

PROJECT MANUAL

May 1, 2018

USD 261 HAYSVILLE

REX ELEMENTARY SCHOOL RE-ROOF
1100 W. GRAND AVE.
HAYSVILLE, KANSAS

for
USD 261
1745 W Grand Ave.
Haysville, Kansas



p: 3.16.634.1111
alloyarchitecture.com

3500 N. ROCK RD. B.DG. 500
WICHITA, KS 67226

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END OF SECTION 00.01.10

**SECTION 00.11.16
INVITATION TO BIDDERS**

1.01 PROJECT
USD 261 Haysville
Rex Elementary School Re-roof
Haysville, Kansas

1.02 PROPOSALS

- A. Sealed proposals, shall be submitted in accordance with the following:
Date: **Tuesday, May 15, 2018**
Time: **3:00 P.M., Central Daylight Time**
Place: **Coonrod & Associates**
3550 S. Hoover Rd.
P.O. Box 12589
Wichita, Kansas 67277-2589
- B. Proposals shall include furnishing all labor, materials, equipment, and performing the Work for the above described Project in strict accordance with the Bidding Documents (Project Manual and Drawings) entitled as above, dated May 1, 2018
- C. Proposals will be received for the entire Work.
- D. Proposals will be publicly opened and read at the time and place designated for receiving bids.
- E. All bids received after the time stipulated for submittal will be returned unopened.

1.03 BIDDING DOCUMENT PROCUREMENT

- A. Contract Documents are on file and may be examined at the following locations:
1. Coonrod & Associates
3550 S. Hoover Rd.
P.O. Box 12589
Wichita, Kansas 67277-2589
 2. Alloy Architecture
3500 North Rock Road, Bldg. 500
Wichita, Kansas 67226
 3. Reed Construction Data
30 Technology Parkway, St. 500
Norcross, GA 30092
 4. KCNR, LLC
230 Laura, Suite 101-105
P.O. Box 195
Wichita, KS 67201
Phone: (316) 263-0265
Fax: 316-263-0267
kcnr@kcnr.net
 5. Plan Room
ARC Document Solutions
518 West Douglas
Wichita, KS 67203
Phone: (316) 264-9344
Fax: (316) 264-5165
- B. Complete sets of Bid Documents are available (to SubContractors, or Material Suppliers) from:
ARC Document Solutions
518 West Douglas

Wichita, Kansas 67203
(316)264-9344

1. Deposit amount is \$200 for each set of Documents. Make checks payable to USD #261 and deliver to ARC when requesting documents.
Deposit is refundable upon return of the set in good condition to the Architect within ten (10) days after the Bid Date. The number of copies of the Documents reserved for each Bidder is as follows:
 - a. SubContractors and Material Suppliers: One
- C. Additional sets or partial sets of Bid Documents may be obtained by General Contractors, Subcontractors, or Material Suppliers by purchase (no refund) at the following:
 1. ARC Document Solutions
518 West Douglas
Wichita, Kansas 67203
(316)264-9344
(316)264-5165 (fax)
- D. Loan sets will be available through the Architect to Subcontractors and Suppliers for not longer than two (2) days duration with no deposit required. Reservations for loan set must be made in advance.

1.04 BID GUARANTEE

- A. A Bid Bond in the amount of 5% of the Base Bid plus all add Alternates shall be provided by the Construction Manager at Risk. In the event of multiple prices in a Bid or Alternate, provide for the maximum possible Contract amount.

1.05 PRE-BID CONFERENCE

- A. A pre-bid conference will be held Tuesday, May 8, 2018, at 4:30 P.M., CT at Rex Elementary School, 1100 West Grand Ave, Haysville, KS.
- B. Bidders, Subcontractors, Suppliers and Manufacturers are invited to attend.
- C. The meeting Agenda is as follows:
 1. Open Meeting
 2. Review of Project
 3. General Requirement, Bid Package, and Bid Opening Procedure
 4. Questions and Answers.
 5. Close Meeting.

END OF SECTION 00.11.16

**SECTION 00.21.13
INSTRUCTION TO BIDDERS**

1.01 DEFINITIONS

- A. Bidding Documents include the Invitation for Bids, Instructions to Bidders, the Bid Form, other sample bidding and Contract forms and the Proposed Contract Documents including any Addenda issued prior to receipt of Bids.
- B. All definitions set forth in the General Conditions of the Contract for Construction or in other Contract Documents are applicable to the Bidding Documents.
- C. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by addition, deletions, clarifications or corrections.
- D. A "Bid" is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein supported by data called for by the Bidding Documents.
- E. A "Base Bid" is the sum stated in the Bid for which the Bidder offers to perform the Work described as the Base, to which Work may be added or deducted for sums stated in Alternate Bids (if any).
- F. An "Alternate Bid" or "Alternate" (if any) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in project scope or materials or methods of construction described in the Contract Documents is accepted.
- G. A "Unit Price" (if any) is an amount stated in the Bid as a price per unit of measurement for materials or services as described in the Contract Documents.
- H. A "Bidder" is one who submits a Bid for Work to the Owner.
- I. A "Sub-Bidder" is one who submits a Bid to a Bidder for materials or labor for a portion of the Work.

1.02 BIDDER'S REPRESENTATION

- A. Each Bidder by making his Bid represents that:
 - 1. He has read and understands the Bidding Documents and his Bid is made in accordance therewith.
 - 2. He has visited the site and has familiarized himself with the local conditions under which the Work is to be performed.
 - 3. His Bid is based upon the materials, systems and equipment described in the Bidding Documents without exception.

1.03 BIDDING DOCUMENTS

- A. Complete sets of Bidding Documents shall be used in preparing Bids.
- B. Neither the Owner nor the Architect assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- C. The Owner or Architect in making copies of the bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

1.04 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

- A. Bidders shall promptly notify the Architect of any ambiguity, inconsistency or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.
- B. Bidders requiring clarification or interpretation of the Bidding Documents shall make such requests of the Architect at least seven days prior to the date for receipt of Bids.
- C. Any interpretation correction or change of the Bidding Documents will be made by Addenda. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.
- D. Inquiries regarding Bidding Documents shall be directed to Bob Faires, Alloy Architecture

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Alloy Project No. 18125

- and will be read aloud.
- B. The Owner shall have the right to reject any or all Bids and in particular to reject a Bid not accompanied by any required data.
 - C. The Owner shall have the right to waive any informality or irregularity in any Bid received.
 - D. The Owner shall have the right to accept Alternates in any combination and to determine the acceptable Bidder on the basis of the sum of the Base Bid and the Alternates accepted.
 - E. It is the intent of the Owner to award a Contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents, is judged to be reasonable, and does not exceed the funds available.
 - F. The Owner shall accept (award) or reject Bids within thirty (30) days after the opening of Bids.

END OF SECTION 00.21.13

**SECTION 00.41.11
SUB-CONTRACT / MATERIAL - BID FORM**

SUB-CONTRACT PROPOSAL FOR: USD 261 Rex Elementary School Re-roof

DATE: _____

BIDDER: _____

ADDRESS: _____

City _____ State _____

SCOPE OF WORK

The undersigned agrees to supply and install the following scope of work in compliance with the Drawings, Specifications and Contract Documents as prepared by **Alloy Architecture** p.a.: _____

BASE BID:

In compliance with the Instructions to Bidders and subject to all conditions thereof, the undersigned hereby proposes to furnish all material and equipment and to perform all labor for and incidental to the entire Work for the Project, all in accordance with the Drawings, Specifications and Contract Documents as prepared by **Alloy Architecture** p.a., for the sum of

_____ Dollars

(\$ _____).

UNIT PRICES:

In the event the envisioned scope of the project changes, and modifications are required to satisfy or rectify unknown, unforeseen, or improved below-grade conditions, the contract price will be adjusted on the basis of the following unit cost amount which will be added or deducted (as applicable) the contract amount once the actual extent of work can be determined.

ADD

Item No. 1 – **Roof Sheathing Replacement:** _____ per 100 sq. ft.

BONDING:

Performance and payment bonds are required on this project. Include the cost of including the bond cost with your subcontract as a percentage of your total bid.

Bonding Rate _____ percent

COMPLETION TIME AND LIQUIDATED DAMAGES:

The Bidder agrees to commence Work on the date of a written Notice to Proceed following execution of the Owner/Contractor Agreement and to substantially complete all Work by **August 1, 2019**. Bidder further agrees to pay as Liquidated damages, the sum of \$1,000.00 for each consecutive calendar day thereafter until the designated portion of the Project and/or the entire Project is substantially complete.

ADDENDA ACKNOWLEDGEMENT:

The undersigned acknowledges receiving Addendums # _____.

If notified by the Architect within 30 days after opening of Bid, the undersigned agrees to execute and deliver a Contract with the Owner as required within 5 days after notification.

Submitted by:

AUTHORIZED SIGNATURE: _____

TITLE: _____

SEAL:

END OF SECTION 00.41.11

**SECTION 00.41.13
BID FORM - CM**

GUARANTEED MAXIMUM PRICE CONTRACT PROPOSAL FOR: USD 261 Rex Elementary School Re-roof

DATE: _____

BIDDER: _____

ADDRESS: _____

City _____ State _____

BASE BID:

In compliance with the Instructions to Bidders and subject to all conditions thereof, the undersigned hereby proposes to furnish all material and equipment and to perform all labor for and incidental to the entire Work for the Project, all in accordance with the Drawings, Specifications and Contract Documents as prepared by **Alloy Architecture** p.a., for the sum of

_____ Dollars

(\$ _____).

UNIT PRICES:

In the event the envisioned scope of the project changes, and modifications are required to satisfy or rectify unknown, unforeseen, or improved below-grade conditions, the contract price will be adjusted on the basis of the following unit cost amount which will be added or deducted (as applicable) the contract amount once the actual extent of work can be determined.

ADD

Item No. 1 – **Roof Sheathing Replacement:** _____ per 100 sq. ft.

COMPLETION TIME AND LIQUIDATED DAMAGES:

The Bidder agrees to commence Work on the date of a written Notice to Proceed following execution of the Owner/Contractor Agreement and to substantially complete all Work by **August 1, 2019**. Bidder further agrees to pay as Liquidated damages, the sum of \$1,000.00 for each consecutive calendar day thereafter until the designated portion of the Project and/or the entire Project is substantially complete.

ADDENDA ACKNOWLEDGEMENT:

The undersigned acknowledges receiving Addendums # _____.

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Alloy Project No. 18125

SUBCONTRACTORS:

The undersigned proposes to use the following Subcontractors for this Project:

Mechanical Work _____
Plumbing Work _____
Electrical Work _____

If notified by the Architect within 30 days after opening of Bid, the undersigned agrees to execute and deliver a Contract with the Owner as required within 5 days after notification.

Submitted by:

AUTHORIZED SIGNATURE: _____

TITLE: _____

SEAL:

END OF SECTION 00.41.13

REX ELEMENTARY SCHOOL RE-ROOF
Alloy Project No. 18125

**SECTION 00.72.13
GENERAL CONDITIONS OF THE CONTRACT**

The "General Conditions of the Contract for Construction" of the American Institute of Architects, document A201, 2007 Edition, is hereby made a part of the Contract Documents.

END OF SECTION 00.72.13

**SECTION 00.73.00
SUPPLEMENTARY GENERAL CONDITIONS**

1.01 GENERAL

- A. The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201, 2007 Edition. Where a portion of the General Conditions is modified or deleted by these Supplementary General Conditions, the unaltered portions shall remain in effect.

1.02 SECTION 1.1 - BASIC DEFINITIONS

- A. Add the following Paragraph:
1.1.9 AGREEMENT BETWEEN OWNER AND CONTRACTOR
The Agreement between Owner and Contractor shall be "Standard Form of Agreement Between Owner and Construction Manager", AIA Document A133, 2009 Edition.

1.03 SECTION 2.2 - INFORMATION AND SERVICES REQUIRED OF THE OWNER

- A. Delete Paragraph 2.2.5 and substitute the following:
2.2.5 The Contractor will be furnished free of charge **10** copies of Drawings and Project Manuals. Additional sets will be furnished at the cost of reproduction, postage and handling.

1.04 SECTION 3.4 - LABOR AND MATERIALS

- A. Add the following Paragraphs:
3.4.4 After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications).
.1 Proposed substitutions which significantly alter the Project causing redesign by Architect will require additional fee for the Architect's services to be paid by the Contractor at the Architects hourly rate.
3.4.5 By making requests for substitutions based on Paragraph 3.4.3 above, the Contractor:
.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
.2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;
.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect's redesign costs, and waives all claims for additional cost related to the substitution which subsequently become apparent; and
.4 will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

1.05 SECTION 3.6 - TAXES

- A. Revise paragraph 3.6 to "3.6.1" and delete the word "sales".
B. Add the following Paragraph:
3.6.2 Materials and equipment incorporated into this Project are exempt from the payment of sales tax under the laws of the State of Kansas and such sales tax shall not be included in the proposal of the Bidders.
.1 The Owner will provide the Contractor with a proper exemption certificate within ten days of the Contract date. Should the Owner fail to provide an exemption certificate within the required time period, the Contractor shall notify the Architect in writing. The Contractor shall be reimbursed by the Owner for sales tax amounts for which he becomes liable until such exemption is provided.

- .2 Upon issuance of a proper exemption certificate to the Contractor, the Contractor shall assume full responsibility for his own proper use of the certificate and shall pay all costs of any legally assessed penalties relating to the Contractor's improper use of the exemption certificate. Contractor shall comply with statutes of the State of Kansas related to sales tax exemption.
- .3 Contractor shall retain, for a period of not less than five years, all his and his Subcontractors' invoices claiming sales tax exemption, properly identified with tax exemption number as required by the State of Kansas.
- .4 Upon completion of the Project, the Contractor shall execute and issue, to the Owner (Political Subdivision), a certificate of compliance on the form provided by the State Department of Revenue. Copies shall also be sent to the State Department of Revenue and the Architect.

1.06 SECTION 3.7 - PERMITS, FEES AND NOTICES

- A. Add the following Subparagraph to Paragraph 3.7.1:
 - .1 If the Owner submits the drawings to the City for Plan Review Approval prior to the Contractor's application for a Building Permit, the Contractor shall reimburse the Owner for fees paid by the Owner to the City.
- B. Add the following Paragraph:
 - 3.7.6 The Contractor shall submit in writing to the Architect, PRIOR TO START OF WORK ON THE SITE, a list of all items which are required to be revised by the City, and shall state any and all additional costs which he deems to be required in order to comply with the requirements of the Building Permit. In the event the Contractor proceeds without notifying Architect, he shall meet all requirements set forth by the Authority Having Jurisdiction at no additional cost to the Owner.

1.07 SECTION 7.3 - CONSTRUCTION CHANGE DIRECTIVES

- A. Revise the referenced Paragraph as follows:
 - 7.3.7 In the first sentence, delete the words "an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount" and substitute "an allowance for overhead and profit in accordance with Paragraph 7.3.11 through 7.3.12."
- B. Add the following Subparagraphs 7.3.11 and 7.3.12:
 - 7.3.11 In Subparagraph 7.3.7, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:
 - .1 For the Contractor, for Work performed by the Contractor's own forces, 15 percent of the cost.
 - .2 For the Contractor, for Work performed by the Contractor's Subcontractor, 10 percent of the amount due the Subcontractor.
 - .3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, 10 percent of the cost.
 - .4 For each Subcontractor, for Work performed by the Subcontractor's Sub-subcontractors, 10 percent of the amount due the Sub-subcontractor.
 - .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Paragraph 7.3.7.
 - .6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of cost including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$500.00 be approved without such itemization.
 - 7.3.12 No Overhead and Profit will be deducted from the Contract Amount for change orders which decrease the Contract Amount except to the extent of change orders which increase the Contract Amount.

1.08 SECTION 8.3 DELAYS AND EXTENSIONS OF TIME

- A. Add the following Subparagraphs to Paragraph 8.3.1.
 - .1 The Contractor shall not be charged with liquidated damages for delays over which he has no control, as set forth in Paragraph 8.3.1, providing proper claim is made and approved.
 - .2 Except for unusual weather, weather conditions shall not be a cause for extension of time, nor shall delay in material deliveries or in the performance of Sub-contracts be cause for delay, unless caused by acts described in Paragraph 8.3.1 as applied to Suppliers or Sub-contractors.
 - .3 The following schedule of average number of rain days per month has been tabulated for the Wichita, KS area and will constitute the base line for monthly weather time evaluations. Actual rain days requested must prevent work on all weather dependent activities. The Contractors progress schedule must reflect these anticipated rain days in all weather dependent activities.

MONTHLY ANTICIPATED CALENDAR RAIN DAYS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
(6)	(5)	(8)	(8)	(11)	(9)	(7)	(7)	(8)	(6)	(5)	(6)

1.09 SECTION 9.3. - APPLICATION FOR PAYMENT

- A. Add the following Subparagraph to Paragraph 9.3.1:
 - .3 Until such time as the project is 50% complete, Certificates for Payment will be issued for 90% of the amount completed, as requested by the Contractor and approved by the Architect, less any amounts previously paid to the Contractor. At the time the Work is over 50% complete and thereafter provided the Work progress and the workmanship is satisfactory in the judgment of the Architect, no additional retainage will be held. Remaining Certificates for Payment will be issued for 100% of the amount completed as requested by the Contractor and approved by the Architect properly due, less any amounts previously paid to the Contractor, and less the retainage accumulated from the first 50% of the project.

1.10 SECTION 9.8 SUBSTANTIAL COMPLETION

- A. Add the following Subparagraph to Paragraph 9.8.3.
 - 9.8.3.1 Upon Substantial Completion, the retainage shall be paid less one and one-half times the amount determined necessary to complete the Work.

1.11 SECTION 9.11 - LIQUIDATED DAMAGES

- A. Add Section 9.11 and the following Paragraph:
 - 9.11.1 The Contractor shall substantially complete all work included in this contract in a manner satisfactory to the Architect by the date specified in the Bid Form. The Contractor and the Contractor's surety, if any, shall be liable for and shall pay the Owner as liquidated damages the sum of One Thousand Dollars (\$1,000.00) for each and every calendar day any portion of the work remains unfinished after the specified (or extended) completion time, thereafter until the Work is substantially complete.

1.12 SECTION 11.1 - CONTRACTOR'S LIABILITY INSURANCE

- A. Add the following Paragraphs:
 - 11.1.5 Insurance to be maintained by the Contractor. The Contractor and all Subcontractors, at their expense, shall provide and maintain for the duration of the project, insurance for not less than the following limits as follows, or greater if required by law. Companies shall be acceptable to the Owner and licensed to do business in the State of Kansas.
 - 11.1.6 Schedule of insurance to be maintained by the Contractor:
 - .1 Workman's Compensation:

	Applicable State	Statutory
	Employers' Liability	\$ 500,000.00
.2	Contractor's Liability Insurance: Form of insurance shall be a Comprehensive General Liability (including premises-operations; Independent Contractors' Protective; Products and Completed Operations; broad form property damage) and Comprehensive Automobile Liability. Completed Operations Liability shall be kept in force for at least 2 years after the date of final completion.	
	Bodily Injury:	
	Each Occurrence	\$ 500,000.00
	Aggregate	\$1,000,000.00
	Property Damage:	
	Each Occurrence	\$ 500,000.00
	Aggregate	\$1,000,000.00
	Personal Injury:	
	Each Person Aggregate	\$ 500,000.00
	General Aggregate	\$1,000,000.00
	Automobile Liability: Owned, Non-Owned and Hired	
	Bodily Injury Each Person	\$ 500,000.00
	Bodily Injury Each Occurrence	\$1,000,000.00
	Property Damage:	
	Each Occurrence	\$ 500,000.00
	XCU Coverage: Remove Exclusion	
.3	Owner's Liability Insurance:	
	Bodily Injury:	
	Each Occurrence	\$ 500,000.00
	Aggregate	\$1,000,000.00
	Property Damage:	
	Each Occurrence	\$ 500,000.00
	Aggregate	\$1,000,000.00

11.1.7 The Contractor shall furnish Certificate of Insurance, AIA Document G-705, latest edition, one (1) copy to the Owner and one (1) copy to the Architect. Furnish endorsements that are subsequently issued amending coverage or limits.

1.13

SECTION 11.3 - PROPERTY INSURANCE

- A. Modify the first sentence of Subparagraph 11.3.1 as follows: Delete "Unless otherwise provided, the Owner" and substitute "The Contractor."
 Add the following sentences:
 If the Owner is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable cost properly attributable thereto.
- B. Delete Paragraph 11.3.1.2.
- C. Modify Paragraph 11.3.1.3, by deleting the word "Owner" and substituting the word "Contractor."
- D. Delete Paragraph 11.3.4.
- E. Delete Subparagraph 11.4.6 and substitute the following:
 11.3.6 Before an exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically related to the Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.
- F. Modify Subparagraph 11.3.7 by substituting "Contractor" for "Owner" at the end of the first sentence.
- G. Modify Subparagraph 11.3.8 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."
- H. Modify Subparagraph 11.3.9 by substituting "Contractor" for "Owner" each time the latter word appears.

- I. Modify Subparagraph 11.3.10 by substituting "Contractor" for "Owner" each time the latter word appears, except that the words, "owner and" shall be removed when followed by the word, "contractor".

1.14 SECTION 11.4 - PERFORMANCE BOND AND PAYMENT BOND

- A. Delete Subparagraph 11.4.1 and substitute the following:
 - 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds shall be obtained through a company approved by the Owner and the cost thereof included in the Contract Sum. The amount of each bond shall be equal to One-hundred (100) percent of the Contract Sum. Surety shall be a company licensed to do business in the same locality as the project.
 - .1 The Contractor shall deliver two (2) sets of the required bonds to the Owner not later than three (3) days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
 - .2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.
- B. Add Paragraph 11.4.3:
 - 11.4.3 Statutory Bond shall be furnished and filed with the Clerk of the District Court binding the Surety to the Owner and the State of Kansas. Provide two (2) copies of the bond and receipt to the Owner through the Architect.

1.15 SECTION 13.5 TESTS AND INSPECTIONS

- A. Add the following Subparagraph and Paragraph 13.5.7.
 - 13.5.7 Additional inspections by the Architect may be required because of:
 - .1 Failure on part of the Contractor to satisfactorily complete all items on the Substantial Completion punch list upon the punch list final inspection
 - .2 Failure on part of the Contractor to satisfactorily complete all items on the Substantial Completion punch list 60 days beyond the date of Substantial Completion.
 - .3 Additional inspections required by defective installations or equipment which appear during construction or guarantee period. See 01.70.00.
 - .4 Charges will be invoiced by Architect based on the current hourly rate and expenses plus service and handling fee.
 - .5 The Owner shall withhold such compensation and expense from the next payment due the Contractor and pay such amount to the Architect. The amount due the Contractor under the Contract shall be reduced by such amount.

1.16 SECTION 15 - CLAIMS AND DISPUTES

- A. Add the following to Subparagraph to Paragraph 15.1.4:
 - .1 The Contractor may not recover damages for delays, for additional overhead which may be incurred due to an increase in Contract Time, unless the increase exceeds thirty (30) consecutive days in length.

END OF SECTION 00.73.00

**SECTION 01.10.00
SUMMARY**

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

- A. The Project consists of a re-roofing project at Rex Elementary School at 1100 West Grand Ave., Haysville, Kansas, as shown on Contract Documents prepared by **Alloy Architecture** p.a, dated May 1, 2018.

1.02 WORK BY OWNER

- A. Owner Installed Items NIC (Not in Contract): Owner will award a contract for supply and installation of items which will commence on Substantial Completion.
1. The Owner will arrange and pay for delivery in accordance with the Contractor's Construction Schedule, and inspect deliveries for damage.
 2. If Owner-furnished items are damaged, defective or missing, the Owner will arrange for replacement. The Owner will arrange for manufacturer's field services, and delivery of warranties and bonds to the Contractor.
 3. The Contractor is responsible for designating delivery dates in the Contractor's Construction Schedule. Items will be supplied and installed by the Owner before Substantial Completion.
 4. Owner is responsible for receiving, unloading and handling Owner-furnished items at the site.
 5. The Contractor is responsible for protecting items from damage, including damage from exposure to the elements, and to repair or replace items damaged as a result of his operations.
 6. Work includes providing support systems to receive the Owner's equipment, and mechanical and electrical connections for Owner-furnished items.
 7. Items include:
 - a. Fabrication equipment for production process.
 - b. Movable cabinets.
 - c. Furnishings.
 - d. Small Equipment.
- B. Items Supplied by Owner, Installed by Contractor:
1. The Owner has negotiated purchase orders with suppliers of material and equipment to be incorporated into the Work. These purchase orders are assigned to the Contractor and costs for receiving, handling, storage, if required, and installation shall be included in the Contract Sum.
 2. The Contractor's responsibilities are the same as if the Contractor negotiated purchase orders, including responsibility to renegotiate purchase if necessary and to execute final purchase order agreements.

1.03 OWNER OCCUPANCY

- A. Full Owner Occupancy: Owner will continue to occupy the existing building during construction.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule and perform the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: 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 construction 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 Owner's employees at all times. Do not use these areas for parking or storage of materials and equipment on site. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

3. The Contractor shall have limited access through the site to the construction area.
- B. Provide access to and from site as required by law and by Owner:
 1. Emergency Building Exist During Construction: Keep all required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 2. Exiting through partially completed construction areas, if approved by the authority having jurisdiction, shall have sufficient emergency lighting, exit signs and clear unobstructed pathways to a "public way" beyond the limits of construction.
 3. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Existing building spaces may not be used for storage.
- D. Time Restrictions: Limit conduct of especially noisy exterior work to the hours designated by the Owner.
- E. Utility Outages and Shutdown:
 1. Limit disruption of utility services to hours the building and site are unoccupied.
 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm systems, without 7 days notice to Owner and authorities having jurisdiction.
 3. Limit shutdown of utility services to 2 hours at a time, arranged at least 24 hours in advance to the Owner.
 4. Prevent accidental disruption of utility services to other facilities.
- F. Maintain the existing building in a weathertight condition throughout construction. Repair damage caused by construction operations. Take precautions necessary to protect the building and occupants during the construction period.

1.05 WORK SEQUENCE

- A. The Work will be conducted in phases to provide the least possible interference to activities of the Owner's personnel and to permit an orderly transfer of personnel and equipment to the new facilities.
- B. The following portions of the work shall be started and completed within the dates indicated:
 1. **Phase 1:** Classroom pods. Construction to take place during the summer of 2018. Work for this phase shall be completed by August 1, 2018.
 2. **Phase 2:** Remainder of School except for Music Room / Storm Shelter constructed in 2006. Construction to take place during the summer of 2019. Work for this phase shall be completed by August 1, 2019.
- A. Each phase shall be complete and ready for occupancy before start of next phase.
- B. Coordinate construction schedule and operations with Owner and Architect.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.10.00

**SECTION 01.22.00
UNIT PRICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for unit prices.
 - 1. A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order if estimated quantities of Work required by Contract Documents are increased or decreased.
 - 2. Unit prices include necessary material, overhead, profit and applicable taxes.
 - 3. Refer to individual Sections for construction activities requiring establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- B. Schedule: "Unit Price Schedule" is included at the end of this Section. Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.
 - 1. The Owner reserves the right to reject the Contractor's measurement of Work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 SCHEDULE OF UNIT PRICES

(Listed below is an example of format)

- A. Item No. 1 – Roof Sheathing:
 - 1. Description: Removal of existing damaged roof sheathing and replacement with new roof sheathing in accordance with Section 06.10.00 Rough Carpentry."
 - 2. Unit of Measurement: One Hundred square feet.

END OF SECTION 01.22.00

**SECTION 01.26.00
CONTRACT MODIFICATION PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for handling and processing Contract modifications.

1.02 RELATED SECTIONS

- A. Division 1 Section "Allowances" for procedural requirements governing the handling and processing of allowances.
- B. *Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.
- C. Division 1 Section "Submittal Procedures" for requirements for the Contractor's Construction Schedule.
- D. Division 1 Section "Payment Procedures" for administrative procedures governing applications for payment.
- E. Division 1 Section "Product Options" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.03 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.

1.04 OWNER-INITIATED PROPOSAL REQUESTS

- A. 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.
- B. 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.
- C. 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.
 - 1. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - 2. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 3. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

1.05 CONTRACTOR-INITIATED CHANGE ORDER PROPOSAL REQUESTS

- A. When latent or other unforeseen 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. Where requested, furnish survey data to substantiate quantities.
 - 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.
- B. Proposal Request Form: Use AIA Document G 709 for Change Order Proposal Requests.

1.06 CONSTRUCTION CHANGE DIRECTIVE

- A. 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.
- B. 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.
- C. 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.

1.07 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 USED

PART 3 EXECUTION – NOT USED

END OF SECTION 01.26.00

**SECTION 01.29.00
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Correlation of Contractor submittals based on changes.
- C. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00.72.13 – General Conditions – Stipulated Sum (Single-Prime Contract).
- B. Section 00.72.23 – General Conditions – Construction Management (Single-Prime Contract).
- C. Section 00.73.00 – Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- D. Section 01.21.00 – Allowances: Payment procedures relating to allowances.
- E. Section 01.22.00 – Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.

1.03 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with the Contractor's Construction Schedule.
- B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - 1. Contractor's Construction Schedule.
 - 2. Application for Payment form.
- C. Submit the Schedule of Values to the Architect with the submittal of the initial Application for Payment.
- D. Form and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
 - 1. Provide a breakdown of the Contract Sum down in sufficient detail to facilitate evaluation of Applications for Payment.
 - 2. Round amounts off to the nearest dollar; the total shall equal the Contract Sum.
 - 3. For each part of the Work where an Application for Payment may include materials or equipment purchased or fabricated and stored, but not installed, provide separate line items for initial cost, each subsequent stage of completion, and installed value of that part of the Work.
- E. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of overhead and profit margin.
 - 1. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
- F. Revise schedule to list approved Change Orders, with each Application for Payment. Construction Change Directives change the Contract Sum.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- 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 indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated.
- C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for the Application for Payment.
- D. Application Preparation: Complete every entry, including notarization and execution by person authorized to sign 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 period covered by the application.
- E. Transmittal: Submit 3 executed copies of each application to the Architect. One copy shall be complete, including waivers of lien and similar attachments, when required.

1.05 WAIVERS OF MECHANICS LIEN

- A. With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the previous application.
1. Submit partial waivers on each item for 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.
- B. Submit final Application for Payment with final waivers from every entity involved with performance of Work covered by the application who could be entitled to a lien.
- C. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

1.06 APPLICATION FOR INITIAL PAYMENT

- A. Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:
1. List of subcontractors
 2. Schedule of Values
 3. Contractor's Construction Schedule (preliminary if not final)
 4. Submittal Schedule (preliminary if not final).
 5. Copies of building permits
 6. Certificates of insurance and insurance policies
 7. Performance and payment bonds (if required).

1.07 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- B. Administrative actions and submittals that precede or coincide with this application include:
1. Occupancy permits.
 2. Warranties
 3. Maintenance instructions.
 4. Meter readings.
 5. Change-over information related to Owner's occupancy.
 6. Final cleaning.
 7. Application for reduction of retainage, and consent of surety.
 8. Test/adjust/balance records.
 9. List of incomplete work.

1.08 APPLICATION FOR FINAL PAYMENT

- A. Administrative actions and submittals which must precede or coincide with submittal of the final payment application include:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Transmittal of required Project construction records to Owner.
 4. *Certified property survey.
 5. Proof that taxes, fees and similar obligations have been paid.
 6. Change of door locks to Owner's access.

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7. Removal of temporary facilities and services.
8. Removal of surplus materials

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.29.00

**SECTION 01.30.00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Project Coordination
 - 2. Electronic document submittal service.
 - 3. General installation provisions.
 - 4. Cleaning and protection.

1.02 RELATED REQUIREMENTS

- A. Section 00.72.13 – General Conditions – Stipulated Sum (Single-Prime Contract): Dates for applications for payment.
- B. Section 00.73.00 – Supplementary Conditions: Agreement form.
- C. Section 01.32.16 – Construction Progress Schedule: Form, content, and administration of schedules.
- D. Section 01.31.19 – Project Meetings: Progress meetings, coordination meetings and pre-installation conferences.
- E. Section 01.70.00 – Execution and Closeout Requirements: Additional coordination requirements and project Record documents.
- F. Section 01.71.23 – Field Engineering.

1.03 REFERENCE STANDARDS

- A. AIA G810 – Transmittal Letter, 2001.

1.04 PROJECT COORDINATION

- A. Coordinate construction activities included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work.
- B. Coordinate operations included under different Sections that are dependent on each other for proper installation and operation.
 - 1. Where installation of one part of the Work depends on installation of other components either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- C. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required coordination procedures. Include such items as required notices, reports, and attendance at meetings.
- D. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the Contract are to be in electronic (PDF) format and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to

requests for information (RFI's), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document and participant want to make part of the project record.

2. Contractor and Architect are required to use this service.
 3. It is the Contractor's responsibility to submit documents in PDF format.
 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 5. Users of the service need an e-mail address, Internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe "Acrobat" or Bluebeam "PDF Revu"), unless such software capability is provided by the service provider.
 6. Paper document transmittals and e-mailed PDF documents will not be reviewed.
 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service shall be paid by the Contractor and included in the contract sum.
- C. Submittal Services: The selected service is:
1. Textura Corporation; "Submittal Exchange".

3.02 GENERAL INSTALLATION PROVISIONS

- A. Require the Installer of each component to inspect both the substrate and conditions under which Work is performed. Do not proceed until unsatisfactory conditions have been corrected.
- B. Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.
- C. Inspect material immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Architect for decision.
- F. Recheck measurements and dimensions, before starting installation or fabrication.
- G. Install each component during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with inspections and tests, to minimize uncovering completed construction for that purpose.
- I. Where mounting heights are not indicated, install components at standard heights for the application indicated. Refer questionable decisions to the Architect.
- J. Adjust and service all equipment for proper operation.
- K. Seal all exterior joints to provide waterproof enclosure.
- L. Completed work shall illustrate first-class workmanship.

3.03 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place.
- B. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- C. Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- D. Clean all materials in a manner not to damage finish.

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- E. Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure. Such exposures include, but are not limited to the following:
1. Excessive static or dynamic loading.
 2. Excessive internal or external pressures.
 3. Excessive weathering.
 4. Excessively high or low temperatures or humidity.
 5. Air contamination or pollution.
 6. Water or ice.
 7. Chemicals or solvents.
 8. Heavy traffic, soiling, staining and corrosion.
 9. Rodent and insect infestation.
 10. Unusual wear or other misuse.
 11. Contact between incompatible materials.
 12. Theft or vandalism.

END OF SECTION 01.30.00

**SECTION 01.31.19
PROJECT MEETINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for project meetings including but not limited to:
 - 1. Pre-Construction Conference.
 - 2. Progress Meetings.
- B. Construction schedules are specified in another Division-1 Section.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than *15 days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
 - 1. Tentative construction schedule.
 - 2. Critical Work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change Orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, Product Data and Samples.
 - 8. Preparation of record documents.
 - 9. Use of the premises.
 - 10. Office, Work and storage areas.
 - 11. Equipment deliveries and priorities.
 - 12. First aid.
 - 13. Security.
 - 14. Housekeeping.
 - 15. Working hours.

1.03 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project site at regularly scheduled intervals. Notify the Owner and Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
 - 1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 2. Review the present and future needs of each entity present, including such items as:
 - a. Interface requirements.
 - b. Time.

- c. Sequences.
 - d. Deliveries.
 - e. Off-site fabrication problems.
 - f. Access.
 - g. Site utilization.
 - h. Temporary facilities and services.
 - i. Hours of Work.
 - j. Housekeeping.
 - k. Quality and Work standards.
 - l. Change Orders.
 - m. Documentation of information for payment requests.
- D. Reporting: No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
- E. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.31.19

**SECTION 01.32.16
CONSTRUCTION PROGRESS SCHEDULE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.02 RELATED SECTIONS

- A. Section 01.10.00 Summary – Work sequence, occupancy, and owner-furnished items.

1.03 REFERENCES

- A. AGC (CPSM) – Construction Planning and Scheduling Manual; Associated General Contractors of America; 2004.
- B. M-H (CPM) - CPM in Construction Management with CPM, O'Brian, McGraw-Hill Book Company; 2006.

1.03 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for the remainder of Work.
- B. If preliminary schedule required revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit update schedule with each Application for Payment.
- F. Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by the Architect.
 - 1. Submit under transmittal letter form specified in Section 01.30.00 – Administrative Requirements.

1.04 QUALITY ASSURANCE

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

1.05 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification number.
- B. Diagram Sheet Size: Multiples of 1-1/2x11 inches.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

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

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages or floors and other logically grouped activities.
- D. Provide sub-schedules for each phase of Work identified in Section 10.10.00, if any.
- E. Provide sub-schedules to define critical portions of the entire schedule.

- F. Include conferences and meetings in schedule.
- G. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- H. Provide separate schedule of submittal dates of shop drawings, product data, and samples, Owner-furnished products, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- I. Indicate delivery date for Owner-furnished products.
- J. Coordinate content with Schedule of Values specified in Section 01.20.00 – Price and Payment Procedures.
- K. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION 01.32.16

**SECTION 01.33.00
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for submittals required for performance of the Work, including;
 - 1. Contractor's construction schedule.
 - 2. Submittal schedule.
 - 3. Daily construction reports.
 - 4. Shop Drawings.
 - 5. Product Data.
 - 6. Samples.
 - 7. Color Selections.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Permits.
 - 2. Applications for payment.
 - 3. Performance and payment bonds.
 - 4. Insurance certificates.
 - 5. List of Subcontractors.
- C. The Schedule of Values submittal is included in Section "Payment Procedures."
- D. Inspection and test reports are included in Section "Quality Requirements".

1.02 SUBMITTAL PROCEDURES

- A. 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. 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.
 - 3. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Processing: 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.
 - 1. Allow three 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 the same 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.
- C. 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. All product data and shop drawing submittals shall bear the Contractor's stamp stating that the Contractor has reviewed and approved the submittal and that they conform to the Contract Documents, with signature of Contractor's authorized representative.
 - 2. Submittals not bearing the Contractor's review stamp will be returned without action.
- D. Submittal Transmittal: Transmit each submittal from Contractor to Architect using a transmittal form.
 - 1. Submittals received from sources other than the Contractor will be returned without

- action.
2. On the transmittal Record relevant information and requests for data.
3. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.

1.03 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. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- 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. Refer to Section " Payment Procedures" for cost reporting and payment procedures.
- D. Distribution: 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.

1.04 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.
- B. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
- C. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
 1. Scheduled date for the first submittal.
 2. Related Section number.
 3. Submittal category.
 4. Description of the part of the Work covered.

SUBMITTAL PROCEDURES

- D. 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.
 - 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.

1.05 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording the following information concerning events at the site; and submit copies to the Architect if requested:
 - 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.

1.06 SHOP DRAWINGS

- A. Submit newly prepared 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.
- C. Submittal: Submit 1 reproducible and a minimum of 3 blue- or black-line prints; submit 5 prints where required for maintenance manuals. 2 prints will be retained; the remainder will be returned.
- D. Do not use Shop Drawings without the Architect's final review stamp indicating action taken in connection with construction. No shop drawings, except those bearing the Architect's review stamp, shall be permitted at the job site.

1.07 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system.
- B. 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."
- C. 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:
 - 1. Manufacturer's printed recommendations.
 - 2. Compliance with recognized trade association standards.
 - 3. Compliance with recognized testing agency standards.
 - 4. Application of testing agency labels and seals.
 - 5. Notation of dimensions verified by field measurement.
 - 6. Notation of coordination requirements.

- D. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
- E. Submittals: Submit a minimum of 3 copies of each required submittal. The Architect will retain a maximum of two, and will return the other marked with action taken and corrections or modifications required. Submit additional copies as required for Contractor's use.
- F. 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.

1.08 SAMPLES

- 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, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
- B. 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.
 - 1. 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.
 - 2. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 - 3. 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.
- C. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit one set; unless otherwise requested by Architect.
- D. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
- E. 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.
- F. 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.
 - 1. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.09 COLOR SELECTIONS

- A. Colors of products shall be as selected by the Architect.
- B. Unless otherwise stated, colors may be selected from any color listed by the manufacturer in his product literature.
- C. The Contractor shall submit samples for color selection for all products to the Architect at the same time.
- D. Contractor shall allow 30 days after submitting all samples for Architect's selection.

1.10 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 submittal, mark to indicate action taken, and return promptly.

- B. Compliance with specified characteristics is the Contractor's responsibility. Architect's review shall be for general conformance to design appearance only and shall not be construed to relieve the Contractor of any requirement set forth in Contract Documents.
- C. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
 - 1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken", 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 Taken", 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. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - 4. Returned: When a submittal is marked "Rejected", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Submittal does not comply with requirements of the Contract Documents and shall not be resubmitted.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.33.00

**SECTION 01.40.00
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.02 RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
 - 1. The Contractor shall employ and pay an independent agency, to perform specified quality control services.
 - 2. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
- B. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
- C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
 - 1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - 2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - 3. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - 4. Providing the agency with a preliminary design mix proposed for use for materials

- mixes that require control by the testing agency.
5. Security and protection of samples and test equipment at the Project site.
- D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- E. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.03 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.
- B. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
- C. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
1. Date of issue.
 2. Project title and number.
 3. Name, address and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making the inspection or test.
 6. Designation of the Work and test method.
 7. Identification of product and Specification Section.
 8. Complete inspection or test data.
 9. Test results and an interpretations of test results.
 10. Ambient conditions at the time of sample-taking and testing.
 11. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting.

1.04 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
- B. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

REX ELEMENTARY SCHOOL RE-ROOF
Alloy Project No. 18125

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01.40.00

SECTION 01.42.16
DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.01 DEFINITIONS

- A. General: Basic Contract definitions are included in the General Conditions.
- B. Indicated refers to graphic representations, notes or schedules on Drawings, or Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference.
- 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. No implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's supervision of construction.
- D. Approve, used in conjunction with action on submittals, applications, and requests, is limited to the Architect's duties and responsibilities stated in General and Supplementary Conditions. Approval shall not release the Contractor from responsibility to fulfill Contract requirements.
- E. Regulation includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.
- F. Furnish means "supply and deliver, ready for unloading, unpacking, assembly, installation, and similar operations."
- G. Install describes operations at the site including "unloading, unpacking, assembly, erection, anchoring, applying, working to dimension, protecting, cleaning and similar operations."
- H. Provide means "furnish and install, complete and ready for use."
- I. "Installer" is the Contractor or an entity engaged by the Contractor, as an employee, subcontractor or sub-subcontractor for performance of 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.
- J. The term "experienced," when used with "Installer" means having a minimum of 5 previous Projects similar in size to this Project, and familiar with the precautions required, and with requirements of the authority having jurisdiction.
- K. Project Site is the space available for construction activities, either exclusively or with others performing other construction on 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 upon which the Project is to be built.
- L. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

1.02 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 48-Division format and MASTERFORMAT numbering system.
- B. Specification Content: This Specification uses certain conventions in the use 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. Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the context of the Contract Documents so indicates.
 - 2. Imperative language is used generally in the Specifications. Requirements expressed in the imperative mode are to be performed by the Contractor. At certain locations in the text subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.

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- C. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.42.16

SECTION 01.50.00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

1.02 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
1. Building Code requirements.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, Fire Department and Rescue Squad rules.
 5. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.03 PROJECT CONDITIONS

- A. Keep temporary services and facilities clean and neat in appearance.
- B. Operate in a safe and efficient manner.
- C. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress.
- D. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."
1. For job-built temporary offices, shops and sheds within the construction area, provide UL labeled, fire treated lumber and plywood for framing, sheathing and siding.
 2. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
 3. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.
 4. For safety barriers, sidewalk bridges and similar uses, provide minimum 5/8" thick exterior plywood.
- C. Paint: Comply with requirements of Division-9 Section "Painting."
1. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.

- D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- E. Water: Provide potable water approved by local health authorities.
- F. Open-Mesh Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized barbed wire top strand and galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.

2.02 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- I. First Aid Supplies: Comply with governing regulations.
- J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 EXECUTION

3.01 INSTALLATION

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

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be

- interrupted, where necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
 4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner unless specifically noted, and will not be accepted as a basis of claims for a Change Order.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
1. Sterilization: Sterilize temporary water piping prior to use.
 2. Owner shall pay for water usage charges.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
1. Except where overhead service must be used, install electric power service underground.
 2. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.
 3. Owner shall pay for electric usage.
- D. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.
1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.
1. At each telephone, post a list of important telephone numbers.
 2. Long distance calls shall be paid for by party making call.
- F. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.
1. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
 2. Connect temporary sewers to the municipal system as directed by the sewer department officials.
 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.
 4. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.03

TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.
1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and sheds located within the

TEMPORARY FACILITIES AND CONTROLS

- construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
 - D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.
 - 1. Mechanical and Electrical Contractors shall make permanent heating system available as soon as possible.
 - 2. Mechanical Contractor shall operate, maintain and be responsible for permanent system.
 - 3. Owner shall pay for fuel costs for permanent heating system used during construction.
 - E. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
 - 1. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table and plan rack and a 6-shelf bookcase.
 - 2. Equip with a water cooler and private toilet complete with water closet, lavatory and mirror-medicine cabinet unit.
 - F. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.
 - G. Temporary Paving: Construct and maintain temporary roads and paving to adequately support the indicated loading and to withstand exposure to traffic during the construction period. Locate temporary paving for roads, storage areas and parking where the same permanent facilities will be located. Review proposed modifications to permanent paving with the Architect.
 - H. Paving: Comply with Division-32 Section "Asphalt Paving" for construction and maintenance of temporary paving.
 - 1. Coordinate temporary paving development with subgrade grading, compaction, installation and stabilization of subbase, and installation of base and finish courses of permanent paving.
 - 2. Install temporary paving to minimize the need to rework the installations and to result in permanent roads and paved areas that are without damage or deterioration when occupied by the Owner.
 - 3. Delay installation of the final course of permanent asphalt concrete paving until immediately before Substantial Completion. Coordinate with weather conditions to avoid unsatisfactory results.
 - 4. Extend temporary paving in and around the construction area as necessary to accommodate delivery and storage of materials, equipment usage, administration and supervision.
 - I. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
 - 1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
 - J. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
 - K. Drinking Water Facilities: Provide containerized tap-dispenser bottled-water type drinking water units, including paper supply.
 - 1. Where power is accessible, provide electric water coolers to maintain dispensed

- water temperature at 45 to 55 deg F (7 to 13 deg C).
- J. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-31 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.
 - K. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
 - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
 - 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
 - 4. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.
 - L. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
 - M. Signage:
 - 1. Project Identification Signs: The General Contractor shall furnish and erect one project identification sign of the size and design indicated on the drawings. Engage an experienced sign painter to apply graphics. Support on posts or framing of preservative treated wood or steel. Do not permit installation of additional, unauthorized signs.
 - 2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
 - N. Temporary Exterior Lighting: Install exterior yard and sign lights so that signs are visible when Work is being performed.
 - O. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.
 - P. Rodent and Pest Control: Before deep foundation Work has been completed, retain a local exterminator or pest control company to recommend practices to minimize attraction and harboring of rodents, roaches and other pests. Employ this service to perform extermination and control procedures at regular intervals so the Project will be relatively free of pests and their residues at Substantial Completion. Perform control operations in a lawful manner using environmentally safe materials.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
- E. Enclosure Fence: When excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except by the entrance gates.
1. Provide open-mesh, chain-link fencing with posts set in a compacted mixture of gravel and earth.
- F. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- G. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.05 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
 2. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other

petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.

3. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01.50.00

**SECTION 01.60.00
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Requirements and administrative procedures for handling requests for substitutions made prior to the bidding and after award of the Contract are included under Section "Product Options."

1.02 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 such are self-explanatory and have well recognized meanings in the construction industry.
- B. "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.
 - 1. "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.
- C. "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.
- D. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.03 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.
 - 2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
- B. Product List Submittal: Within *60 days after date of commencement of the Work, submit 3 copies of 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.
- C. 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.

1.04 QUALITY ASSURANCE

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

1.05 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.
- B. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
- C. 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.
- D. 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.
- E. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
- F. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
- G. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
- H. 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

2.01 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. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - a. 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.
 - 3. 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.
4. 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.
 5. 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.
 6. 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.
 7. 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.
 8. 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

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated.
- B. Anchor each product securely in place, accurately located and aligned with other Work.
- C. 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 01.62.00
PRODUCT OPTIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made prior to bidding and after award of the Contract.
1. Where the phrase "**or equal**" appears, Product Data shall be submitted for Architect's approval and comply with the requirements for substitutions.
 2. Where the phrase "**or approved equal**" appears, Product Data shall be submitted for the Architect's approval prior to bidding, and comply with the requirements for pre-bid substitutions. Substitutions after the bid opening will not be considered by the Architect.
- B. Procedural requirements governing the Contractor's selection of products and product options are included under Division 1 Section "Product Requirements."

1.02 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 after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
1. Revisions to Contract Documents requested by the Owner or Architect.
 2. Specified options of products and construction methods included in Contract Documents.
 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.
- C. Pre-bid Substitutions: Requests by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are subject to requirements.

1.03 SUBMITTALS

- A. Substitutions: Requests for substitution will be considered if received within *60 days after commencement of the Work. Requests received more than *60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
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. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures. Provide samples, where applicable or requested.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - c. 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.
 - d. A statement indicating the substitution's effect on the Contractor's Construction Schedule and proposed substitution on overall Contract Time.

- e. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - f. Certification by the 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.
3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed Substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.
- B. Pre-bid Substitutions: When pre-bid approval is required by the specifications, the Bidders, Sub-bidders, and Suppliers shall submit materials, equipment and systems they propose as being equal for consideration of the Architect.
1. Submittals for Pre-bid Substitutions shall be submitted to Architect not less than five (5) days prior to the opening of the Bids. Submittals shall be complete with all supporting data needed for examination. Incomplete submittals will not be considered.
 2. The Contractor shall submit only those products which in his opinion are equal to those specified. The Architect will consider design appearance as well as technical properties in determining whether or not a product will be approved.
 3. The Architect's opinion will be final.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when 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. Extensive revisions to Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of Contract Documents.
 3. The request is timely, fully documented and properly submitted.
 4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
- B. In addition to the conditions noted above, the Contractor's Substitution request will be received and considered by the Architect when one or more conditions are satisfied, as determined by the Architect.
1. 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.
 2. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 3. 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.

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4. The specified product or method of construction cannot be provided in a manner that is compatible or cannot be coordinated with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility and/or be coordinated.
 5. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
- C. 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.

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01.62.00

**SECTION 01.70.00
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. 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 41.

1.02 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. 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 documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum. 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.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. 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.
 - 5. Submit record drawings, maintenance manuals, damage or settlement survey, property survey, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
 - 8. 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.
 - 9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- 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 that the Work has been substantially completed.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.03 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 a final liquidated damages settlement statement.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- 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, but not more than once without the Contractor reimbursing Architect for expenses as outlined in Supplementary General Conditions.
- C. Post Final Inspection Services: When required due to Contractor's non-performance; Contractor shall pay for Architectural services required to close out the project after issuance of the final Certificate of Payment to the Owner, or in the absence of a final Certificate of Payment, more than 60 days after the date of Substantial Completion of the Work.

1.04 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 red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 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. 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.
- 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 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 that 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. 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.
 8. Fixture lamping schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 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. Shutdown.
 3. Emergency operations.
 4. Noise and vibration adjustments.

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5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.02 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities and Controls".
- 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.
- C. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 1. Remove labels that are not permanent labels.
 2. 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.
 3. 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.
 4. 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.
 5. Clean the site, including landscape development areas, of rubbish, litter and other 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.
- D. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.
- E. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- F. 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.
- G. 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 01.70.00

**SECTION 01.73.29
CUTTING AND PATCHING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for cutting and patching.

1.02 RELATED REQUIREMENTS

- A. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- B. Demolition of selected portions of the building for alterations is included in Section-2 "Selective Structure Demolition."

1.03 QUALITY ASSURANCE

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

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use materials that are identical to existing materials.
- B. 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.
- C. Use materials whose performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.01 INSPECTION

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

3.02 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 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 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.

3.03 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.

3.04 CUTTING

- 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. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review 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 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. Comply with requirements of applicable sections of Division-2 where cutting and patching requires excavating and backfilling.

3.05 PATCHING

- A. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
- B. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
- C. 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.
- D. Where the removal of walls or partitions extends from 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.
 - 1. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch, after the patched area has received primer and second coat.
- E. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.06 CLEANING

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

END OF SECTION 01.73.29

SECTION 02.41.19
SELECTIVE STRUCTURE DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition work of building elements for alterations purposes excluding removal of hazardous materials and toxic substances.
- B. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Removal Work:
 - 1. Roofing Removal: Section 07.01.50.19 – Roof Removal: Roofing removal
 - 2. Cutting non-structural concrete floors and masonry walls for underground piping and ducts, and for above grade piping, ducts, and conduit is included with the work of the following respective Divisions:
 - a. Division 22 – Plumbing.
 - b. Division 23 – Heating, Ventilation, and Air Conditioning.
 - c. Division 26 – Electrical.
 - 3. Cutting holes in roof deck and complete installation of new rooftop equipment is specified in Division 23 – Heating, Ventilation, and Air Conditioning.
- B. Remodeling Construction Work and Patching: Work is included within the respective sections of specifications, including removal of materials for re-use and incorporated into remodeling or new construction.
- C. Relocation: Relocation of pipes, conduits, ducts, and other mechanical and electrical work are specified by respective trades.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 – U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 – Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2009.

1.04 SUBMITTALS

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work to Owner's Representative for review prior to commencement of work. Include coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection.
- B. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
- C. Coordinate with Owner's continuing occupation of portions of existing building, with Owner's partial occupancy of completed new addition, and with Owner's reduced usage during summer months.

1.04 JOB CONDITIONS

- A. Occupancy: Owner will be continuously occupying areas 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 which will severely impact 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 commencement of contract will be maintained by Owner insofar as practicable. However, variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.
- C. Hazardous Materials: The Owner, due to ownership of the existing buildings, holds legal title to hazardous materials if included therein. It is the Owner's responsibility to determine whether hazardous materials exist, and to legally dispose of such materials if they are discovered.
 - 1. By language of the "Standard Form of Agreement Between Owner and Contractor,

- AIA-A101 and the "General Conditions of the Contract for Construction, AIA Document A201-2007, the Owner agrees to indemnify and hold harmless the Architect and Contractor against hazardous material claims. If the Contractor encounters hazardous materials which have not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the Owner and Architect in writing. Work in the affected area shall not be resumed except by written agreement of the Owner and Contractor as outlined in A201.
2. It is recommended that if hazardous materials are encountered, or if they are believed to exist, the Owner should seek the services of a qualified and competent hazardous waste consultant.
 3. Hazardous materials are defined to include but not be limited to:
 - a. Harmful dust.
 - b. Flammable or explosive materials.
 - c. Corrosive substances.
 - d. Radioactive materials.
 - e. Asbestos-containing materials.
- D. Partial Demolition and Removal: Items indicated to be removed but of salvable value to Contractor 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 as required 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 and from 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.
 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 solid 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 if required.
 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 facilities by demolition work at no cost to Owner.
- G. Traffic: Conduct selective demolition operations and debris removal in a manner 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. Explosives: Use of explosives will not be permitted.
- I. Utility Services: Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
1. Do not interrupt existing 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.
- J. Environmental Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
1. Do not use water when it may create hazardous or objectionable conditions such as

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ice, flooding, and pollution.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 SCOPE

- A. Remove portions of existing buildings as indicated on Drawings, and as required to accommodate remodel construction whether indicated on Drawings or not. Review all new and remodel construction documents as required.
- B. Remove other items indicated, or salvage and relocation.

3.02 INSPECTION

- A. Prior to commencement of selective demolition work, inspect areas in which work will be performed.
- B. Photograph existing conditions to structure surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Owner's Representative prior to starting work.

3.03 PREPARATION

- A. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement or collapse of structures to be demolished and adjacent facilities to remain.
 - 1. Cease operations and notify the Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
- B. Cover and protect furniture, equipment and fixtures to remain from soiling or damage when demolition work is performed in rooms or areas from which such items have not been removed.
- C. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.
 - 1. Where selective demolition occurs immediately adjacent to occupied portions of the building, construct dust-proof partitions of minimum 4" studs, 5/8" drywall (joints taped) on occupied side, 1/2" fire-retardant plywood on demolition side, and fill partition cavity with sound-deadening insulation.
 - 2. Provide weatherproof closures for exterior openings resulting from demolition work.
- D. Locate, identify, stub off and disconnect utility services that are not indicated to remain.
- E. Provide by-pass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shut-down of service is necessary during change-over.

3.04 DEMOLITION

- A. 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.
 - 1. 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.
 - 2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors or framing.
 - 3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
 - 4. Demolish foundation walls to a depth of not less than 12" below existing ground surface. Demolish and remove below-grade wood or metal construction. Break up below-grade concrete slabs.
 - 5. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
 - 6. Completely fill below-grade areas and voids resulting from demolition work. Provide fill

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consisting of approved earth, gravel or sand, free of trash and debris, stones over 6" diameter, roots or other organic matter.

- B. If unanticipated mechanical, electrical or structural elements which 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 delay.

3.05 REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS

- A. The Owner is solely responsible for the removal of hazardous materials including the implementation of any special procedures required by local health authorities having jurisdiction. All applicable requirements of EPA or any other governing body having jurisdiction must be followed.
- B. Owner shall assume the responsibility for the safe and proper removal of all hazardous materials and the disposal of such materials off the site in a legal hazardous materials disposal are. All fees, transportation cost and special precautions shall be the responsibility of the Owner who shall bear full responsibility for any fines or assessments levied against the project due to improper handling of hazardous materials.

3.06 SALVAGE MATERIALS

- A. Salvage Items: All items to be demolished shall become property of the Contractor except where indicated on Drawings as "Salvage-Deliver to Owner". Carefully remove indicated items, clean, store and turn over to Owner and obtain receipt. All items to be demolished shall become the property of the Contractor.
- B. Historic artifacts, including cornerstones and their contents, commemorative plaques and tablets, antiques, and other articles of historic significance remain the property of the Owner. Notify Owner's Representative if such items are encountered and obtain acceptance regarding method of removal and salvage for Owner.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations from building site. Transport and legally dispose of materials off site.
- B. 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.
- C. Burning of removed materials is not permitted on project site.

3.08 CLEAN-UP AND REPAIR

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave interior areas broom clean.
- B. Promptly repair demolition performed in excess of that required. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION 02.41.19

**SECTION 05.50.00
METAL FABRICATIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ladders.
- B. Anchor Devices.

1.02 RELATED REQUIREMENTS

- A. Section 03.30.00 – Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 05.51.00 – Metal Stairs.
- C. Section 05.52.00 – Metal Railings.
- D. Section 09.90.00 – Painting and Coating: Paint finish.

1.03 REFERENCE STANDARDS

- A. AAMA 611 – Voluntary Specifications for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.
- B. ANSI A14.3 – American National Standard for Ladders – Fixed – Safety Requirements; 2002.
- C. ASTM A 36/A 36M – Standard Specification for Carbon Structural Steel; 2005.
- D. ASTM 53A/A 53M – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.
- E. ASTM A 123/A 123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- F. ASTM A 283/A 283M – Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).
- G. ASTM A 325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009.
- H. ASTM A 325M – Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2009.
- I. ASTM A 500/A 500M – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.
- J. ASTM A 501 – Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.
- K. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
- L. ASTM B 209M – Standards Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2207.
- M. ASTM B 210M – Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric); 2005.
- N. AWS D1.1 – Structural Welding Code – Steel; American Welding Society; 2010.
- O. SSPC-Paint 15 – Steel Joist Shop Primer, Society for Protective Coatings; 1999 (Ed. 2004).

1.04 SUBMITTALS

- A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

PART 2 PRODUCTS

2.01 GENERAL

- A. For work exposed to view use materials selected for their smoothness and freedom from surface blemishes.
- B. Use materials of size and thickness shown, or, if not shown, of required size, grade and thickness to produce strength and durability in finished product.
- C. Shop-paint all items not specified to be galvanized after fabrication.
- D. Weld corners and seams continuously to comply with AWS recommendations.
- E. *Finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.

2.02 FABRICATIONS

- A. Ladders: Steel; in compliance with ANIS A14.3, at elevator pit comply with ASME A17.1; with mounting brackets and attachments; prime paint finish.
- B. Provide at the following locations and where indicated:
 - a. At each roof hatch.
 - b. At access openings through floors such as mezzanines, shall extend 42 inches above floor which ladder passes through. If floor access door provided, ladder shall be constructed with "ladder-up" extensions.
- C. Anchor Devices: Inserts and anchoring devices for all metal work this section. Anchors, tie bolts, inserts, hangers, etc. to anchor and support other construction to concrete, masonry or steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05.50.00

**SECTION 06.10.00
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Non-structural dimension lumber framing.
- C. Sheathing.
- D. Roof-mounted curbs.
- E. Roofing nailers.
- F. Roofing cant strips.
- G. Preservative treated wood materials.
- H. Fire retardant treated wood materials.
- I. Miscellaneous framing and sheathing.
- J. Concealed wood blocking, nailers, and supports.
- K. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

- A. Section 05.12.00 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.
- B. Section 05.50.00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
- C. Section 07.25.00 - Weather Barriers:
- D. Section 09.21.16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.02 SUBMITTALS

- A. Submit the following:
 - 1. Product data for insulating sheathing and underlayment.
 - 2. Material certificates for dimension lumber indicated for compliance with selected minimum design values.
 - 3. Wood treatment data including treatment plant's certification of compliance with indicated requirements.

1.03 REFERENCE STANDARDS

- A. American National Standard Institute: ANSI A208.1 - American National Standard for Particleboard; 2009.
- B. American Forest and Paper Association: AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2001.
- C. American International:
 - 1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
 - 2. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2009a
 - 3. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2008a.
 - 4. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2009.
 - 5. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.
 - 6. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2009a.
 - 7. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2009.
 - 8. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2010.

9. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2005.
- D. American Wood Protection Association: AWWA U1 - Use Category System: User Specification for Treated Wood; 2010.
- E. National Institute of Standards and Technology, U.S. Department of Commerce:
 1. PS 1 - Structural Plywood; 2007.
 2. PS 2 - Performance Standard for Wood-Based Structural-Use Panels;; 2004.
 3. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.
- F. Southern Pine Inspection Bureau, Inc.: SPIB (GR) - Grading Rules; 2002.
- G. West Coast Lumber Inspection Bureau: WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2004, and supplements.
- H. Western Wood Products Association: WWPA G-5 - Western Lumber Grading Rules; 2011.

1.04 DELIVERY, STORAGE AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked product to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - a. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - a. For exposed lumber, apply grade stamps to ends or back of each piece or omit grade stamps entirely and issue certificate of grade compliance, if allowed by authorities.
 3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Joist, Rafter and Small Beam Framing: (2 - 6 inches thick, 6 inches and wider):
 1. Species: Douglas Fir-Larch.
 2. Grade: No. 2.
 3. Fb (minimum extreme fiber stress in bending): 1,350 psi (single member use).
 4. E (minimum modulus of elasticity): 1,300,000 psi.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 1. Species: Douglas Fir-Larch or Pine.
 2. Lumber: S4S, No. 2 or Standard Grade.
 3. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Roof Sheathing: Provide one of the following:
 1. APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as

follows:

- a. Span Rating: 24/16.
- b. Thickness: 1/2 inch, nominal.
- c. Edges: Tongue and groove.

2.04 FASTENERS AND ANCHORAGES

- A. General: Provide products of size, material, finish and type recommended for intended use by manufacturer.
- B. Fasteners and Anchors:
 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A153/A153M for exposed to weather, in ground contact and high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
 3. Anchors: Toggle bolt type for anchorage to hollow masonry.
- C. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M.
- D. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing per ASTM A653/A653M.

2.09 ACCESSORIES

- A. Sill Flashing: As specified in Section 07.62.00.
- B. Water-Resistive Barrier: As specified in Section 07.25.00.

2.10 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.
- B. Fire Retardant Treatment:
 1. Manufacturers:
 - a. Arch Wood Protection, Inc.
 - b. Hoover Treated Wood Products, Inc.
 - c. Osmose, Inc.
 2. Exterior Type: AWWA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat all exterior rough carpentry items.
 - c. Treat exposed exterior rough carpentry items, including stairways, balconies, and covered walkways
 - d. Do not use untreated wood in direct contact with the ground.
 3. Interior Type A: AWWA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when

tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.

- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
1. Manufacturers:
 - a. Arch Wood Protection, Inc.
 - b. Chemical Specialties, Inc.
 - c. Osmose, Inc.
 2. Preservative Pressure Treatment of Lumber Above Grade: AWWA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber exposed to weather.
 - c. Treat lumber in contact with roofing, flashing, or waterproofing.
 - d. Treat lumber in contact with masonry or concrete.
 - e. Treat lumber less than 18 inches above grade.
 - f. Treat lumber in other locations as indicated.
 3. Preservative Pressure Treatment of Plywood Above Grade: AWWA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.
 - d. Treat plywood less than 18 inches above grade.
 - e. Treat plywood in other locations as indicated.
 4. Preservative Pressure Treatment of Lumber in Contact with Soil: AWWA U1, Use Category UC4A, Commodity Specification A using waterborne preservative to 0.4 lb/cu ft retention.
 - a. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 - b. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and

- D. immediately after installation sufficient to remove indoor air contaminants.
- D. Perform all cutting necessary for other trades.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.05 ATTACHMENTS

- A. Securely attach carpentry work to substrates and supporting members using fasteners of size that will not penetrate members where opposite side will be exposed to view or receive finish materials.
- B. Install fasteners without splitting wood; fasten panel products to allow for expansion at joints unless otherwise indicated.
- C. Bolt Attachment:
 - 1. Drill bolt holes 1/16" larger than bolt diameter.
 - 2. Countersink bolts where required.
 - 3. Bolt heads and nuts shall have washers where in contact with wood.

3.06 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.
- C. Bolt roof curbs and cant blocking to metal deck, masonry, concrete, or steel with 1/2" bolts, 4 ft. on center.

3.07 INSTALLATION OF CONSTRUCTION PANELS

- A. Comply with recommendations of American Plywood Association (APA), unless otherwise indicated.
- B. For sheathing, underlayment and other products not covered in above standards, comply with recommendations of manufacturer of product involved for use intended.
- C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.
 - 4. Size: 48 by 96 inches, installed horizontally at ceiling height.

3.08 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

- B. Allow preservative to dry prior to erecting members.

3.09 WATER RESISTIVE BARRIER INSTALLATION

- A. Cover wall sheathing with air infiltration barrier in compliance with manufacturer's printed directions.

3.10 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.11 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01.74.19.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 06.10.00

**SECTION 07.01.50.19
ROOF REMOVAL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal (to the deck) and disposal of the existing roof system off site.
- B. Removal of gutters and downspouts.
- C. Removal of any construction debris from drains and piping.
- D. Trimming and re-securing of existing construction details to accommodate new roof system.

1.02 SUBMITTALS

- A. Schedule: Submit proposed schedule coordination for shut-off, capping, and continuation of utility services as required. Provide a detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations

1.03 JOB CONDITIONS

- A. Condition of Structures: Owner assumes no responsibility for actual condition of materials to be demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner insofar as practicable. However, variations may occur by Owner's operations prior to start of work.
- B. Hazardous Materials: The Owner, due to ownership of the existing buildings, holds legal title to hazardous materials if included therein. It is the Owner's responsibility to determine whether hazardous materials exist, and to legally dispose of such materials if they are discovered.
 - 1. By language of the "Standard Form of Agreement Between Owner and Contractor", AIA-A101 and the "General Conditions of the Contract for Construction, AIA Document A201-2007, the Owner agrees to indemnify and hold harmless the Architect and Contractor against hazardous material claims. If the Contractor encounters hazardous materials which have not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the Owner and Architect in writing. Work in the affected area shall not be resumed except by written agreement of the Owner and Contractor as outlined in A201.
 - 2. It is recommended that if hazardous materials are encountered, or if they are believed to exist, the Owner should seek the services of a qualified and competent hazardous waste consultant.
 - 3. Hazardous materials are defined to include but not be limited to:
 - a. Harmful dust.
 - b. Flammable or explosive materials.
 - c. Corrosive substances.
 - d. Radioactive materials.
 - e. Asbestos-containing materials.
- C. Traffic: Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

1.04 PROTECTIONS

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures.
- B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations.
- C. Provide enclosed dust chutes to carry debris to truck beds and govern flow of material into

truck. Provide overhead bridges of tight board or prefabricated metal construction at dust chutes to protect persons and property from falling debris.

- D. Damages: Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.
- E. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by Architect or governing authorities. Return adjacent areas to condition existing prior to the start of work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

- A. Any and all damages to adjacent areas remaining caused by the Contractor during demolition shall be corrected at the Contractor's expense.
- B. Limit size of work sections to safeguard adjacent materials and structures, and to minimize dust and noise.
- C. Protect existing facilities from damage during work. Do not overload existing paving, curbs, and sidewalk, or new or existing construction with demolition debris, equipment, vehicles, and containers.
- D. Construct a disposal chute, to avoid damage to building or grounds. Disposal chute shall be erected in location acceptable to the Architect. Excessive dust, generated by demolition, shall not be acceptable.
- E. Demolition adjacent to areas to remain shall be performed in a neat manner with straight lines to facilitate tie-ins of replacement materials.
- F. Demolition shall be performed by personnel familiar with the replacement of materials being removed.
- G. Excessive demolition, as determined by Owner, shall be replaced with similar and equal materials at Contractor's expense.
- H. Contractor shall furnish necessary temporary protection from weather to protect interior of building from elements of weather at all times.
- I. Contractor shall maintain required safety precautions during performance of work.
- J. Due to unacceptable water intrusion during the execution of the project, the Contractor shall:
 - 1. Continuously monitor all work to ensure that at no time are more areas exposed than can be made completely watertight prior to water intrusion due to sudden rains, discharge water due to operations, damage caused by the Contractor to existing process piping, ponding water or water existing within the roofing system.
 - 2. At all times maintain an experienced crew in sufficient number with readily available materials to insure the above.
 - 3. At no time leave exposed areas unattended without making water tight repairs.
 - 4. Provide continuous and effective protection of building contents from water or debris by use of acceptable sheet materials and methods during this project. Coordinate these activities with Owner's personnel.
 - 5. Remove all loose or constricting debris from gutters, outlet tubes, and downspouts as necessary to restore original capacity.
 - 6. Trim or raise existing construction features to accommodate a minimum finished flashing height of 6 inches or as designated by Architect.

3.02 AGGREGATE REMOVAL

- A. Powerroom clean existing roof surface to remove all loose aggregate.
- B. Protect aggregate and debris from entering gutters, outlet tubes, and downspouts.

3.03 ROOF REMOVAL

- A. Cut out and remove existing roof system down to the deck as indicated on drawings and/or additionally required. Work from the drains or lowest level toward higher levels.

- B. Remove as much roof as can be totally replaced in the same day. The Contractor shall plan his work day and take whatever action necessary to prevent water entry to the building during roof replacement.
- C. Replacement section shall be terminated with water cut-offs where new roof butts up to the old and shall overlap existing roof at least one foot. Water invasion beneath finished work is unacceptable.

3.04 INSPECTION OF ROOF DECK

- A. Carefully examine deck in area of removal to assure it is sound and dry.
- B. Notify Architect if deck repair or replacement is required prior to start of installation of roofing in the uncovered area.

3.05 CLEAN-UP

- A. On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to Architect.
- B. Clean-up shall include off site disposal of all items and materials not required to remain property of the Owner as well as all debris and rubbish resulting from demolition operations.

3.06 REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS

- A. The Owner is solely responsible for the removal of hazardous materials including the implementation of any special procedures required by local health authorities having jurisdiction. All applicable requirements of EPA or any other governing body having jurisdiction must be followed.
- B. Owner shall assume the responsibility for the safe and proper removal of all hazardous materials and the disposal of such materials off the site in a legal hazardous materials disposal area. All fees, transportation cost and special precautions shall be the responsibility of the Owner who shall bear full responsibility for any fines or assessments levied against the project due to improper handling of hazardous materials.

END OF SECTION OF 07.01.50.19

SECTION 07.52.16
STYRENE-BUTADIENE-STYRENE MODIFIED BITUMINOUS ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Modified bituminous roofing.
- B. Roof insulation; flat and tapered.
- C. Deck sheathing.
- D. Membrane flashings.
- E. Roofing stack boots, roofing expansion joint, and walkway pads

1.02 RELATED REQUIREMENTS

- A. Section 03.45.00 - Precast Architectural Concrete: Precast paver ballast.
- B. Section 06.10.00 - Rough Carpentry: Wood nailers and curbs.
- C. Section 06.10.00 - Rough Carpentry: Wood cant strips.
- D. Section 07.01.50.19 - Preparation for Re-Roofing.
- E. Section 07.62.00 - Sheet Metal Flashing and Trim: Counterflashings, and reglets.
- F. Section 07.71.00 - Roof Specialties: Counterflashings.
- G. Section 07.72.00 - Roof Accessories: Roof-mounted units.
- H. Section 08.62.00 - Unit Skylights: Skylight frame.
- I. Section 08.45.00 - Translucent Wall and Roof Assemblies: Counterflashings.
- J. Section 22.10.06 - Plumbing Piping Specialties: Roof drains.

1.03 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM C79/C79M - Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board; 2001.
 - 2. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2010.
 - 3. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2008a.
 - 4. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2007.
 - 5. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2010a.
 - 6. ASTM C726 - Standard Specification for Mineral Fiber Roof Insulation Board; 2005e1.
 - 7. ASTM C728 - Standard Specification for Perlite Thermal Insulation Board; 2005 (Reapproved 2010).
 - 8. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2008.
 - 9. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2010.
 - 10. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2009a.
 - 11. ASTM D41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011.
 - 12. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.
 - 13. ASTM D312 - Standard Specification for Asphalt Used in Roofing; 2000 (Reapproved 2006).
 - 14. ASTM D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction; 2008.
 - 15. ASTM D1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs; 2005.
 - 16. ASTM D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2004.

17. ASTM D2822 - Standard Specification for Asphalt Roof Cement, Asbestos-Containing; 2005.
 18. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007.
 19. ASTM D4601 - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; 2004.
 20. ASTM D4897 - Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing; 2001 (Reapproved 2009).
 21. ASTM D6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; 2000a (Reapproved 2008).
 22. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements; 2000 (Reapproved 2008).
 23. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2011.
 24. ASTM D6222 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2011.
 25. ASTM D6223 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; 2002 (Reapproved 2009).
 26. ASTM D6298 - Standard Specification for Fiberglass Reinforced Styrene Butadiene Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface; 2005.
 27. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2010.
 28. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011.
- B. Factory Mutual Research Corporation:
1. FM P7825 - Approval Guide; current edition.
 2. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation; 2007.
- C. Intertek Testing Services NA, Inc.: ITS (DIR) - Directory of Listed Products; current edition.
- D. National Roofing Contractors Association: NRCA ML104 - The NRCA Roofing and Waterproofing Manual; Fifth Edition, with interim updates.
- E. Underwriters Laboratories Inc.:
1. UL (RMSD) - Roofing Materials and Systems Directory; current edition.
 2. UL (FRD) - Fire Resistance Directory; current edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of associated flashings and counterflashings installed by other sections.

1.05 SUBMITTALS

- A. Manufacturer's Literature and Data: Submit the following:
1. Asphalt materials.
 2. Modified bituminous sheet roofing.
 3. Roofing cement.
 4. Fastening requirements.
 5. Application instructions.
- B. Inspection Report: Provide a written copy of the roof warranty inspection report and warranty to Architect.
- C. Certificates: Indicating materials and method of application of roofing system meets requirements of Factory Mutual Research Corporation for I-90 roofs.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- E. Shop Drawing: Provide shop drawings indicating complete flashing and reglet detailing.

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- F. Pre-Roofing Conference: Submit copies of pre-roofing conference records.
- G. Inspection Report: Provide a written copy of the roof warranty inspection report and warranty to Architect.

1.06 QUALITY CONTROL

- A. Supervision of work by persons that are knowledgeable and experienced in roofing.
- B. Unless specified otherwise, comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to modified bituminous sheet roofing for storage, handling and application.
- C. Comply with roofing manufacturers requirements if they exceed the requirements specified in this section.
- D. Installer: A firm with not less than 5 years of successful experience in installation of roofing systems similar to those required for this project and which is acceptable to or licensed by manufacturer of primary roofing materials.
- E. Pre-Roofing Conference: Prior to installation of roofing and associated work, meet at project site, or other mutually agreed location, with Installer, roofing manufacturer, installers of related work, and other entities concerned with roofing performance, including (where applicable) Owner's insurer, test agencies, governing authorities, Architect, and Owner.
 - 1. Record discussions and agreements and furnish copy to each participant.
 - 2. Provide at least 72 hours advance notice to participants prior to convening pre-roofing conference.

1.07 DELIVERY, STORAGE AND MARKING

- A. Deliver materials to the site in original sealed packages or containers marked with the name and brand, or trademark of the manufacturer or seller.
- B. Keep materials dry, and store in dry, weathertight facilities or under canvas tarps. Use of polyethylene or plastic tarps to cover materials is not permitted.
 - 1. Store above ground or deck level on wood pallets. Cover ground under pallet stored materials with plastic tarp.
 - 2. Store rolled materials on end. Do not store materials on top of rolled materials.
 - 3. Protect from damage from handling, weather and construction operations before, during, and after installation.

1.08 FIELD CONDITIONS

- A. Do not apply roofing membrane when environmental conditions are outside the ranges recommended by manufacturer.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is below 40 degrees F.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

1.09 SPECIAL PROJECT WARRANTY

- A. Installer Warranty: Installer shall warranty roofing work for a period of two years.
- B. Provide manufacturer's 15 year Total System Warranty covering both labor and material with no dollar limitation agreeing to replace/repair defective materials and workmanship as required to maintain roofing system in watertight condition. The maximum wind speed coverage shall be peak gusts of 55 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.
- B. Pro-rated System Warranties shall not be accepted.
- C. A single Contractor shall be responsible for roofing systems, roof insulation systems and flashings.
- D. Warranty period shall begin on date of substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Manufacturers: Subject to compliance with requirements provide products of one of the following or approved equal:
1. CertainTeed Corporation.
 2. Firestone Building Products Co.
 3. GAF Materials Corporation.
 4. Johns Manville Commercial Roofing Systems.
 5. Tamko Roofing Products.
 6. Tremco Roofing and Building Maintenance.

2.02 ROOFING MEMBRANE

- A. Modified Asphalt Sheet: Hot mop applied membrane composed primarily of SBS modified asphalt material fabricated in sheet form and designed for roofing exposed to the weather. Reinforced sheet with polyester fabric or felt, at manufacturers' option.
1. Thickness: Minimum thickness 120 mils.
- B. Roofing System: Three (3) ply, ASTM D-2178 Type IV; one (1) ply cap sheet.
- C. Provide the sheet with a release sheet to prevent bonding of the sheet to itself.

2.03 ROOFING MEMBRANE CAP SHEETS

- A. Cap Sheet: ASTM D6164, Grade G, Type 1, polyester reinforced, SBS-modified asphalt sheet; granular surfaced.
1. Thickness: Minimum thickness 150 mils.

2.04 FLASHING SHEET MATERIALS

- A. Backer Sheet: SBS-modified, asphalt-coated base sheet reinforced with composite glass fiber mat/glass fiber scrim and dusted with fine mineral surfacing on both sides.
1. Thickness, minimum, ASTM D5147; 0.120 inch.
- B. Flashing Sheet: ASTM D6164, Grade G, Type I, polyester reinforced, SBS-modified asphalt sheet; granular surfaced.
1. Thickness, minimum ASTM D5147: 0.0160 inch.
- C. Glass-Fiber Fabric: Woven glass-fiber cloth, treated with asphalt, complying with ASTM D1668, Type I.

2.05 BITUMINOUS MATERIALS

- A. Bitumen: ASTM D312, Type IV hot-melt for roof membrane, Type III for adhering insulation.
- B. Primer: Water-based, polymer modified, asphalt primer ASTM D41.
- C. Roof Cement: ASTM D4586, Type I or Type II.
- D. Building Paper (Sheathing Paper): Fed. Spec. UU-B-790, Type I, Barrier paper, Grade D, Water-Vapor permeable, Style 1a, Uncreped, not reinforced; or, Style 1b, Uncreped, not reinforced; red rosin sized. Weighing approximately six pounds per 100 square feet.

2.06 FASTENERS

- A. Nails for securing built-up flashing and base sheets to wood nailers:
1. Zinc coated steel roofing nails with minimum head diameter of 3/8-inch through metal discs at least one inch across.
 2. Nails with an integral flat cap at least 15/16-inch across.
- B. Fasteners for securing building paper and dry felt edge strips to wood nailer and decks:
1. Zinc coated steel roofing nails, 5/8-inch minimum head diameter.
 2. Flat top crown, zinc coated.
- C. Nails for Plywood:
1. Use annular thread type and length to penetrate plywood at least 3/4-inch.
 2. Through flat cap at least 15/16-inch across.
- D. Nails for Securing Built-up Flashing to Masonry:
1. Hardened steel nails through metal discs at least one inch in diameter.

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2. One piece nails with an integral flat cap at least 15/16-inch across.

2.07 POLYISOCYANURATE BOARD ROOF INSULATION

- A. Rigid, cellular thermal insulation with polyisocyanurate closed-cell foam core and manufacturer's standard facing laminated to both sides; complying with FS HH-I-1972/2, Class 1; aged R-values per CAN/ULC-S770; and as follows:
- B. Surface Burning Characteristics: Maximum flame spread of 25.
- C. Thermal Resistivity: 21.
- D. Thickness: Provide tapered insulation at locations noted. Total thickness 3.5" minimum unless otherwise indicated; minimum 2 layers. At classroom pods with tapered insulation, minimum thickness to be 1/2".
- E. Provide preformed crickets, tapered edge strips, and other insulation shapes as required. Fabricate to slope water to drains.

2.08 COVER BOARD

- A. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate.
- B. Manufacturers: Subject to compliance with requirements, provide products of the following or approved equal:
 1. Georgia Pacific Corporation; "DensDeck Prime" (basis of design).
- C. Composition: Nonstructural, glass mat faced gypsum panels, ASTM C 1177/CM fire resistant type, 1/2" thick.
- D. Board Size: Nominal 4 ft.x8 ft.

2.09 ACCESSORIES

- A. Insulation Fasteners: Type required for substrate, approved by roofing manufacturer and the material or materials to be secured.
- B. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.
- C. Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board, compatible with roofing system.
- D. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide, self adhering.
- E. Sealants: As recommended by membrane manufacturer.
- F. Roof Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
 1. Composition: Roofing membrane manufacturer's standard.
 2. Size: Manufacturer's standard size.
 3. Surface Color: As selected by Architect from manufacturer's standard colors.

PART 3 EXECUTION

3.01 GENERAL

- A. Do not apply roofing if deck will be used for subsequent work platform, storage of materials, or staging or scaffolding will be erected thereon unless system is protected.
- B. Entire roof deck construction of section of the building shall be completed before roofing work is begun.
 1. Install curbs, blocking, edge strips, cants, and other components where insulation, roofing and base flashing is attached to, in place ready to receive insulation and roofing.
 2. Coordinate roof operations with roof insulation and sheet metal work so that insulation and flashings are installed concurrently to permit continuous roofing operations.
- C. Apply dry roofing materials.
- D. Dry out surfaces, including the flutes of metal deck, that become wet from any cause during progress of the work before roofing work is resumed. Apply materials to dry substrates.

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- E. Except for temporary protection, do not apply materials during damp or rainy weather, during excessive wind conditions, nor while moisture (dew, snow, ice, fog or frost) is present in any amount in or on the materials to be covered or installed.
 - 1. Do not apply materials when the temperature is below 50 degrees F.
 - 2. Do not apply materials to substrate having temperature of 50 degrees F or less.
- F. Phased construction is not permitted. Complete roofing membrane in the same day, including insulation, base flashings, and stripping except for the area where temporary protection is required when work is stopped.
- G. All roof penetrations to be properly flashed.
- H. All wiring on roofs shall be in conduit.
- I. Provide supports for piping equipment and conduit so they are above the roof (minimum 18") on stands (no 2X4's directly on roof structure). Special care shall be taken to insure the water proofing of the roof at supports.
- J. At roof top equipment / air conditioning units, mount units on stands so that unit is 18" minimum above roof deck.

3.02 TEMPORARY PROTECTION

- A. Install temporary protection consisting of glaze coats and water cut offs at the end of day's work and when work is halted for an indefinite period or work is stopped when precipitation is imminent.
- B. Glaze coat exposed surfaces of felts to seal within the bitumen coating. Do not leave felt surfaces or edges exposed.
- C. Install temporary cap flashing over the top of base flashings where permanent flashings are not in place to provide complete protection against moisture entering the roof system through or behind the base flashing. Securely anchor in place to prevent blow off and damage by construction activities.
- D. Provide for removal of water or drainage of water away from the work.
- E. Provide temporary protection for roofing by means of duckboard walkways, plywood platforms, or other materials, as approved by Architect, for roof areas that are to remain intact, and that are subject to foot traffic and damage. Provide notches in sleepers to permit free drainage.

3.03 SURFACE PREPARATION

- A. Sweep decks to broom clean condition. Remove all dust, dirt or debris.
- B. Remove projections that might damage materials.

3.04 BASE SHEET INSTALLATION

- A. Nailing or Anchorage of Sheets to Nailable Decks: Use nails or fasteners appropriate for type of deck.
 - 1. Nail down along bottom edges at intervals not to exceed nine inches.
 - 2. Nail down through last 19-inch wide sheet to both edges at intervals not to exceed 9-inches.
 - 3. Stagger nails down center of sheet in two rows 11 inches apart at intervals of not more than 18 inches in each row.
 - 4. Nail to edge blocking at not more than 9 inches on center.

3.05 INSULATION INSTALLATION

- A. Extend insulation full thickness in two layers, or in multiple layers over entire surface to be insulated as recommended by insulation manufacturer, cutting and fitting tightly around obstructions. Form cant strips, crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane.
- B. Stagger joints in one direction for each course. For multiple layers, stagger joints in both directions between courses with no gaps, forming a complete thermal envelope.
- C. Do not install more insulation each day than can be covered with membrane before end of day and before start of inclement weather.
- D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing

STYRENE-BUTADIENE-STYRENE MODIFIED BITUMINOUS ROOFING

- felt.
- E. Attachment of Insulation:
 - 1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions.
 - 2. Embed second layer of insulation into flood coat mopping of hot bitumen in accordance with roofing and insulation manufacturers' instructions. Embed with Type III asphalt firmly pressed into the hot bitumen. Apply units in accordance with requirements of applicable fire and insurance ratings.
 - F. Tape joints of insulation in accordance with roofing and insulation manufacturer's instructions.

3.06 HEATING BITUMEN

- A. Heat the asphalt to the equiviscous temperature plus or minus 25 degrees F at the time of application.
 - 1. Do not heat asphalt greater than 100 degrees F above the equiviscous temperature.
 - 2. When the equiviscous temperature is not furnished by the asphalt manufacturer, do not heat asphalt above 525 degrees F for Type III and IV with temperature not less than 475 degrees F at time of application.
- B. Do not heat bitumen above the flash point temperature.
- C. Provide heating kettles with a thermometer kept in operating condition. Attend kettle during heating to insure that the bitumens are heated within the temperatures specified.
- D. Use type III and Type IV asphalt between plies.
- E. Do not mix different type of asphalt in kettle.

3.07 APPLICATION OF MATERIALS WITH HOT BITUMEN

- A. Apply bitumen in quantities required, immediately followed by membrane materials embedded therein before bitumen cools below the application temperature limit.
 - 1. Do not apply more material than can be covered at one time except for glaze coats.
 - 2. Recoat cooled bitumen areas.
- B. Roll sheets into bitumen brushing down to firmly embed in the hot bitumen free of wrinkles, fish mouths, blisters, bubbles, voids, air pockets or other defects that prevent complete adhesion.
 - 1. Lap sheets shingle fashion starting with starter strips at right angles to slope of roof.
 - 2. Commence the laying of sheets at the low points.
- C. Separate sheets or substrate so that subsequent plies do not touch previous placed sheets or substrate unless noted specifically.
- D. Cut to fit closely around pipes, roof drains, bitumen stops, and similar roof projections.
- E. Do not walk on roofing until bitumen has cooled hard and is not tacky.
- F. Quantities of Asphalt Between Substrate and Sheets: 15 to 25 pounds per square.

3.08 INSTALLATION OF MODIFIED BITUMEN MEMBRANE

- A. Where nailers occur at roof edges under gravel stops or penetrations to receive metal base flashing, nail a continuous strip of 16-inch wide dry organic felt envelope over the nailers before the first ply sheet is applied. Strip shall be installed on top of venting base sheet. After membrane is installed, turn the dry felt back over the roofing, and secure in place with hot bitumen before gravel stops or other metal flanges extending out onto the membrane are installed.
- B. Use cants at vertical surfaces except for pipes.
- C. Where cants occur at vertical surfaces, cut off roofing sheets two inches above top of cant strips, except at prefabricated curbs, scuttles and other roof accessories having integral cants, extend membrane over cant and up vertical surface to top of curb or nailer as shown.
- D. Where fascia-cant occurs at roof edges, extend membrane beyond outside cant face and cut off at outside after base flashing is installed.
- E. Where reglet occurs at vertical surfaces, extend plies roofing sheets up into reglet the full depth of the reglet.
- F. Roofing on Insulation: Mop down membrane as specified.

STYRENE-BUTADIENE-STYRENE MODIFIED BITUMINOUS ROOFING

- G. Roofing material to be fully adhered.
- H. Laps for Top Sheet and Base Sheet:
 - 1. Base sheet, lapped three inches.
 - 2. Use 18 inch starting widths, lap top sheet 19 inches

3.09 BASE FLASHING

- A. Provide built-up base flashing over cants and as necessary to make work watertight.
- B. Prime vertical surfaces of masonry and concrete with asphalt primer except where vented base sheet is required to provide edge venting.
- C. Apply flashing on top of roofing, up face of cant and up the face of the vertical surface, at least eight inches above the roofing but not more than 14 inches above the roofing, generally full height beneath counter flashing or top of curb flashing.
 - 1. At fascia-cants, extend to top of cant and cut off at top of cant.
 - 2. At reglet, extend full depth into the reglet.
 - 3. Where venting base sheet is used with insulating concrete, do not seal edges of venting base sheet with bitumen; allow for venting.
- D. Use two plies of modified bituminous sheet.
 - 1. Extend the first ply four inches out on the roofing, and the second ply three inches beyond the first ply. Lap ends three inches with joints broken 18 inches in each ply. Use smooth surface modified bituminous sheet for first ply.
 - 2. Use granular surfaced modified bitumen cap sheet.
- E. Set base flashing either in type III or IV asphalt.
 - 1. Embed each sheet in asphalt so sheets do not touch.
 - 2. Set cap sheet in hot bitumen with laps sealed with hot bitumen.
 - 3. Except for venting roof edges, seal the top edge of the base flashing with roof cement.

3.10 STRIPPING

- A. Coordinate to set flanges of metal flashing in roof cement on top sheet of the modified bituminous roofing and mailing to blocking with Section 07600.
- B. Cover that portion of the horizontal flanges of metal base flashings, gravel stops, and other flanges extending out onto the roofing with modified bituminous sheet.
- C. Extend the sheet out on the roofing six inches beyond the edge of the metal flange. Cut edge to fit tight against vertical members of flange.
- D. Prime flange before stripping, embed sheet in hot bitumen.

3.11 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- C. Repair or replace defaced or damage finishes caused by work of this section.

3.12 PROTECTION

- A. Protect installed roofing and flashing from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 07.52.16

SECTION 07.62.00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal counter flashing; and base flashing.
- B. Gravel stops and copings.
- C. Exposed metal trim/fascia units.
- D. Metal expansion joints.
- E. Miscellaneous sheet metal accessories.

1.02 RELATED REQUIREMENTS

- A. Section 04.20.00 – Unit Masonry: Integral masonry flashings are specified as masonry work.
- B. Section 07.42.13 – Metal Wall Panels: Flashings in metal wall panel systems.
- C. Section 7.61.13 – Standing Seam Sheet Metal Roofing.
- D. Section 07.71.00 – Roof Specialties: Preformed flashings and manufactured expansion joint covers.
- E. Section 07.71.23 – Manufactured Gutters and Downspouts.
- F. Section 07.72.00 – Roof Accessories: Roof-mounted units.

1.03 REFERENCE STANDARDS

- A. AAMA 2605 – Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coating on Aluminum Extrusions and Panels; 2005.
- B. ASTM A 653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015 (Editorial 01).
- C. SMACNA (ASMM) – Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association 7th edition; 2012.

1.04 SUBMITTALS

- A. Shop Drawings: Submit showing layout, profiles, methods of joining, and anchorages details, including major counterflashings, and trim/fascia units. Provide layouts and details at appropriate scale to indicated adequate detail.
- B. Samples: Submit factory finished samples for color selection for products exposed as finished work.

1.05 PROJECT CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

1.06 QUALITY ASSURANCE

- A. Conform to the requirements of the "Architectural Sheet Metal Manual", Latest Edition of the Sheet Metal and Air Conditioning Contractors National Association.
- B. Form all metal shapes in shop with bending brake.
- C. Conform to profiles and sizes shown on Drawings (where indicated).

PART 2 PRODUCTS

2.01 FABRICATION, GENERAL

- A. Provide flashings which are designed and fabricated to fit application indicated and to weather resistance, water tightness, durability, strength, and uniform appearance.
- B. Expansion Provisions: Fabricate flashings to allow for controlled expansion in running lengths not only for movement of metal components in relationship to one another but also

to adjoining dissimilar materials, including flashing and roofing membrane materials, in a manner which is sufficient to prevent water leakage, deformation or damage.

2.02 SHEET METAL FLASHING AND TRIM MATERIALS

- A. Steel: 24 gage (0.0179 inch) steel, commercial quality A1 S1 G90 hot-dipped galvanized, extra smooth.
- B. Standard Length of Product: 10 feet with 6" wide concealed splice plates at joints. Match profile of flashing piece.
- C. Steel Finish: Primed on both sides and finished on one side with 70 percent Kynar 500 based fluorocarbon coating minimum 0.70 mils total dry film thickness. Color as selected from manufacturer's standard color selection. Provide with strippable coating shop-applied to front side of pre-finished metal to protect finish during fabrication, shipment and field handling.

2.03 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Fasteners: Same metal as flashing/sheet metal or, other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
 - 1. Exposed fasteners shall have neoprene washers.
- B. Solder: For use with steel or copper, provide 50-50 tin/lead solder (ASTM B32), with rosin flux.
- C. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.
- D. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealers."
- E. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.
- F. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
- G. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.
- H. Bituminous Coating: SSPC-Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- I. Reglets: Metal or plastic of type and profile indicated, compatible with flashing indicated, noncorrosive.

2.05 FABRICATED UNITS

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices.
- B. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.
- C. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder.
- E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of

intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- F. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- G. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

- A. Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, "Architectural Sheet Metal Manual", except as otherwise shown or specified.
- B. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application. Finish work shall be tight, straight, with flat surfaces and even edges.
- C. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate. Cover holes or cracks in wood wider than 1/4-inch with sheet metal compatible with the roofing and flashing material used.
- D. Anchorage: Install bolts, rivets, and screws where indicated, specified, or required in accordance with the SMACNA Sheet Metal Manual.
 - 1. Space rivets at three inches on centers in two rows in a staggered position.
 - 2. Use concealed anchors unless indicated otherwise. Use neoprene washers under fastener heads when fastener head is exposed.
 - 3. Confine direct nailing of sheet metal to strips 12 inches or less wide. Nail flashing along one edge only. Space nails not over four inches on center unless specified otherwise.
 - 4. Nail continuous cleats on 3-inch center in two rows in a staggered position.
 - 5. Nail individual cleats with two nails and bend end tab over nail heads. Lock other end of cleat into hemmed edge.
- E. Coordinate with roofing work for the installation of metal base flashings and other metal items having roof flanges for anchorage and watertight installation.
- F. Install flashings in conjunction with other trades so that flashings are inserted in other materials and joined together to provide a water tight installation.
- G. Where required to prevent galvanic action between dissimilar metal isolate the contact areas of dissimilar metal with sheet lead, waterproof building paper, or a coat of bituminous paint.
- H. Flashings shall spring tight against roofing.
- I. Joints: Install with butt type joints, with splice plate center under joint. Apply sealant between splice plate and each flashing member. Splice plates shall not be anchored to either member to allow for expansion.
- J. Where indicated, install flashing into reglets with lead wedges and fill reglet with sealant.

3.02 COUNTERFLASHING

- A. Install counterflashing over and in conjunction with installation of base flashings, except as otherwise specified or shown.
- B. Install counterflashing to lap base flashings not less than four inches.
- C. Install upper edge or top of counterflashing not less than nine inches above top of the roofing.
- D. Lap joints not less than four inches. Stagger joints with relation to metal base flashing joints.
- E. Use surface applied counterflashing on existing surfaces and new work where not possible to integrate into item.

- F. When fastening is to be made to concrete or masonry, use screws driven in expansion shields set in concrete or masonry. Use screws to wood and sheet metal. Set fasteners in mortar joints of masonry work.

3.03 GRAVEL STOPS AND COPINGS

- A. General: Install gravel stops and fascias with allowance for expansion at each joint; minimum of 1/4-inch.
 - 1. Extend roof flange of gravel stop and splice plates not less than four inches out over roofing and nail or screw to wood nailers. Space fasteners on 3-inch centers in staggered pattern.
 - 2. Install continuous cleat for fascia drip edge. Secure with fasteners as close to lower edge as possible on 3-inch centers.
 - 3. Where ends of gravel stops and copings abut a vertical wall, provide a watertight, flashed and sealant filled joint.
- B. Sheet Metal Gravel Stops and Coping:
 - 1. Install with end joints sheets lapped three inches over a splice plate.
 - 2. Hook the lower edge of fascia into a continuous edge strip.

3.04 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.
- B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering at time of substantial completion.

END OF SECTION 07.62.00

**ROOF SPECIALTIES
SECTION 07.71.00**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal copings.
- B. Sheet metal and flashings not part of coping, and fascia systems included in this section are specified in another Division-7 section.

1.02 RELATED REQUIREMENTS

- A. Section 07.72.00 – Roof Accessories: Manufactured curbs, and roof hatches.
- B. Section 07.90.05 – Joints Sealers.

1.03 REFERENCE STANDARDS

- A. National Roofing Contractors Association: NRCA ML104 – The NRCA Roofing and Waterproofing Manual; Fifth Edition, with interim updates.
- B. Sheet Metal and Air Conditioning Contractors' National Association: SMACNA (ASMM) Architectural Sheet Metal Manual; 2003.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, installation instructions and general recommendations for each fascia and coping product required. Include data substantiating that materials and performance comply with requirements.
- B. Shop Drawings: Submit shop drawings indicating layout, joining, profiles, accessories, anchorages, flashing connections and relationship to supporting structure and to adjoining roof and wall construction.
- C. Samples: For selection of colors submit manufacturer's color charts consisting of small sections of the same metal to be used in the work which have been finished to indicate the full range and quality of standard colors or color ranges and of standard textures available.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA Architectural Manual details.

1.04 JOB CONDITIONS

- A. Coordinate work of this section with adjoining work for proper sequencing of each installation to ensure best possible weather resistance and protection of materials and finishes against damage.

PART 2 PRODUCTS

2.01 FABRICATION, GENERAL

- A. Provide fascia and coping which are designed and fabricated to fit application indicated and to weather resistance, water tightness, durability, strength, and uniform appearance.
- B. Expansion Provisions: Fabricate fascia and copings to allow for controlled expansion in running lengths not only for movement of metal components in relationship to one another but also to adjoining dissimilar materials, including flashing and roofing membrane materials, in a manner which is sufficient to prevent water leakage, deformation or damage.

2.02 METAL COPINGS

- A. Interlocking Multi-Part Coping System: Provide manufacturer's standard system consisting of coping formed from G90 zinc-coated steel sheet complying with ASTM A 526 to profile and of thickness indicated, zinc-coated steel continuous cleat with formed concealed splice plate located at coping joint; without exposed fasteners.
 - 1. Thickness of Coping: 24 gauge.
 - 2. Dimensions: Provide 5" high nominal front face unless otherwise indicated, and width as required by wall conditions.

- B. Manufacturer: Subject to compliance with requirements, provide products of the following or approved equal:
 - 1. Architectural Products Co.
 - 2. Peterson Aluminum Corporation; "PAC Anchor-Tite" (basis of design).
 - 3. W.P. Hickman Company
- C. Accessories: Provide manufacturer's standard accessories of the following type, designed and manufactured to match and fit to fascia system indicated:
 - 1. Prefabricated corner units for both inside and outside corners, with miters welded in factory prior to finishing.
- D. Finish: High Performance Coating: AA-C12C42R1x (cleaned with inhibited chemicals, conversion coated with an acid-chromate-fluoride-phosphate treatment and painted with organic coating specified below). Apply in strict compliance with coating and resin manufacturer's instructions using a licensed applicator.
 - 1. Fluorocarbon Coating: Inhibitive of thermo-cured primer, 0.2 min. mil dry film thickness, and thermo-cured fluorocarbon coating containing "Kynar 500" resin, 1.0 min mil. dry film thickness.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's written installation instructions and recommendations.
- B. Coordinate with installation of roof deck and other substrates to receive work of this section, with vapor retarders, roof insulation, roofing membrane, flashing, and wall construction; as required to ensure that each element of the work performs properly, and that combined elements are waterproof and weathertight.
- C. Anchor products included in this section securely to structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.
- D. Isolation: Where metal surfaces of units are installed in contact with dissimilar metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation as recommended by aluminum producer.

3.02 CLEANING AND PROTECTION

- A. Cleaning: Clean exposed metal surfaces in accordance with manufacturer's instructions. Touch-up damaged metal coatings.
- B. Protection: Provide protective measures as required to ensure that work of this section will be without damage or deterioration at time of substantial completion.

END OF SECTION 07.71.00

**SECTION 07.71.23
MANUFACTURED GUTTERS AND DOWNSPOUTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pre-finished galvanized steel gutters and downspouts.

1.02 RELATED REQUIREMENTS

- A. Section 07.62.00 – Sheet Metal Flashing and Trim.
- B. Section 09.90.00 – Painting and Coating: Field painting of metal surface.

1.03 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015 (Editorial 01).
 - 2. ASTM A666 – Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
 - 3. ASTM B32 – Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- B. Sheet Metal and Air Conditioning Contractors' National Association: SMACNA (ASMM) – Architectural Sheet Metal Manual 7th edition; 2014.

1.04 DESIGN REQUIREMENTS

- A. Conform to SMACNA Architectural Sheet Metal Manual for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.05 SUBMITTALS

- A. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations and installation details.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be stored in a clean, dry location prior to installation to prevent any damage to the contents. Store materials off the ground and protect from damage and deterioration as required by the material manufacturer.
- B. Handle materials to prevent damage to their surfaces, edges and ends of metal items. Damaged materials shall be rejected and removed from site.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pre-Finished Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage (0.0179 inch) steel.

2.02 COMPONENTS

- A. Gutters: SMACNA Style F.
 - 1. Fabrication: Continuous field formed.
 - 2. Size: 6" overall width by 6" depth.
 - 3. Accessories:
 - a. Gutter end caps.
 - b. Premanufactured gutter internal and external corners.
 - c. Strainers: Provide at each downspout.
 - d. Expansion: Provide sealed slip joints at 40' intervals.
- B. Downspouts: SMACNA rectangular style.
 - 1. Size: Approximately 4" x 6", ribbed.
- C. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Anchoring Devices: In accordance with SMACNA requirements.
 - 2. Gutter Supports: Brackets

MANUFACTURED GUTTERS AND DOWNSPOUTS

3. Downspout Supports: Brackets. Provide three per downspout, minimum.
- D. Fasteners: Same material and finish as gutters and downspouts.
- E. Accessories:
 1. Splash Pads: Precast concrete type, size and profiles indicated, minimum 3,000 psi at 28 days, minimum 5 percent air entrainment.

2.03 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.
- B. Fabricate with required connecting pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. All for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

2.04 FACTORY FINISHING

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturers standard colors.
- B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.
- C. Provide with strippable coating shop-applied to front side of pre-finished metal to protect finish during fabrication, shipment and field handling.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work. Do not begin installation until substrates are properly prepared.
- B. Prior to installation, inspect the anchoring surface to determine suitability for attachment of the guttering system.

3.02 PREPARATION

- A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil.

3.02 INSTALLATION

- A. Install gutters downspouts and accessories in accordance with manufacturer's installation instructions.
- B. Sheet Metal: Join lengths with seams sealed watertight. Rivet and seal gutters to downspouts and accessories.
- C. Provide slight slope in gutter to downspout locations.
- D. Provide for thermal expansion and contraction, and building movement at expansion joints.
- E. Space gutter supports at 4'-0" maximum.
- F. Provide items not specified but required for complete installation.
- G. *Connect downspouts to storm drains as indicated on Drawings.
- H. Set splash pans and pads under downspouts.

3.03 PROTECTION

- A. Protect installed products until completion.
- B. Maintain prefinished surfaces in undamaged condition. Repair or replace damaged components, any touch up to be indistinguishable from undamaged surface or finish.

END OF SECTION 07.71.23

**SECTION 07.72.00
ROOF ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof hatches.
- B. Telescoping ladder extension.

1.02 REFERENCE STANDARDS

- A. UL (BMD) – Building Materials Directory; current edition.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product used:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
 - 5. For smoke vents, submit evidence of approval by evaluation agency specified.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.

PART 2 PRODUCTS

2.01 ROOF HATCHES

- A. Manufacturer: Provide prefabricated roof hatch units by one of the following or approved equal:
 - 1. Acudor Products, Inc.
 - 2. Babcock-Davis.
 - 3. Bilco, Co.
 - 4. Dur-Red Products.
 - 5. Milcor, Inc.
 - 6. Naturalite, Inc.
 - 7. Plasticrafts, Inc.
 - 8. Precision Ladders LLC.
- B. Roof Hatches: Factory-assembled steel frame and cover, complete with operating and release hardware.
 - 1. Style: Flat metal covers unless otherwise indicated.
 - 2. Mounting: Provide frames and curbs suitable for mounting conditions indicated on the Drawings.
 - 3. Size: Single leaf, 30 x 36 inches or as indicated on the Drawings.
 - 4. Frames/Curbs: One piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
 - a. Material: Galvanized steel, 14 gage, 0.0747 inch thick.
 - b. Finish: Factory prime paint.
 - c. Insulation: 1 inch rigid glass fiber, located on inside hollow curb.
 - d. Curb Heights: 12 inches from surface of roof deck, minimum.
 - 5. Metal Covers: Flush, insulated, hollow metal construction.
 - a. Capable of supporting 40 psf live load.
 - b. Materials: Galvanized steel; outer cover 14 gage, 0.0747 thick, liner 22 gage, 0.03 inch thick.
 - c. Finish: Factory prime paint.
 - d. Insulation: 1 inch rigid glass fiber.
 - e. Gasket: EPDM, continuous around cover perimeter.
 - 6. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or

required by manufacturer.

- a. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
- b. Hinges: Heavy duty pintle type.
- c. Hold open arm with vinyl-coated handle for manual release.
- d. Latch: Upon closing, engage latch automatically and reset manual release.
- e. Manual Release: Pull handle on interior; latch handle on exterior.
- f. Locking: Padlock hasp on interior.

2.02 TELESCOPING LADDER EXTENSION

- A. Manufacturers: Subject to compliance with requirements, provide curb-set expansion joint units by one of the following:
 1. Bilco; "LadderUP Safety Post".
 2. Milcor; "Upright Safety Bar".
 3. J.L. Industries; "LP-4 Safety Post".
- B. Adjustable mounting hardware shall accommodate virtually any ladder rung size or spacing.
- C. Designed with a telescoping or pivoting tubular section that locks automatically when fully extended.
- D. Upward and downward movement shall be controlled by a stainless steel spring balancing mechanism or pivot system.
- E. Unit shall be completely assembled with fasteners for securing to the top two ladder rungs or hatch frame in accordance with manufacturer's instructions.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations. Coordinate with installation of roof deck and other substrates to receive accessory units, and vapor barriers, roof insulation, roofing and flashing; as required to ensure that each element of the work performs properly, and that combined elements are waterproof and weathertight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.
 1. Except as otherwise indicated install roof accessory items in accordance with construction details of "NRCA Roofing and Waterproofing Manual".
- B. Isolation: Where metal surfaces of units are to be installed in contact with noncompatible metal or corrosive substrates, including wood, apply bituminous coating on concealed metal surfaces, or provide other permanent separation.
- C. Flange Seals: Except as otherwise indicated, set flanges of accessory units in a thick bed of roofing cement, to form a seal.
- D. Cap Flashing: Where cap flashing is required as component of accessory, install to provide adequate waterproof overlap with roofing or roof flashing (as counter-flashing). Seal with thick bead of mastic sealant, except where overlap is indicated to be left open for ventilation.
- E. Operational Units: Test operate units with operable components. Clean and lubricate joints and hardware. Adjust for proper operation.

3.02 CLEANING AND PROTECTION

- A. Clean exposed metal and plastic surfaces in accordance with manufacturer's instructions. Touch up damaged metal coatings.

END OF SECTION 07.72.00

**SECTION 07.92.00
JOINT SEALANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sealants and joint backing.
- B. Preformed compressible foam sealers.
- C. Provide for the following locations:
 - 1. Exterior building wall joints including joints at windows, louvers, and exterior doors.
 - 2. Flashing and coping joints.
 - 3. Miscellaneous concrete construction joints.
 - 4. Wall joints (exterior concrete and miscellaneous).

1.02 RELATED REQUIREMENTS

- A. Section 04.42.00 – Exterior Stone Cladding: Sealing joints in exterior stonework.
- B. Section 07.24.00 – Polymer-Based Exterior Insulation and Finish System: Sealing joints in exterior insulation and finish system.
- C. Section 08.80.00 – Glazing: Sealants for glazing.
- D. Section 09.29.00 - Gypsum Board: Sealing concealed perimeter joints of gypsum drywall partitions to reduce sound transmission characteristics.
- E. Section 09.31.00 – Thin Set Tiling: Sealing tile joints.
- F. Divisions 23 and 26: Joint sealers in mechanical and electrical work, not work of this Section.

1.03 REFERENCE STANDARDS

- A. ASTM C834 – Standard Specification for Latex Sealants; 2005.
- B. ASTM C920 – Standard Specification for Elastomeric Joint Sealants; 2009.
- C. ASTM C1193 – Standard Guide for Use of Joint Sealants; 2009.
- D. ASTM D1056 – Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber; 2007.
- E. ASTM D1667 – Standard Specification for Flexible Cellular Materials – Poly (Vinyl Chloride) Foam (Closed-Cell); 2005.

1.04 SYSTEM PERFORMANCES

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.
- B. Failure of installed sealers to comply with this requirement will be recognized as failures of materials and workmanship.

1.05 SUBMITTALS

- A. Product data from manufacturers for each joint sealer product required, including instructions for joint preparation and joint sealer application.
- B. Samples for Selection Purposes: Manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

1.06 QUALITY ASSURANCE

- A. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

1.07 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 of use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials in compliance with manufacturers' recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.08 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 manufacturers.
 - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.
- A. Joint Width Conditions: Do not proceed with installation of joint sealers where widths are less than allowed by joint sealer manufacturer for application indicated.
- B. Joint Substrate Conditions: Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under service and application conditions, as demonstrated by testing and field experience.
- B. Colors: Provide color of exposed joint sealers as selected by Architect from manufacturer's standard colors. In general, color shall match or be slightly darker than the adjacent material(s).
- C. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

2.02 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C920 requirements, including those referenced for Type, Grade, Class, and Uses.
- B. Exterior Joints (subject to vehicular traffic): Manufacturer's standard Hot Poured Elastic type sealant; complying with ASTM D3405-94, ASTM D1190-94, AASHTO M301-85 and AASHTO M173-84. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Crafc0 Inc.; RoadSaver 221.
- C. Exterior Joint, Interior Expansion Joints (not subject to traffic): Manufacturer's standard One-Component Nonsag Polyurethane sealant; Type M; Grade NS; Class 12-1/2. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. BASF Construction Chemicals-Building Systems; Sonneborn Sonolastic NP1.
 - 2. Pecora Corporation; Dynatrol 1-XL.
 - 3. Sika Corp.; Sikaflex 1A.
 - 4. Tremco Global Sealants; Dymonic.
- D. Foot Traffic Joints (Interior and exterior): Manufacturer's standard one-component non sag urethane sealant; Type S, Grade NS. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Bostik Inc.; Chem-Calk 900.
 - 2. Products Research & Chemical Corp.; Permapol RC-1.
 - 3. Sika Corp.; Sikaflex-1A.
- E. Joints in High Humidity and Wet Areas: Manufacturer's standard one-component sealant; Type S; Grade NS; Class 25; acid-type for non-porous joint surfaces, and non-acid type where one or both joint surfaces are porous.
 - 1. Acid Curing:
 - a. BASF Construction Chemicals-Building Systems; OmniPlus.
 - b. Bostik Inc.; Chem-Calk 1200.
 - c. Pecora Corp.; 863.
 - 2. Non-acid Curing:
 - a. Bostik Construction Products Division; Chem-Calk N-Cure 2000.
 - b. Dow Corning; 790.
 - c. Momentive Performance Materials, Inc.; SCS2902 Ultraproof II.

- d. Pecora Corp.; 864NST
- e. Tremco Global Sealants; Spectrem 3.

2.03 NON-ELASTOMERIC SEALANTS

- A. Interior, Non-moving and Non-watertight Joints: Provide manufacturer's standard, one-part, non-sag, mildew-resistant, acrylic-emulsion sealant complying with ASTM C834, formulated to be paintable and recommended for exposed applications on interior and on protected exterior locations involving joint movement of not more than plus or minus 5 percent and watertightness is not necessary.
 - 1. Pecora Corp.; AC-20.
 - 2. BASF Construction Chemicals-Building Systems; Sanolac.
 - 3. Tremco Global Sealants; Tremflex 834.

2.04 PREFORMED COMPRESSIBLE FOAM SEALERS

- A. Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from urethane foam and impregnated with a nondrying, water-repellant agent. Factory produced in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping. Size and depth as recommended by manufacturer.
 - 1. Balco Inc.; BCSW Series.
 - 2. Dayton Superior Corporation; Product Polytite B.
 - 3. EMSEAL Joint Systems, Ltd.; Colorseal.
 - 4. In Pro Corporations; 1200 Series.
 - 5. Sandell Manufacturing Company Inc.; Polyseal Type C.
 - 6. Watson Bowman Acme; Wabo WeatherSeal II.

2.05 SEALANT BACKINGS, GENERAL

- A. Provide sealant backings of material and type which are nonstaining; compatible with joint substrates, sealants, primers and other joint fillers; 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 plastic foam of either flexible, open-cell polyurethane foam or nongassing, closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer. Size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back of joint.

2.07 ACCESSORIES

- A. Primer: As recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer, compatible with joint forming materials.

PART 3 EXECUTION

3.01 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.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers, ASTM C1193 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 sealer; oil; grease; waterproofing; water repellents; 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. 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 test 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.

3.03 INSTALLATION OF JOINT SEALERS

- A. General: Comply with ASTM C1193 and with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Installation of Sealant Backing: 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. Joints greater than 3/4" deep, and where suitable back stop has not been provided, shall be packed with back-up material, or filler material where appropriate, to within 1/2" of finished surface.
1. Do not leave gaps between ends of joint fillers.
 2. Do not stretch, twist, puncture or tear joint fillers.
 3. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.
- C. 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.
- D. 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.
- E. Installation of Preformed Hollow Neoprene Gaskets: Install gaskets, with minimum number of end joints, in joint recesses with edges free of spalls and sides straight and parallel, both within tolerances specified by gasket manufacturer. Apply manufacturer's recommended adhesive to joint substrates immediately prior to installing gaskets. For straight sections provide gaskets in continuous lengths; where changes in direction occur, adhesively splice gasket together to provide watertight joint. Recess gasket below adjoining joint surfaces by 1/8 inch to 1/4 inch.
- F. Installation of Preformed Compressible Foam Sealers: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 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.

3.05 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 installations with repaired area indistinguishable from original work.

END OF SECTION 07.92.00

SECTION 07.95.13
EXPANSION JOINT COVER ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof expansion joint cover assemblies.
- B. Wall expansion joint cover assemblies.

1.02 REFERENCE STANDARDS

- A. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2008.
- B. ASTM B 221M – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2007.
- C. ASTM B 308/B 308M - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles; 2003.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Instructions: In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of work, including preparation of substrate, applying materials, and protection of installed units.
- B. Fire Performance Characteristics: Where indicated, provide expansion joint cover assemblies identical to those of assemblies whose fire resistance has been determined per UL 2079 or ASTM E 1966 by a nationally recognized testing and inspecting organization or by another means, as acceptable to authorities having jurisdiction.
 - 1. Fire Rating: As indicated on schedule, or if not indicated, not less than the rating of adjacent construction.
 - 2. Hose Stream Test: Wall-to wall and wall-to-ceiling assemblies shall be subjected to hose stream testing.
- C. Allowable load on floor joint cover plate shall be 50 psf uniform load and 300 pounds concentrated load with 1/16 inch deflection at normal position.

1.04 SUBMITTALS

- A. Product Data: Product data in form of manufacturer's product specifications, installation instructions, and general recommendations for each type of expansion joint cover assembly indicated.
- B. Material Test Reports: Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-rated expansion joint assemblies with requirements indicated.
- C. Shop Drawings: Shop drawings showing full extent of expansion joint cover assemblies; include large-scale details indicating profiles of each type of expansion joint cover assembly, splice joints between sections, joinery with other types, special end conditions, anchorages, fasteners, and relationship to adjoining work and finishes. Include description of materials and finishes.
- D. Samples: Samples for each type of metal finish indicated on metal of same thickness and alloy to be used in work. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing limits of such variations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to the following:
 - 1. Architectural Art Mfg., Inc.
 - 2. Balco, Inc. (basis of design).
 - 3. Construction Specialties, Inc.
 - 4. Metalines, Inc.

5. MM Systems Corp.
 6. Watson Bowman Acme Corp.
- B. One product is specified on the schedule as standard of quality. It is the responsibility of the Contractor to provide a product or products from listed or other manufacturers which are equal to or exceed the requirements of the Drawings and Specifications.

2.02 METAL MATERIALS

- A. Aluminum: ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 6061-T6, sheet and plate.

2.03 NONMETAL PRODUCTS

- A. Extruded Preformed Seals: Single or multilayered rubber extrusions as classified under ASTM D 2000, designed with or without continuous, longitudinal, internal baffles and formed to fit compatible frames, in color indicated, or, if not indicated, as selected by Architect from manufacturer's standard colors.
- B. Elastomeric Sealant: Manufacturer's standard elastomeric sealant complying with ASTM C 920, Use T, factory-formed and bonded to metal frames or anchor members; in color indicated, or, if not indicated, as selected by Architect from manufacturer's standard colors.
1. Joints up to 2 inches wide: Withstand plus or minus 35 percent movement of the joint width without failure.
 2. Joints 2 inches to 4 inches wide: Withstand plus or minus 50 percent movement of the joint width without failure.
- C. Fire Barriers: Designed for indicated or required dynamic structural movement without material degradation or fatigue. Tested in maximum joint width condition with a field splice as a component of an expansion joint cover in accordance with UL 2079 or ASTM E 1966 including hose stream test at full-rated period by a nationally recognized testing and inspecting organization or by another means, as acceptable to authorities having jurisdiction.

2.04 FABRICATION - GENERAL

- A. Provide expansion joint cover assemblies of design, basic profile, materials, and operation indicated.
- B. Select units comparable to those indicated or required to accommodate joint size, variations in adjacent surfaces, and structural movement.
- C. Furnish units in longest practicable lengths to minimize number of end joints.
- D. Provide hairline mitered corners where joint changes directions or abuts other materials.
- E. Include closure materials and transition pieces, tee-joints, corner, curbs, cross-connections, and other accessories as required to provide continuous joint cover assemblies.

2.05 FABRICATION OF METAL JOINT COVER ASSEMBLIES

- A. Provide continuous extruded metal frames of profile indicated with seating surface and raised floor rim to accommodate flooring and concealed bolt and steel anchors for embedment in concrete.
- B. Provide assemblies formed to receive cover plates of design indicated and to receive filler materials (if any) between raised rim of frame and edge of plate.
- C. Furnish depth and configuration to suit type of construction and to produce a continuous flush wearing surface with adjoining finish floor surface.

2.06 FABRICATION OF JOINT COVER ASSEMBLY WITH PREFORMED SEAL

- A. Provide joint cover assemblies consisting of continuously anchored aluminum extrusions and continuous extruded preformed seals of profile indicated or required to suit types of installation conditions shown.
- B. Furnish extrusions designed for embedment in concrete and mechanical retention of lugs of field-installed extruded preformed seals.
- C. Vulcanize or heat-seal splices (if any) to ensure hermetic joint condition.

2.07 METAL FINISHES

- A. Comply with NAAMM "Metal Finishes Manual" for finish designations and application

- recommendations, except as otherwise indicated.
- B. Apply finishes in factory after products are fabricated.
 - C. Protect finished on exposed surfaces with protective covering before shipment.
 - D. Aluminum Finishes:
 - 1. Clear Anodized Finish: AA-C22A41; medium matte etched finish with 0.7-mil minimum thick anodic coating.
 - 2. Factory-Primed Concealed Surfaces: Protect concealed metal surfaces that will be in contact with concrete and masonry surfaces when installed by applying a shop coat of manufacturer's standard primer to contact surfaces. Provide minimum dry film thickness of 2.0 mils.

2.08 ACCESSORIES

- A. Manufacturer's standard anchors, fasteners, set screws, spacers, flexible vapor seals and filler materials, drain tubes, adhesive, and other accessories compatible with material in contact, as indicated or required for complete installations.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, templates, and instructions for installation of expansion joint cover assemblies to be embedded in concrete or have recesses formed into edges of concrete slab for later placement and grouting-in of frames.

3.02 INSTALLATION

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing expansion joint cover assemblies to in-place construction, including threaded fasteners with drilled-in expansion shields for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type, and size to suit type of construction indicated and provide for secure attachment of expansion joint cover assemblies.
- B. Cutting, Fitting and Placement: Perform all cutting, drilling, and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion joints and adjoining finished surfaces measured from established lines and levels. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Set floor covers at elevations to be flush with adjacent finished floor materials. Locate wall, ceiling, roof, and soffit covers in continuous contact with adjacent surfaces. Securely attach in place with all required accessories. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches on centers.
- C. Joinery and Continuity: Maintain continuity of expansion joint cover assemblies with end joints held to a minimum and metal members aligned mechanically using splice joints. Cut and fit ends to produce joints that will accommodate thermal expansion and contraction of metal to avoid buckling of frames. Adhere flexible filler materials (if any) to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Installation of Extruded Preformed Seals: Install seals to comply with manufacturer's instructions and with minimum number of end joints. For straight sections provide preformed seals in continuous lengths. Vulcanize or heat-seal all field splice joints in preformed seal material to provide watertight joints using manufacturer's recommended procedures. Apply manufacturer's approved adhesive, epoxy, or lubricant-adhesive to both frame interfaces prior to installing preformed seal. Seal transitions in accordance with manufacturer's instructions.
- E. Installation of Fire Barriers: Install fire barriers in accordance with federal, state, and local building codes using manufacturer's recommended procedures. Install transition and end joints to provide continuous fire resistance and in accordance with manufacturer's instructions.

3.03 CLEANING AND PROTECTION

- A. Do not remove strippable protective material until finish work in adjacent areas is complete.
- B. When protective material is removed, clean exposed metal surfaces to comply with manufacturer's instructions.

3.04 EXPANSION JOINT SCHEDULE

- A. Exterior Expansion Joints:
 - 1. Roof: Balco; #BRBA-1CSE, or as indicated on drawings.
 - 2. Wall, Above Grade: EMSHIELD COLORSEAL
- B. All expansion joint cover assemblies must be classified for the same fire rating as the wall/floor/ceiling assembly in which it is located. Install Balco MetaBlock Fire Barrier behind cover joint system at all locations where fire rated system is required.

END OF SECTION 07.95.13