Removable Mullions:

1. Standard: BHMA A156.3.
2. When used with panic exit devices, provide removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based

on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.

2.8 VISION LITES

A. Factory Glazing: 1-inch glass insulating units.

B. Lites in Exterior Doors: Allow for thermal expansion.

2.9 ALUMINUM FINISHES

A. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

3.3 INSTALLATION

A. Install doors in accordance with manufacturer's instructions.

B. Install doors plumb, level, square, true to line, and without warp or rack.

C. Anchor frames securely in place.

D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by Architect.

E. Set thresholds in bed of mastic and backseal.

F. Install exterior doors to be weathertight in closed position.

G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

H. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 ADJUSTING

A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.5 CLEANING

A. Clean doors promptly after installation in accordance with manufacturer's instructions.

B. Do not use harsh cleaning materials or methods that would damage finish.

3.6 PROTECTION

A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

END OF SECTION 08 25 50

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Exterior aluminum-framed entrances and storefronts.

a. Glazing is retained mechanically with gaskets on four sides**.**

B. Related Sections include the following:

1. Division 7 Section "Joint Sealants" for installation of joint sealants installed with aluminum-framed systems and for sealants to the extent not specified in this Section.
2. Division 8 Section "Door Hardware" for hardware requirements to the extent not specified in this Section.
3. Division 8 Section "Fiberglass Reinforced Plastic Doors" for exterior manual-swing aluminum doors.
4. Division 8 Section "Glazing" for glazing requirements to the extent not specified in this Section

1.3 DEFINITIONS

A. Basis-of-Design: The designated entrance and storefront systems, frame profile including dimensions, frame “color design” and paint system, attachment method, wind performance and all other attributes which manufacturers must provide, meet or exceed, to the satisfaction of the Architect, in order to be used on the project. The Architect is the sole arbiter in determining whether a product is equal to the “Basis-of-Design”.

1.4 SYSTEM DESCRIPTION

A. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:

1. Structural loads.
2. Thermal movements.
3. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
4. Dimensional tolerances of building frame and other adjacent construction.
5. Failure includes the following:

a. Deflection exceeding specified limits.
b. Thermal stresses transferred to building structure.
c. Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
d. Noise or vibration created by wind and thermal and structural movements.
e. Loosening or weakening of fasteners, attachments, and other components.
f. Sealant failure.
g. Failure of operating units to function properly.

B. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Seismic Loads: As indicated on Drawings.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m) or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.
3. Deflection of framing members in a direction normal to wall plane is limited to 1/360 of clear span, 3/4 inches (19 mm) maximum, where plaster or gypsum board surfaces are subject to bending.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity but not less than 10 seconds.

E. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

F. Air Infiltration: Provide aluminum-framed systems with maximum air leakage through fixed glazing and framing areas of 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa). Provide aluminum-framed doors with maximum air leakage rates of 1.0 cfm/sq. ft. of door area when tested according to ASTM E 283.

G. Water Penetration Under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).

H. Condensation Resistance: Provide aluminum-framed systems with fixed glazing and framing areas having condensation-resistance factor (CRF) of not less than 53 when tested according to AAMA 1503.

I. Average Thermal Conductance: Provide aluminum-framed systems with fixed glazing and framing areas having average U-factor of not more than 0.69 Btu/sq. ft. x h x deg F (3.92 W/sq. m x K) when tested according to AAMA 1503.

1.5 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each product specified, including construction details, material descriptions, dimensions of individual components, profiles, and finishes for each type of product indicated.

C. Shop Drawings showing fabrication and installation of aluminum-framed systems including plans, elevations, sections, details of components, and attachments to other work.

1. Include details of provisions for system expansion and contraction and for draining moisture occurring within the system to the exterior.
2. For entrances, include hardware schedule and indicate operating hardware types, functions, quantities, and locations.

D. Samples for verification of each type of exposed finish required in manufacturer's standard sizes. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.

E. Cutaway Sample of each vertical-to-horizontal intersection of system, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:

1. Joinery.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

F. Qualification Data: For Installer.

G. Product test reports from a qualified independent testing agency evidencing compliance of aluminum-framed systems with requirements based on comprehensive testing of manufacturer's current system.

H. Maintenance Data: For aluminum-framed systems to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing aluminum-framed systems similar to those required for this Project and who is acceptable to manufacturer.

1. Engineering Responsibility: Engage a qualified professional engineer to prepare or supervise the preparation of data for aluminum-framed systems, including Shop Drawings based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project and submission of reports of tests performed on manufacturer's standard assemblies.

B. Source Limitations: Obtain each type of aluminum-framed systems from one source and by a single manufacturer.

C. Product Options: Information on Drawings and in Specifications establishes requirements for systems' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.

D. Accessible Entrances: Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)" , and all applicable state and local requirements.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings." Review methods and procedures related to glazed aluminum curtain wall system including, but not limited to, the following:

1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
2. Review structural loading limitations.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required inspecting, testing, and certifying procedures.
5. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of structural supports for aluminum-framed systems by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established and Guaranteed Dimensions: Where field measurements cannot be made without delaying the Work, establish and guarantee dimensions and proceed with fabrication without field measurements. Coordinate construction to ensure that actual dimensions correspond to established and guaranteed dimensions.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the Manufacturer agreeing to repair or replace components of aluminum-framed systems that do not comply with requirements, or that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including, but not limited to, excessive deflection.
2. Noise or vibration caused by thermal movements.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Failure of operating components to function normally.
5. Adhesive or cohesive sealant failures.
6. Water leakage through fixed glazing and framing areas.
7. Glazing breakage.
8. Warranty Period: Two years from date of Substantial Completion.

C. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within specified warranty period. Warranty does not include normal weathering.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design (exterior storefront system – interior glazed, insulated glazing, center glazing location, thermal isolated): Series 403, EFCO, a Pella Company 800-221-4169 www.efcocorp.com

B. Manufacturers: Subject to compliance with requirements, provide the named product, or a comparable product by one of the following:

1. Arch Aluminum & Glass Co., Inc. 866-629-2724 www.amarlite.com
2. CMI Architectural Products, Inc. 800-334-1533 www.cmiarch.com
3. Columbia Commercial Building Products 800-668-1645 www.ccbpwin.com
4. Kawneer North America 972-438-1212 www.kawneer.com
5. Litex Architectural Window Systems 248-852-0661 www.Litex.com
6. Manko Window Systems, Inc. 800-642-1488 www.mankowindows.com
7. Oldcastle BuildingEnvelope 866-653-2278 www.oldcastlebe.com
8. Regal Mfg. Co., Division of Arcorp, Inc. 503-230-0444
9. Tubelite Inc. 800-866-2227 www.tubeliteinc.com
10. United States Aluminum 214-632-8370 www.usalum.com
11. Waltek & Company, Ltd. 513-577-7980 www.walteltd.com
12. YKK AP America Inc. 800-955-9551 www.ykkap.com

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Sheet and Plate: ASTM B 209/B 209M.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221/B 221M.
3. Extruded Structural Pipe and Tubes: ASTM B 429.
4. Structural Profiles: ASTM B 308/B 308M.

2.3 FRAMING SYSTEMS

A. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermal Isolated; framing members are composite assemblies of two separate extruded-aluminum components permanently bonded by an elastomeric material of low thermal conductance.

B. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
2. Reinforce members as required to receive fastener threads.
3. Provide manufacturer’s standard continuous extruded aluminum backer plate closure at all exterior head and exterior jamb framing members.

D. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

E. Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials. Form exposed flashing from sheet aluminum finished to match framing and of sufficient thickness to maintain a flat appearance without visible deflection.

F. Framing System Gaskets and Sealants: Manufacturer's standard recommended by manufacturer for joint type.

G. Provide manufacturer’s standard continuous extruded aluminum sub-sill receptors at all exterior frames. Sub-sill receptors shall have fully continuously welded end dams adjacent to jambs and at lower receptors where sills step. Sub-sill receptors shall be prefabricated with color to match framing. Allow for expansion of sub-sill receptors according to requirements of other Articles of this specification. Brake metal sub-sill receptors will not be accepted.

2.4 GLAZING SYSTEMS

A. Glazing: As specified in Division 8 Section "Glazing."

B. Glazing Gaskets: Manufacturer's standard permanent, nonmigrating, compression types, replaceable, molded or extruded, that maintain uniform pressure and watertight seal.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric types.

2.5 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 7 Section "Joint Sealants."

B. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.6 FABRICATION

A. Form aluminum shapes before finishing.

B. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.

2. Accurately fitted joints with ends coped or mitered.
3. Means to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing from exterior.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Glazing Pockets: Provide minimum clearances for thickness and type of glass indicate according to GANA's "Glazing Manual".

D. Mechanically Glazed Framing Members: Fabricate for flush glazing (without projecting stops).

E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.

F. Doors: As specified in Division 8 section "FRP Flush Doors and Frames."

G. Hardware Installation: Factory install hardware to the greatest extent possible. Cut, drill, and tap for factory-installed hardware before applying finishes.

1. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.7 ALUMINUM FINISHES

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

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

D. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of Work. Do not proceed with installation until unsatisfactory conditions have been corrected or accommodations acceptable to Architect have been made.

3.2 INSTALLATION

A. General:

1. Glaze the storefront system from the interior of the building.
2. Comply with manufacturer's written instructions and any special instructions for interior glazed storefront systems.
3. Do not install damaged components.

4. Fit joints to produce hairline joints free of burrs and distortion.
5. Rigidly secure nonmovement joints.
6. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
7. Seal joints watertight, unless otherwise indicated.

B. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer, or by applying sealant, or tape, or installing nonconductive spacers as recommended by manufacturer for this purpose.
2. Where aluminum makes contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.

D. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

E. Install components plumb and true in alignment with established lines and grades, without warp or rack.

F. Install glazing according to Shop Drawings. Comply with requirements of Division 8 Section "Glazing", unless otherwise indicated.

G. Install perimeter joint sealants as specified in Division 7 Section "Joint Sealants" and to produce weathertight installation.

H. Entrances: Install to produce smooth operation and tight fit at contact points.

1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

I. Erection Tolerances: Install aluminum-framed systems to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3 mm in 3 m); 1/4 inch in 40 feet (6 mm in 12 m).
2. Level: 1/8 inch in 20 feet (3 mm in 6 m); 1/4 inch in 40 feet (6 mm in 12 m).
3. Alignment:

a. Where surfaces abut in line, limit offset from true alignment to 1/16 inch (1.5 mm).
b. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch (0.8 mm).
c. Where a reveal or protruding element separates aligned surfaces by less than 2 inches (50.8 mm), limit offset to 1/2 inch (12.7 mm).

4. Location: Limit variation from true location and plane to 1/8 inch in 12 feet (3 mm in 3.7 m); 1/4 inch (6 mm) over total length.
5. Diagonal Measurements: Limit difference between diagonal measurement to 1/8 inch (3 mm).

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner may engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing and inspecting of representative areas to determine compliance of installed systems with specified requirements shall take place as follows and in successive stages. Do not proceed with installation of the next area until test results for previously completed areas show compliance with requirements.

1. Water Spray Test: Before installation of interior finishes has begun, a minimum area of 75 feet (23 m) by 1 story of aluminum-framed systems designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

C. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.

1. For doors accessible to people with disabilities, adjust closers to provide a 3 second closer sweep period for doors to move from a 70 degree open position to 3 inches (75 mm) from the latch measured to the leading door edge.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure aluminum-framed systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 41 13

SECTION 08 45 23 - TRANSLUCENT FIBERGLASS WALL PANEL ASSEMBLIES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes translucent fiberglass wall panels and grid system required for this Work as indicated herein and on the Drawings and shall include all required hardware, anchors, weather-stripping, flashing and sheet metal, and joint sealers for a complete weather tight installation.

B. All flashing and sheet metal Work shall be provided in accordance with Division 7 Section "Sheet Metal Flashing, Trim and Accessories" and as indicated on the Drawings.

C. All sealant Work shall be provided in accordance with Division 7 Section "Joint Sealants" and as indicated on the Drawings.

1.3 QUALITY ASSURANCE

A. For installation, use only personnel who are skilled in the work required.

B. The translucent fiberglass wall panel manufacturer for products described in this Section shall be listed by a recognized building code authority which requires quality control inspections by an approved agency for sandwich panel construction.

C. Materials and products shall be manufactured by a company which can show evidence of these materials being satisfactorily used on at least five (5) projects of similar size, scope and type. At least three (3) of these projects shall have been in successful use for eight (8) years or longer.

D. Installer’s Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two (2) consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

E. The translucent fiberglass wall panel manufacturer shall be responsible for the engineering design, configuration, and fabrication of the complete panel system.

1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
2. Panel system shall have less than 0.01cfm/ft^2 air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 20 psf before and after structural testing by ASTM E 330.

F. Product Options: Drawings indicate size, profiles, and dimensional requirements of translucent fiberglass wall panel systems and are based on the specific system indicated. Other manufacturers' systems with equal performance characteristics may be considered. Refer to Division 1 Section "Substitutions."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.4 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings, color samples and panel samples in accordance with Division 1 Section "Submittals", include elevations, details, material descriptions, profiles, finish of components, and manufacturer’s color charts showing the full range of colors available for factory finished aluminum.

1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.

    a. Sandwich panels: 14 inch by 28 inch units.
    b. Factory Finished Aluminum: 5 inch long sections.

B. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.

C. Installation Methods: Submit two copies of manufacturer's recommended installation method showing all requirements for blocking and bracing.

D. The manufacturer shall submit certified test reports, made by an independent testing organization for each type and class of wall panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if current and indicative of products used on this project. Test reports required are:

1. International Building Code Evaluation Report.
2. Flame Spread and Smoke Development (UL 723), submit UL Card.
3. Burn Extent (ASTM D 635).
4. Color Difference (ASTM D 2244).
5. Abrasion/Erosion Resistance (ASTM D 4060).
6. Impact Strength (UL 972).
7. Bond Strength (ASTM C 297 after aging by ASTM D 1037).
8. Bond Shear Strength (ASTM D 1002).
9. Beam Bending Strength (ASTM E 72).
10. Insulated U Factor (NFRC 100).
11. NFRC System U Factor Certification.
12. Solar Heat Gain Coefficient.
13. Condensation Resistance Factor (AAMA 1503).
14. Air Leakage (ASTM E 283).
15. Structural Performance (ASTM E 330).
16. Water Penetration (ASTM E 330).
17. 1200 degrees F Fire Resistance (SWRI).
18. ASTM E 1886/E 1996 or TAS 201, 202 and 203.

1.5 PRODUCT HANDLING

A. Deliver panel system, components and materials in manufacturer’s standard protective packaging.

B. Store panels on the long edge several inches above the ground, blocked and under cover in accordance with manufacturer’s storage and handling instructions.

C. Protect translucent fiberglass wall panel assemblies before, during and after installation.

D. Protect installed work of other trades.

E. Replacements: In event of damage, make necessary replacements.

1.6 WARRANTY

A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year from the date of Substantial Completion. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering and defects in accessories, insulated translucent sandwich panels and other components of the work.

B. Extended Warranty: Five (5) year Materials and Workmanship.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Basis-of-Design: Translucent Daylighting Systems – Kawall 100 Wall Panels, Kalwall Corporation 800-258-9777 www.kalwall.com

B. Manufacturers: Subject to compliance with requirements, provide the named product, or a comparable product by Major Industries, Inc. 888-759-2678 www.majorskylights.com

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Fiberglass-sandwich-panel assemblies shall withstand the effects of the following forces without failure due to defective manufacture, fabrication, installation, or other defects in construction:

1. Structural loads.
2. Thermal movements.
3. Movements of supporting structure.
4. Dimensional tolerances of building frame and other adjacent construction.
5. Failure includes, but is not limited to, the following:

    a. Deflection exceeding specified limits.
    b. Water leakage.
    c. Thermal stresses transferred to building structure.
    d. Noise or vibration created by wind, thermal, or structural movements.
    e. Loosening or weakening of fasteners, attachments, and other components.

B. Structural Loads:

1. Seismic Loads: As indicated on Drawings.
2. Wind Loads: As indicated on Drawings.

2.3 PANEL COMPONENTS

A. Face Sheets: Translucent faces manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.

1. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
2. Face sheets shall not deform, deflect or drip when subject to fire or flame.

B. Interior Face Sheets

1. Flamespread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flamespread rating no greater than 20 and smoke developed no greater than 200 when tested in accordance with UL 723/ASTM E 84.
2. Burn extent by ASTM D 635 shall be no greater than 1 inch.

C. Exterior Face Sheets

1. Color Stability: Full thickness of the exterior face sheet shall not change color more than 3.0 (5.0) CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5 degrees facing south, determined by the average of at least three (3) white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
2. Strength: Exterior face sheet shall be uniform in strength, with panel meeting ASTM E 1996 and ASTM E 1886 or TAS 201, 202 and 203.

D. Appearance

1. Exterior Face Sheets: Smooth, 0.070 inch thick and Crystal in color.

2. Interior Face Sheets: Smooth, 0.045 inch thick and White in color.
3. Face sheets shall not vary more than plus or minus 10 percent in thickness and be uniform in color.

E. Grid Core

1. Thermally broken aluminum I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I- beam shall be no less than 7/16 inch.
2. I-beam Thermal Break: Minimum 1 inch, thermoset fiberglass composite.

F. Laminated Adhesive

1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives.”
2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two (2) exposures to six (6) cycles each of the aging conditions prescribed by ASTM D 1037.
3. Minimum shear strength of the panel adhesive by ASTM D-1002 after exposure to four (4) separate conditions:

a. 50 percent Relative Humidity at 68 degrees F: 540 PSI.
b. 182 degrees F: 100 PSI.
c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI.
d. Accelerated Aging by ASTM D 1037 at 182 degrees F: 250 PSI.

2.4 PANEL CONSTRUCTION

A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking thermally broken (aluminum) I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge. White spots indicating lack of bond at intersections of grid-core members are limited in number to four for every 40 sq. ft. of panel and limited in diameter to 3/64 inch.

1. Thickness: 2-3/4 inch.
2. Light transmission: 20 percent.
3. Solar heat gain coefficient: 0.28 maximum.
4. Panel U-factor by NFRC certified laboratory: 2-3/4 inch aluminum I-beam 0.29 maximum.
5. Grid Pattern: As indicated on drawings, symmetrical about centerlines of each panel.

B. Panels shall deflect no more than 1.9 inches at 30 psf in 10 foot span without a supporting frame by ASTM E 72.

C. Panels shall withstand 1200 degrees F fire for minimum one (1) hour without collapse or exterior flaming.

D. Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.

E. Fabricate panel to allow condensation within panel to escape.

F. Reinforce panel corners.

2.5 BATTENS AND PERIMETER CLOSURE SYSTEM

A. Closure System: Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.

B. Sealing Tape: Manufacturer’s standard, pre-applied to closure system at the factory under controlled conditions.

C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.

2.6 ALUMINUM FINISHES

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

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

D. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine installed work of other trades and verify that such work is complete to a point where this Work may commence.

B. Verify that surrounding structure and elements are smooth, clean and free from conditions that would adversely affect installation and performance and are otherwise properly prepared.

C. Verify measurements and verify that the installation may be made in accordance with approved Shop Drawings and manufacturer's instructions.

D. Verify that openings are ready to receive Work of this Section.

E. In event of discrepancy, notify Architect.

F. Do not proceed with installation until conditions are satisfactory and discrepancies have been resolved.

G. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

3.2 INSTALLATION

A. Install where indicated, anchoring all components firmly in place in complete accordance with approved Shop Drawings and the manufacturer's recommendations.

B. Do not install damaged components.

C. Fit joints between aluminum components to produce hairline joints free of burrs and distortion.

D. Rigidly secure non-movement joints.

E. Anchor component parts securely in place by permanent mechanical attachment system.

F. Accommodate thermal and mechanical movements.

G. Install anchors with separators and isolators to prevent metal corrosion, electrolytic deterioration, and immobilization of moving joints.

H. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

I. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

J. Metal Protection: Where aluminum components will contact dissimilar materials, protect against galvanic action by painting contact surfaces with corrosion-resistant coating or by installing nonconductive spacers as recommended in writing by manufacturer for this purpose.

K. Install components to drain water passing through joints, condensation occurring within aluminum members and panels, and moisture migrating within assembly to exterior.

L. Install components plumb and true in alignment with established lines and elevations.

M. Erection Tolerances: Install panel assemblies to comply with the following maximum tolerances:

1. Alignment: Limit offset from true alignment to 1/32 inch (0.8 mm) where surfaces abut in line, edge to edge, at corners, or where a reveal or protruding element separates aligned surfaces by less than 3 inches (76 mm); otherwise, limit offset to 1/8 inch (3.2 mm).

N. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet (3.2 mm in 3.7 m), but no greater than 1/2 inch (13 mm) over total length.

3.3 CLEANING

A. Clean the panel system inside and outside, immediately after installation, according to manufacturer's written recommendations.

END OF SECTION 08 45 23

SECTION 08 51 13 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Related Sections include the following:

a. Division 8 Section “Translucent Fiberglass Wall Panel Assemblies”.
b. Division 8 Section “Glazing”.

1.2 SUMMARY

A. This Section includes Commercial and Heavy-Commercial Grade aluminum windows of the performance class indicated. Window types required include the following:

1. Horizontal-sliding windows.
2. Fixed windows.

1.3 DEFINITIONS

A. Basis-of-Design: The designated window system, exterior frame profile including dimensions, frame “color design” and paint system, attachment method, wind performance and all other attributes which manufacturers must provide, meet or exceed, to the satisfaction of the Architect, in order to be used on the project. The Architect is the sole arbiter in determining whether a product is equal to the “Basis-of-Design”.

B. Combination Windows: Where 2 different types of operating sash or ventilators are included in the same window unit and share a common frame, the unit is considered a "combination window."

C. Performance class number, included as part of the window designation system, is the actual design pressure in pounds force per square foot (pascals) used to determine structural test pressure and water test pressure.

1. Structural test pressure, wind load test, is equivalent to 150 percent of the design pressure.
2. Water-leakage-resistance test pressure is equivalent to 15 percent of the design pressure with 2.86 lbf/sq. ft. (137 Pa) as a minimum for Residential, Commercial, and Heavy-Commercial Grade windows.

1.4 PERFORMANCE REQUIREMENTS

A. Performance Class:

1. Horizontal Sliding Windows: Comply with requirements of AAMA Grade and Performance Class HS-AW100. Window units shall successfully pass operating force test performance requirements specified in AAMA 101.
2. Fixed Windows: F-AW120.

B. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.

C. Test Criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:

1. Design wind velocity at Project site is 90 MPH.
2. Test Procedures: Test window units according to ASTM E 283 for air infiltration, both ASTM E 331 and ASTM E 547 for water penetration, and ASTM E 330 for structural performance.

D. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in AAMA 101 for air infiltration, water penetration, and structural performance for type, grade, and performance class of window units required. Where required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101, Section 3, "Optional Performance Classes," for higher than minimum performance class.

1. Air-Infiltration Rate for Institutional grade horizontal sliding window units: Not more than 0.10 cfm/ft. of operable sash joint for an inward test pressure of 6.24 lbf/sq. ft. (299 Pa)
2. Air-Infiltration Rate for Institutional grade fixed units: Not more than 0.01 cfm/ft. of area for an inward test pressure of 6.24 lbf/sq. ft. (299 Pa).
3. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 15 percent of the design pressure.

E. Structural Performance: No failure or permanent deflection in excess of 0.4 percent of any member's span after removing the imposed load associated with the specified window performance classification.

F. Condensation Resistance: Where window units are indicated to be "thermally improved," provide units tested for thermal performance according to AAMA 1503.1 showing a condensation resistance factor (CRF) of 55.

G. Forced-Entry Resistance: Comply with Performance Level 10 requirements when tested according to ASTM F 588.

H. Thermal Movements: Provide window units that allow thermal movement resulting from the following maximum change (range) in ambient temperature when engineering, fabricating, and installing aluminum windows to prevent buckling, opening of joints, and overstressing of components, connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime sky heat loss.

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

1.5 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data for each type of window required, including the following:

1. Construction details and fabrication methods.
2. Profiles and dimensions of individual components.
3. Data on hardware, accessories, and finishes.
4. Recommendations for maintaining and cleaning exterior surfaces.

C. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:

1. Layout and installation details, including anchors.
2. Elevations at 1/4 inch = 1 foot (1:50) scale and typical window unit elevations at 3/4 inch = 1 foot (1:20) scale.
3. Full-size section details of typical composite members, including reinforcement and stiffeners.
4. Location of weep holes.
5. Panning details.
6. Hardware, including operators.
7. Glazing details.
8. Accessories.
9. Translucent fiberglass wall panels including grid and any false mullion locations

D. Test reports from a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated. Test results based on use of down-sized test units will not be accepted.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.

B. Single-Source Responsibility: Obtain aluminum windows from one source and by a single manufacturer.

C. Product Options: The Drawings indicate sizes, profiles, dimensional requirements, and aesthetic effects of aluminum windows and are based on the specific window types and models indicated. Other aluminum window manufacturers whose products have equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. Refer to Division 1 Section "Substitutions."

1.7 PROJECT CONDITIONS

A. Field Measurements: Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Where field measurements cannot be made without delaying the Work, guarantee opening dimensions and proceed with fabricating aluminum windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to guaranteed dimensions.

1.8 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty signed by aluminum window manufacturer agreeing to repair or replace window components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
2. Faulty operation of sash and hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

C. Warranty Period: 10 years after date of Substantial Completion.

D. Warranty Period for Metal Finishes and Glass: 10 years after date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design (Horizontal-sliding Windows): Series L500T HS-AW100, Litex Architectural Window Systems 248-852-0661 www.Litex.com

B. Basis-of-Design (Fixed Windows): Series L500T F-AW120, Litex Architectural Window Systems 248-852-0661 www.Litex.com

C. Manufacturers: Subject to compliance with requirements, provide the named product, or a comparable product by one of the following:

1. EFCO, a Pella Company 800-221-4169 www.efcocorp.com
2. Wausau Window and Wall Systems 281-304-7180 www.wausauwindow.com

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength and not less than 0.062 inch (1.6 mm) thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard, noncorrosive, pressed-in, splined grommet nuts.
2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.

D. Compression-Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets complying with ASTM D 2000 Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.

E. Sliding-Type Weatherstripping: Provide woven-pile weatherstripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric. Comply with AAMA 701.2.

1. Provide stripping with integral centerline barrier fin of semirigid plastic sheet of polypropylene.

F. Sealant: For sealants required within fabricated window units, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating. Comply with Division 7 Section "Joint Sealants" of these Specifications for selection and installation of sealants.

G. Wire-Fabric Insect Screen: 18 by 18 (1.1 by 1.1 mm), 18 by 16 (1.1 by 1.3 mm), or 18 by 14 (1.1 by 1.5 mm) mesh of 0.013 inch (0.3 mm) diameter, coated aluminum wire, complying with FS RR-W-365, Type VII.

2.3 HARDWARE

A. Each operating sash shall operate on two (2) height adjustable ball bearing steel rollers capable of supporting a load of 100 lbs each under continuous operation.

B. Operating sash shall have a white bronze spring-loaded lock that automatically engages a white bronze keeper at meeting rails. Lock shall be easily serviceable in the field without disassembling the sash.

2.4 ACCESSORIES

A. General: Provide manufacturer's standard accessories that comply with indicated standards.

B. Insect Screens: Provide insect screens for each operable exterior sash or ventilator. Locate screens on inside or outside of window sash or ventilator, depending on window type. Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches.

1. Screen Frames: Fabricate frames of tubular-shaped, extruded- or formed-aluminum members of 0.050 inch (1 mm) minimum wall thickness, with mitered or coped joints and concealed mechanical fasteners. Finish frames to match window units.

a. Provide removable PVC spline-anchor concealing edge of screen frame.

C. Weatherstripping: Provide sliding-type weatherstripping where sash rails slide horizontally or vertically along unit frame. Provide compression-type weatherstripping at perimeter of each operating sash where sliding type is inappropriate.

1. Provide silicone treated pile with polypropylene center fin weatherstripping locked into extruded grooves in sash conforming to AAMA 701.2.

2.5 FABRICATION

A. General: Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.

1. Provide units that are reglazable without dismantling sash or ventilator framing.
2. Prepare window sash or ventilators for glazing, except where preglazing at the factory is indicated.

B. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance, thermal barrier, located between exterior materials and window members exposed on interior, in a manner that eliminates direct metal-to-metal contact.

1. Provide thermal-break construction that has been in use for not less than 3 years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.
2. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
3. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.
4. Subframes: Provide subframes with anchors for window units as shown, of profile and dimensions indicated but not less than 0.062-inch- (1.6-mm-) thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units.
5. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated.
6. Glazing Stops: Provide screw-applied or snap-on glazing stops, coordinated with glass selection and glazing system indicated. Finish to match window units.

C. Preglazed Fabrication: Preglaze window units at the factory. Comply with glass and glazing requirements of Division 8 Sections "Glazing” and “Translucent Fiberglass Wall Panels” of these Specifications and AAMA 101.

2.6 FINISHES

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

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

C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect openings before installation. Verify that rough or masonry opening is correct and sill plate is level.

1. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal surfaces shall be dry; clean; free of grease, oil, dirt, rust and corrosion, and welding slag; without sharp edges or offsets at joints.

3.2 INSTALLATION

A. Comply with manufacturer's specifications and recommendations for installing window units, hardware, operators, and other components of the Work.

B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

C. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified under "Dissimilar Materials" Paragraph in appendix to AAMA 101.

D. Set sill members and other members in a bed of sealant or with joint fillers or gaskets, as shown on Shop Drawings, to provide weathertight construction. Refer to Division 7 Section "Joint Sealants" for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the Work.

1. Sealants, joint fillers, and gaskets to be installed after installation of window units are specified in other Division 7 Section(s).

3.3 ADJUSTING

A. Adjust operating sash and hardware to provide a tight fit at contact points and at weatherstripping for smooth operation and a weathertight closure.

3.4 CLEANING

A. Clean aluminum surfaces promptly after installing windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

B. Clean glass of preglazed units promptly after installing windows. Comply with requirements of Division 8 Section "Glazing" for cleaning and maintenance.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to aluminum window manufacturer, that ensure window units are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 51 13

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 Refer to "General and Special Conditions", and "Instructions to Bidders", Division 1 of Specifications. Requirements of these Sections and the project drawings shall govern work in this section.

1.2 WORK INCLUDED

A. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.

B. Related work:

1. Division 1 – General Requirements
2. Division 6 – Rough Carpentry
3. Division 8 – FRP Flush Doors and Frames
4. Division 8 – Aluminum Framed Entrances and Storefronts

1.3 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.

B. Hardware Supplier:

1. Shall be an established firm dealing in contract builders' hardware. He must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant (AHC).

C. Pre-installation Meeting:

1. Before hardware installation, General Contractor will request a hardware installation meeting be conducted on the installation of hardware; specifically that of locksets, closers, exit devices, overhead stops and coordinators. Manufacturer's representatives of the above products, in conjunction with the hardware supplier for the project, shall conduct the meeting. Meeting to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Meeting to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.
2. When any electrical or pneumatic hardware is specified this meeting shall also include the following trades/installers: Electrical, Security, Alarm systems and Architect.
3. Convene one week or more prior to commencing work of this Section.
4. The Hardware Supplier shall include the cost of this meeting in his proposal.

D. Manufacturer:

1. Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
2. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

1.4 SUBMITTALS

A. Hardware Schedule

1. Submit number of Hardware Schedules as directed in Division 1.
2. Follow guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule unless noted otherwise.
3. Schedule will include the following:

a. Door Index including opening numbers and the assigned Finish Hardware set.
b. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B
Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

c. Hardware Locations.
d. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
e. Hardware Description: Quantity, category, product number, fasteners, and finish.
f. Headings that refer to the specified Hardware Set Numbers.
g. Scheduling Sequence shown in Hardware Sets.
h. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
i. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
j. Typed Copy.
k. Double-Spacing.
l. 8-1/2 x 11 inch sheets
m. U.S. Standard Finish symbols or BHMA Finish symbols.

B. Product Data:

1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
2. Submit product data with hardware schedule.

C. Samples:

1. Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample, if required, of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule.
2. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

D. Key Schedule:

1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
2. Submit as a separate schedule.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Label each item of hardware with the appropriate door number and Hardware Schedule heading number, and deliver to the installer so designated by the contractor.

1.6 WARRANTIES

A. Refer to Division 1 for warranty requirements.

B. During the warranty period, replace defective work, including labor, materials and other costs incidental to the work. Replace work found to be defective as defined in the General Conditions.

PART 2 - PRODUCTS

2.1 Furnish each category with the products of only one manufacturer unless specified otherwise; this requirement is mandatory whether various manufacturers are listed or not.

2.2 Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, it is understood that this is the owner's Building Standard and "no substitution" is allowed.

A. Hinges:

1. Furnish hinges of class and size as listed in sets.
2. Numbers used are Ives (IVE).
3. Products of a BHMA member are acceptable.

B. Exit Devices: Supplied by Owner.

C. Closers:

1. Refer to door and frame details and furnish accessories such as drop plates, panel adapters, spacers and supports as required to correctly install door closers. State degree of door swing in the hardware schedule.
2. Products listed in sets are LCN 4000 Series. (No substitutions)

D. Kick Plates:

1. Furnish 0.050 inch thick, 10 inches high by door width less 2 inches at single doors and less 1 inch at pairs. Where glass or louvers prevent this height, supply with height equal to height of bottom rail less 2 inches.
2. Any BHMA manufacturing product meeting above is acceptable.

E. Thresholds:

1. 1/2 inch high - 5 inches wide. Cope at jambs.
2. Furnish full wall opening width when frames are recessed.
3. Cope in front of mullions if thresholds project beyond door faces.
4. Furnish with non-ferrous stainless steel screws and lead anchors.

a. National Guard as listed in sets
b. Equal of Reese, Pemko or Zero

F. Door Sweeps:

1. Surface Sweeps:

a. National Guard as listed in sets
b. Equal of Reese, Pemko or Zero

G. Weather-stripping:

1. Apply to head and jamb stops.
2. Solid bar stock all sides

a. National Guard as listed in sets
b. Equal of Reese, Pemko or Zero

H. Miscellaneous:

1. Furnish items not categorized in the above descriptions but specified by manufacturer's names in Hardware Sets.

I. Fasteners:

1. Furnish fasteners of the proper type, size, quantity and finish. Use machine screws and expansion shields for attaching hardware to concrete or masonry, and wall grip inserts at hollow wall construction. Furnish machine screws for attachment to reinforced hollow metal doors and frames and reinforced aluminum doors and frames. Furnish full thread wood screws for attachment to solid wood doors and frames. "TEK" type screws are not acceptable.
2. Sex bolts will not be permitted on reinforced metal doors or wood doors where blocking is specified.

2.3 FINISHES

A. Provide finish for each item as indicated in sets.

2.4 TEMPLATES AND HARDWARE LOCATION

A. Furnish hardware made to template. Supply required templates and hardware locations to the door and frame manufacturers.

B. Furnish metal template to frame/door supplier for continuous hinge.

2.5 CYLINDERS AND KEYING

A. All cylinders for each building will be supplied by Owner.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install hardware according to manufacturer's installations and template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.
2. Provide blocking/reinforcement for all wall mounted hardware.
3. Reinforced hollow metal doors and frames and reinforced aluminum door and frames will be drilled and tapped for machine screws.
4. Install weather-strip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket to provide a continuous seal around perimeter of door opening. Allow for gasket when installing finish hardware. Door closers will require special templating. Exit devices will require adjustment in backset.

B. Locations:

1. Dimensions are from finish floor to center line of items.
2. Include this list in Hardware Schedule.

CATEGORY	DIMENSION
Hinges	Door Manufacturer's Standard
Exit Device Touchbar	Per Template

Wall Stops/Holders	At Head

C. Final Adjustment:

1. Provide the services of a representative to inspect material furnished and its installation and adjustment, to make final hardware adjustment, and to instruct the Owner's personnel in adjustment, care and maintenance of hardware.
2. Locksets, closers and exit devices shall be inspected by the factory representative and adjusted after installation and after the HVAC system is in operation, to insure correct installation and proper adjustment in operation. The manufacturer's representative shall prepare a written report stating compliance, and also recording locations and kinds of noncompliance. The original report shall be forwarded to the Architect with copies to the Contractor, hardware installer and Owner.

D. Technical and Warranty Information:

1. At the completion of the project, the technical and warranty information coalesced and kept on file by the General Contractor shall be given to the Owner or Owner’s Agent. In addition to both the technical and warranty information, all factory order acknowledgement numbers supplied to the General Contractor during the construction period shall be given to the Owner or Owner’s Agent. The warranty information and factory order acknowledgement numbers shall serve to both expedite and properly execute any warranty work that may be required on the various hardware items supplied on the project.
2. Submit to General Contractor, two copies each of parts and service manuals and two each of any special installation or adjustment tools. Include for locksets, exit devices, door closers and any electrical products.

3.2 HARDWARE SETS

HW SET: 1

2	EA	CONTINUOUS HINGE	224HD	628	IVE
1	EA	REMOVABLE MULLION	BY DOOR SUPPLIER		
2	EA	PANIC HARDWARE	BY OWNER		
1	EA	CYLINDER	BY OWNER		
2	EA	SURFACE CLOSER	4111 SCUSH X ST-1586	689	LCN
2	SET	WEATHER SEALS	700NA	AL	NGP
1	EA	DRIP CAP	16A	AL	NGP
2	EA	DOOR SWEEP	C627A	AL	NGP
1	EA	THRESHOLD	425	AL	NGP

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SECTION 08 80 00 – GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This 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. Windows.
2. Doors.
3. Glazed entrances.
4. Storefront framing.
5. Laminated glass.

B. Related Sections include the following:

1. Division 8 Section “Aluminum Framed Entrances and Storefronts”.
2. Division 8 Section “FRP Flush Doors and Frames.”
3. Division 8 Section “Aluminum Windows”.

1.3 DEFINITIONS

A. Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or a specified gas.

D. Deterioration of Laminated Glass: Defects developed from normal use, which are attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated glass standard.

E. Deterioration of Insulating Glass: Failure of hermetic seal under normal use, which is attributed to the manufacturing process and not to causes other than glass breakage and practices for maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

a. Specified Design Wind Loads: As indicated, but not less than wind loads applicable to Project as required by ASCE 7 "Minimum Design Loads for Buildings and Other Structures": Section 6.0 "Wind Loads."
b. Probability of Breakage for Vertical Glazing: 8 lites per 1,000 for lites set vertically or not more than 15 degrees off vertical and under wind action.

1) Load Duration: 3 seconds.

c. Maximum Lateral Deflection: For the following types of glass supported on all 4 edges, provide thickness required that limits center deflection at design wind pressure to 1/50 times the short side length or 1 inch (25 mm), whichever is less.

1) For monolithic-glass lites heat treated to resist wind loads.
2) For insulating glass.
3) For laminated glass lites.

d. Minimum Glass Thickness for Exterior Lites: Not less than 6.0 mm.
e. Thickness of Tinted Glass: Provide the same thickness for each tint color indicated throughout Project.

C. Thermal Movements: Provide glazing that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

D. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6.0 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units with lites 6.0 mm thick and a nominal 1/2 inch (12.7 mm) wide interspace.
4. Center-of-Glass Values: Based on using LBL-44789 WINDOW 5.0 computer program for the following methodologies:

a. U-Factors: NFRC 100 expressed as Btu/ sq. ft. x h x deg F (W/sq. m x K).
b. Solar Heat Gain Coefficient: NFRC 200.
c. Solar Optical Properties: NFRC 300.

1.5 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

B. Product Data: For each glass product and glazing material indicated.

C. Shop Drawings: Showing design and pattern location for each glass unit. Include the following:

1. Glazing method.
2. Size and location of penetrations.

D. Samples: For the following products, in the form of 12 inch (300 mm) square Samples for glass and of 12 inch (300 mm) long Samples for sealants. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

1. Each color of tinted float glass.
2. Laminated glass.
3. Insulating glass for each designation indicated.
4. For each color (except black) of exposed glazing sealant indicated.

E. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.

F. Product Certificates: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.

G. Qualification Data: For installers**.**

H. Preconstruction Adhesion and Compatibility Test Report: From glazing sealant manufacturer indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

I. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).

B. Source Limitations for Glazing Accessories: Obtain glazing accessories through one source from a single manufacturer for each product and installation method indicated.

C. Glass Product Testing: Obtain glass test results for product test reports in "Submittals" Article from a qualified testing agency based on testing glass products.

1. Glass Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

D. Elastomeric Glazing Sealant Product Testing: Obtain sealant test results for product test reports in "Submittals" Article from a qualified testing agency based on testing current sealant formulations within a 36-month period.

1. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated, as documented according to ASTM E 548.
2. Test elastomeric glazing sealants for compliance with requirements specified by reference to ASTM C 920, and where applicable, to other standard test methods.

E. Safety Glazing Products: Comply with testing requirements in 16 CFR 1201 and, for wired-glass, ANSI Z97.1.

1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of the Safety Glazing Certification Council or another certification agency or manufacturer acceptable to authorities having jurisdiction and manufacturer’s name.

   a. Permanent mark shall be acid etched, sand blasted, ceramic fired, laser etched, embossed, or of a type that once applied, cannot be removed without being destroyed.
   b. Multilite glazed assemblies having individual lights not exceeding 1 sq. ft. (0.09 sq. m) in exposed areas shall have at least one light in the assembly marked as indicated. Other lites in the assembly shall be marked “CPSC 16 CFR 1201”.

2. Where glazing units, including Kind FT glass and laminated glass, are specified in Part 2 articles for glazing lites more than 9 sq. ft. (0.84 sq. m) in exposed surface area of one side, provide glazing products that comply with Category II materials, for lites 9 sq. ft. (0.84 sq. m) or less in exposed surface area of one side, provide glazing products that comply with Category I or II materials, except for hazardous locations where Category II materials are required by 16 CFR 1201 and regulations of authorities having jurisdiction.

F. 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 Publication: “Glazing Manual”.
2. GANA Publication: “Sealant Manual”.
3. GANA Publication: "Laminated Glazing Reference Manual".
4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "Glazing Guidelines for Sealed Insulating Glass Units”.

G. Preinstallation Conference: Conduct conference at Project site.

1.7 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 from condensation, temperature changes, direct exposure to sun, or other causes.

B. Retain packaging and sequencing numbers for glass units.

C. For insulating-glass units that will be exposed to substantial altitude changes, comply with insulating-glass manufacturer's written recommendations for venting and sealing to avoid hermetic seal ruptures.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install liquid glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturer or below 40 deg F (4.4 deg C).

1.9 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form, made out to Owner and signed by laminated glass manufacturer agreeing to replace laminated glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

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

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form, made out to Owner and signed by insulating-glass manufacturer agreeing to replace insulating-glass units that deteriorate as defined in "Definitions" Article, f.o.b. the nearest shipping point to Project site, within specified warranty period indicated below.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units 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 publications, to comply with system performance requirements.

B. Grind smooth and polish exposed glass edges and corners.

2.2 GLAZING UNITS

A. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3; of class indicated.

B. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3; of class, kind, and condition indicated.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed, unless otherwise indicated.
2. Provide Kind HS (heat-strengthened) float glass in place of annealed float glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
3. For uncoated glass, comply with requirements for Condition A.
4. Provide Kind FT (fully tempered) float glass in place of annealed or Kind HS (heat-strengthened) float glass where safety glass is indicated or, if not indicated, where required by authorities having jurisdiction.

C. Monolithic Float-Glass:

1. Uncoated Clear Float Glass: Class 1 (clear) annealed or Kind HS (heat-strengthened) float glass where heat strengthening is required to resist thermal stresses induced by differential shading of individual glass lites and to comply with system performance requirements. Provide Kind FT (fully tempered) float glass where indicated or, if not indicated, where required by authorities having jurisdiction.
2. Manufacturers: Subject to compliance with requirements, manufacturers offering monolithic float-glass units which may be incorporated in the Work include, but are not limited to, the following:

a. Guardian Industries Corp. 248-340-1800 www.guardian.com
b. Pilkington North America Inc. 800-221-0444 www.pilkington.com
c. PPG Industries, Inc. 800-377-5267 www.ppg.com

D. Laminated Glass: ASTM C 1172, and complying with requirements as follows:

1. Interlayer: Clear polyvinyl butyral of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation, 0.030 inch thick, but not less than that required to comply as a Type II Safety glass.

a. For polyvinyl butyral interlayers, laminate lites in autoclave with heat plus pressure.

2. Laminating Process: Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets.

E. Insulating-Glass, General: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements as follows:

1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in Part 1 "Performance Requirements" Article.
2. Provide Kind FT (fully tempered) glass lites where safety glass is indicated.
3. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
4. Sealing System: Dual seal, with primary and secondary sealants as follows:

a. Manufacturer's standard sealants.

5. Spacer Specifications: Manufacturer's standard spacer material and construction.
6. Tinted Insulating-Glass:

a. Overall Unit Thickness and Thickness of Each Lite: 25 and 6.0 mm.
b. Interspace Content: Air or inert gas as standard with manufacturer.
c. Outdoor Lite: Provide Kind FT (fully tempered) float glass.

1) Tint Color: Gray to match existing.

d. Indoor Lite: Provide Kind FT (fully tempered) float glass.

2.3 GLAZING GASKETS

A. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:

1. EPDM, ASTM C 864.
2. Silicone, ASTM C 1115.
3. Thermoplastic polyolefin rubber, ASTM C 1115.
4. Any material indicated above.

B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets of material indicated below; complying with ASTM C 509, Type II, black; and of profile and hardness required to maintain watertight seal:

1. EPDM.
2. Silicone.
3. Thermoplastic polyolefin rubber.
4. Any material indicated above.

2.4 GLAZING SEALANTS

A. General: Provide products of type indicated, complying with the following requirements:

1. Compatibility: Select glazing sealants of proven compatibility with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.5 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:

1. Type 1: For glazing applications in which tape acts as the primary sealant.
2. Type 2: For glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.6 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 contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore, Type A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.7 FABRICATION

A. General: Fabricate glass units and other glazing products in sizes required to glaze openings indicated for the Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standards.

B. Fabricate laminated glass to produce glass free of foreign substances and air or glass pockets.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing glazing, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep system.
3. Minimum required face or edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Glazing channel dimensions, as indicated on Drawings, provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, 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 joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm) as follows:

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8 inch (3 mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until just before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING AND PROTECTION

A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.

D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

3.7 GLASS TYPES SCHEDULE

A. **MG-1**: Monolithic Clear.

1. Uses: Vision.
2. Thickness: 6mm.
3. Color (Tint): PPG Clear, Annealed.
4. Coating(s): None.
5. U-factor: 1.025 Btu/ sq. ft. x hx deg F.
6. Solar Heat Gain Coefficient (SHGC): 0.815.
7. Transmittance (Tvis): 88.61 percent.
8. Reflectance (Rvis1): 8.49 percent.

B. **IG-2T**: Insulating Gray, Tempered.

1. Uses: Safety Vision.
2. Overall Unit Thickness: 1-inch.
3. Outdoor Lite: 6 mm Monotithic PPG Solargray Low-E, Kind FT.
4. Interspace: 1/2-inch Argon.
5. Indoor Lite: 6 mm Monolithic PPG Clear, Kind FT.
6. Coating(s): PPG Solarban 70 Low-E on No. 2.
7. U-factor: 0.239 Btu/ sq. ft. x hx deg F.
8. Solar Heat Gain Coefficient (SHGC): 0.233.
9. Transmittance (Tvis): 35.26 percent.
10. Reflectance (Rvis1): 6.28 percent.

C. **ILG-2T**: Insulating Gray Laminated, Tempered (Privacy).

1. Uses: Safety Privacy.
2. Overall Unit Thickness: 1-inch.
3. Outdoor Lite: 6 mm Monotithic PPG Solargray Low-E, Kind FT.
4. Interspace: 1/2-inch Argon.
5. Outboard Layer of Indoor Lite: 3 mm Monolithic Clear, Kind HS.
6. Interlayer of Indoor Lite: 0.030 Polyvinyl butyral Vanceva Artic White 21 65%
7. Inboard Layer of Indoor Lite: 3 mm Monolithic Clear, Kind HS.
8. Coating(s): PPG Solarban 70 Low-E on No. 2.
9. U-factor: 0.23 Btu/ sq. ft. x hx deg F
10. Solar Heat Gain Coefficient (SHGC): 0.16
11. Transmittance (Tvis): 23 percent
12. Reflectance (Rvis1): 8 percent

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SECTION 12 24 13 - ROLLER SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes roller shades.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Division 8 Sections for windows with roller shades mounted on window frames.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are show and coordinated with each other, based on input from installers of the items involved.

1. Attachment to building structure.
2. Shade mounting assembly and attachment.
3. Minimum drawing scale: 1/4 inch = 1 foot (1:48).

C. Samples for Verification:

1. Complete, full-size operating unit not less than 16 inches (400 mm) wide for each type of roller shade indicated.
2. For the following products:

a. Shade Material: Not less than 12 inch (300 mm) square section of fabric, from dye lot used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of material.
b. Valance: Full-size unit, not less than 12 inches (300 mm) long.

D. Maintenance Data: For roller shades to include in maintenance manuals. Include the following:

1. Methods for maintaining roller shades and finishes.
2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
3. Operating hardware.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed installation of roller shades 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. Source Limitations: Obtain roller shades through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Resistance Ratings: Passes NFPA 701.

D. Corded Window Covering Product Standard: Provide roller shades complying with WCMA A 100.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades in factory packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in a window treatment schedule.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, 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: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Draper, Inc. 800-238-7999 www.draperinc.com
2. Hunter Douglas Inc. 800-789-0331 www.hunterdouglascontract.com (Basis-of-design product)
3. Levolor Window Fashions, a division of Newell-Rubbermaid 800-752-9677 www.levolorcontract.com
4. MechoShade Systems, Inc. 718-729-2020 www.mechoshade.com
5. Solarfective Products Limited 800-421-5578 www.solarfective.com
6. SWF Contract, 800-544-4749 www.swfcontract.com

2.2 ROLLER SHADES (RWS-1)

A. Shade Band Material: 100 percent glass fiber with vinyl laminates.

1. Material Width: As required to eliminate or minimize vertical seams.
2. Bottom Hem: Straight.
3. Trim: As indicated by manufacturer's designation for style and color.
4. Material Openness Factor: 0 percent.
5. Material Color: As selected by Architect to match existing (from Morocco style by Hunter Douglas, Inc.).

B. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets; with manufacturer's standard method for attaching shade material. Provide capacity for one roller shade bandper roller, unless otherwise indicated on Drawings.

C. Direction of Roll: Regular, from back of roller.

D. Mounting Brackets: Fascia end caps, fabricated from steel finished to match fascia or headbox.

E. Fascia: L-shaped, formed-steel sheet or extruded aluminum; long edges returned or rolled; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; length as indicated on Drawings; removable design for access.

F. Top/Back Cover: L shaped; material and finish to match fascia; combining with fascia and end caps to form a six-sided headbox enclosure sized to fit shade roller and operating hardware inside.

G. Bottom Bar: Steel or extruded aluminum, with plastic or metal capped ends. Provide exposed-to-view, external-type bottom bar with concealed weight bar as required for smooth, properly balanced shade operation.

H. Shade Operation: Manual; with continuous loop bead chain, clutch, and cord tensioner and bracket lift operator.

1. Position of Clutch Operator: Right side of roller, as determined by hand of user facing shade from inside, unless otherwise indicated on Drawings.
2. Clutch: Capacity to lift size and weight of shade; sized to fit roller or provide adaptor.
3. Lift Assist Mechanism: Manufacturer's standard spring assist for balancing roller shade weight and lifting heavy roller shades.
4. Loop Length: Length required to make operation convenient from floor level.
5. Bead Chain: Stainless steel.
6. Cord Tensioner Mounting: Sill.
7. Operating Function: Stop and hold shade at any position in ascending or descending travel.

I. Valance: As indicated by manufacturer's designation for style and color.

J. Mounting: Inside mounting permitting easy removal and replacement without damaging roller shade or adjacent surfaces and finishes.

2.3 ROLLER SHADE FABRICATION

A. Product Description: Roller shade consisting of a roller, a means of supporting the roller, a flexible sheet or band of material carried by the roller, a means of attaching the material to the roller, a bottom bar, and an operating mechanism that lifts and lowers the shade.

B. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.

1. Lifting Mechanism: With permanently lubricated moving parts.

C. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Shade Units Installed Outside Jambs: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

D. Installation Brackets: Designed for easy removal and reinstallation of shade, for supporting fascia, roller, and operating hardware and for hardware position and shade mounting method indicated.

E. Installation Fasteners: Not fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use.

F. Color-Coated Finish: For metal components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

G. Colors of Metal and Plastic Components Exposed to View: As indicated by manufacturer's designations, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION 12 24 13