



Rapid Valley Elementary School Addition and Remodel

**Rapid City Area School District 51/4
Rapid City, South Dakota**

Construction Documents

VOLUME 1

Chamberlin Architects #2521

March 02, 2026

Chamberlin Architects
725 St. Joseph Street, Suite B1
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SKYLINE ENGINEERING

615 12th STREET

RAPID CITY, SOUTH DAKOTA 57701-2615

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RAPID CITY, SOUTH DAKOTA 57702
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E-MAIL: shane.matt@interstateeng.com

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ACCESS TO BUILDING FORM
RAPID CITY AREA SCHOOL DISTRICT No. 51-4

All Keys/Key Fob will be issued by:
RCAS Locksmith- Maintenance Department 394-4045
3715 Cambell St, Rapid City SD 57701

Building:		
Project Name:		
Project Area and Description:		
Project Start Date:		End Date:
Purchase Order Number:		
Contractor Name:		
Contractor Phone Number:		
Contractor Fax Number:		
Name of Person Picking up Key/Key Fob:		
Phone Number:		
Any user of the Rapid City Area Schools property shall sign this statement that indemnifies and holds harmless the Rapid City Area Schools from any and all losses, including claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought against the Rapid City Area Schools by reason of any act or omission of the user. Payment will be withheld until all necessary repairs are completed to the School Districts specifications.		
Contractor will pay for any re-keying if keys are lost - Payment will be held until keys/key fob are returned.		
PLEASE CHECK IN AND CHECK OUT AT MAIN OFFICE DURING SCHOOL HOURS		
Name of Person Picking up Key/Key Fob (Printed):		
I have read and understand the above statements: Signature of Person Picking up Key/Key Fob:		
Key Number:		and/or Key Fob Number:
Date Key/Key Fob are returned:		
Person Accepting Returned Key/Key Fob:		

Adopted: 09/28/15

Rapid City Area Schools District No. 51-4, Rapid City, South Dakota



ASBESTOS NOTIFICATION TO BIDDERS
IMPORTANT NOTICE

Jon Lundgren 605-394-4045
Asbestos Compliance Officer

To ensure that the Rapid City Area School District 51-4 complies with the RPS's asbestos Hazard Emergency Response Act (AHERA) regulations, the following items need to be addressed.

- #1 All construction products listed in specifications shall have no asbestos containing material. If there must be asbestos containing material in a product, it shall be approved in writing by the School District's Asbestos Compliance Office and recorded in the Asbestos Management Plan.
- #2 The AHERA regulations states in 763.84 Part (d). *

(d) Ensure that short term workers (i.e. telephone repair workers, utility workers, or exterminators) who may come in contact with asbestos in a school are provided information regarding the locations of ACBM and suspected ACBM assumed to be ACM.
- #3 The general contractor for the project shall coordinate with the School District's Asbestos Compliance Officer for locations of asbestos containing building material (ACBM).

Please complete this acknowledgement and return it with your bid. Thank you.

Asbestos Hazard Emergency Response Act, 40 C.F.R. 763, Federal Register 10/30/87

FIRM _____

NAME _____

DATE _____

ASBESTOS COMPLIANCE OFFICER

Jon Lundgren 

DATE 10/6/2021

Revised 10/04/2021

CERTIFICATION OF CLAIM

RAPID CITY AREA SCHOOL DISTRICT NO. 51-4
625 9th Street, Suite 214
Rapid City, SD 57701

DATE			Pur. Order
Name			INVOICE
Street Rd	City	State	Zip

ITEMIZED INVOICE MUST ACCOMPANY CLAIM

FOR SCHOOL USE ONLY		TOTAL PAGE	
Account No.	Total	State Of County	
		I	
		declare and affirm under the penalties of perjury that this claim	
		has been examined by me, and to the best of my knowledge	
		and belief, is in all things true and correct.	
		X	
		Owner	
		Title	
SS# or Federal ID			
WARRANT NO.			
RCAS Form 03-22		Signature of Appropriate School Official	

CERTIFICATE OF FINAL COMPLETION

PROJECT	_____	ENGINEER / ARCHITECT	_____
	_____		_____
	_____		_____
OWNER	_____	CONTRACTOR:	_____
	_____		_____
	_____		_____

This Certificate of Final Completion applies to all Work under the Contract Documents, or to the following specified parts thereof:

The Work to which this Certificate applies has been inspected by authorized representatives of the OWNER and the CONTRACTOR, and that Work is hereby declared to be complete in accordance with the Contract Documents on _____, 20____.

Executed by Owner or Engineer/Architect on _____, 20____.

(Owner or Owner's Representative)

Accepted by CONTRACTOR

Accepted by OWNER

By _____

By _____

Title _____

Title _____

Acceptance Date _____

Acceptance Date _____

INSTRUCTIONS FOR USE OF CHANGE ORDER COST SUMMARY FORM

MATERIAL AND LABOR QUOTATIONS

The Owner shall require actual quotations for material and/or labor from the respective Contractors, Subcontractors, or suppliers. The material and labor prices allowed will be at their net cost when computing the amount of the Change Order. These quotations will appear on the breakdown prepared by the Contractor and attached to their proposal for all Change Orders.

CHANGE ORDER SUBMITTAL PROCESS

The Contractor will prepare the Change Order proposal as directed by these procedures and present it to the Architect/Engineer. The Architect/Engineer will review the Change Order proposal to insure its compliance with the procedures outlined above and submit it to the Owner. The Owner will review the proposal and, if deemed acceptable, will sign the Change Order proposal and forward it to the Architect/Engineer. The Architect/Engineer will prepare three (3) copies of the final Change Order for signature by the Contractor, Architect/Engineer, and the Owner.

CHANGE ORDER COST SUMMARY FORM

The Contractor shall use the Change Order Cost Summary Form provided by the Owner and made part of this document by reference. A copy of the form is to be submitted by each applicable subcontractor and by the General Contractor.

CHANGE ORDER MARK-UP

On this project the General Contractor's Change Order mark-up shall be limited to 8% for the total of overhead and profit. Subcontractor mark-up shall be limited to 6% for the total of overhead and profit. This overhead and profit mark-up is limited to the General Contractor and the first tier subcontractors. No additional mark-up is allowed on additional tiers of subcontractors.

In the case of a Change Order that results in a net decrease in the Contract Sum, the Contractor and his subcontractors need only credit back actual cost savings, including savings on bonds and insurance. Overhead and profit mark-up need not be credited back.

Instructions for use of the Change Order Cost Summary Form:

Subcontractors: Enter total material cost on Line 8, sales or use tax on Line 9, and total labor cost on Line 10. Enter equipment costs on Line 11 and enter the sum of lines 7 through 11 on line 12. Enter the overhead and profit mark-up on line 13 if you are a 1st tier subcontractor. (sub-subcontractors are not allowed additional mark-up) If there are any sub-subcontractors, their costs would be entered on Lines 1 through 6 and an additional form submitted for each. Lines 14 (bond) and 15 (excise tax) apply only to the General Contractor. Enter the total on Line 16 and also enter this number on Lines 1 through 6 on the General Contractor's form. Attach cost breakdowns for material and labor costs as required on the Cost Summary form.

General Contractor: Enter costs for each subcontractor on Lines 1 through 6 and subtotal on Line 7. Identify each subcontractor in the space provided. Enter General Contractor materials, sales or use tax, labor and equipment costs on Lines 8, 9, 10, and 11 respectively. Enter the sum of lines 7 through 11 on line 12.

Apply overhead and profit markup on Line 13. Enter bond cost on Line 14 and indicate percentage for bond cost in space provided. Enter excise tax on Line 15 and total of proposal on Line 16. Attach cost breakdowns for materials, labor, and equipment per instructions printed on the Cost Summary Form. The General Contractor is responsible for verifying that all subcontractor items are complete and accurate before submitting the final proposal to the Architect.

NOTE: Cost breakdown requirements may not be rigidly enforced when the total of the proposal is less than \$1,000.00. Cost Summary Forms are always required.

END OF DOCUMENT

GENERAL CONTRACTOR OR SUBCONTRACTOR
CHANGE ORDER COST SUMMARY FORM

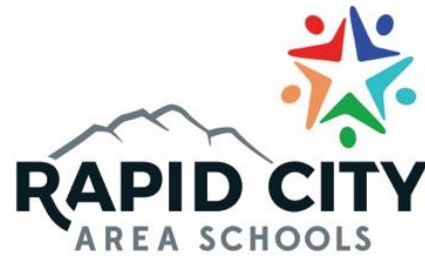
Project: _____

Contractor: _____

Request For Proposal #:

Date: _____

1.	Subcontractor	(_____) name or trade	\$ _____	attach form
2.	Subcontractor	(_____) name or trade	\$ _____	attach form
3.	Subcontractor	(_____) name or trade	\$ _____	attach form
4.	Subcontractor	(_____) name or trade	\$ _____	attach form
5.	Subcontractor	(_____) name or trade	\$ _____	attach form
6.	Subcontractor	(_____) name or trade	\$ _____	attach form
7.	Subtotal.....		\$ _____	
8.	Materials.....		\$ _____	attach breakdown *
9.	Sales Tax/Use Tax (____%).....		\$ _____	
10.	Labor.....		\$ _____	attach breakdown *
11.	Equipment.....		\$ _____	attach breakdown *
12.	SUBTOTAL.....		\$ _____	sum of lines 7 thru 11
13.	Overhead and Profit (See Instructions)..... (no mark-up required for net deduct)		\$ _____	6% of line 12 (Sub.) 8% of line 12 (G.C.)
14.	G.C. only - Bond (____%).....		\$ _____	____% of lines 12 + 13
15.	G.C. only - Excise Tax (2.04%).....		\$ _____	2.04% of lines 12 thru 14
16.	TOTAL PROPOSAL.....		\$ _____	Total lines 12 thru 15



RAPID CITY AREA SCHOOL DISTRICT 51/4
Facilities Services
625 9th Street, Suite 214
Rapid City, SD 57701
605-394-4105

DATE

NOTICE OF AWARD: PROJECT NAME

You may consider this as your notice of the Board of Education's action at the Board Meeting of _____
_____ to accept your proposal for the above referenced project's base bid of \$_____
_____.

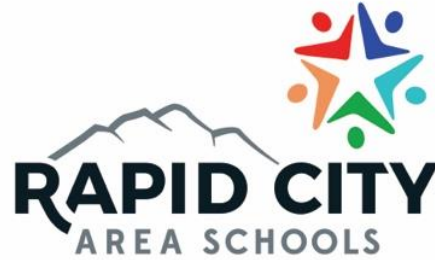
We are requesting that you submit a Performance Bond and a Payment Bond to replace your present Bid Bond and an Insurance Certificate as specified in bid documents. Please submit these bonds in the amount of \$_____. All orders for this bid will be retained in this office until the bonds and certificate of insurance are secured.

If you have any questions, please feel free to call me at 605-394-4105.

Sincerely,

Jade Clement
Construction & Planning Manager
Rapid City Area Schools District 51/4

cc: Architect/Engineer



RAPID CITY AREA SCHOOL DISTRICT 51/4

Facilities Services
625 9th Street, Suite 214
Rapid City, SD 57701
605-394-4105

DATE

NOTICE TO PROCEED: PROJECT NAME

Owner hereby notifies Contractor that the contract times under the above contract will commence to run on _____, 2018.

On that date, Contractor shall start performing its obligations under the Contract Documents. No work shall be done at the site prior to such date.

In accordance with the agreement, the date of substantial completion is _____ for _____

_____.

Before starting any work at the site, contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Sincerely,

Jade Clement
Construction & Planning Manager
Rapid City Area Schools District 51/4

cc: Architect / Engineer

RAPID CITY AREA SCHOOL DISTRICT

SAFETY AND SECURITY FORM

PROJECT NAME _____

LOCATION _____

ADDRESS _____

PROJECT CONTRACT DATES _____

To ensure that the Rapid City Area School District maintains a safe and secure environment, the following items must be addressed:

- Contractors (General and Subcontractors) must follow all Rapid City Area School District Policies pertaining to safety, security, and building access.
- Contractors may be required to provide background checks for staff at the request of RCASD. Contractors shall not assign any personnel to work on school grounds who have been convicted of sexual crimes or violent felonies involving harm to others. Felony convictions related to violent crimes within the past ten (10) years shall disqualify individuals from working on RCASD property unless an exception is granted by the district. RCASD reserves the right to request the removal of any contractor personnel deemed unsuitable for working on school property.
- All Rapid City Area School District Grounds are Alcohol, Drug and Tobacco-Free (including vaping). The Contractor or its work forces shall not use prohibited substances on RCASD properties. The grounds are defined as within the property boundary. Contractors or subcontractors observed to be in violation of this policy shall be asked to refrain from the behavior. Repeated violations of this policy will be handled on a case-by-case basis by an authorized district official and may result in a directive to leave school property.
- Attire for all laborers (General and Subcontractor) shall be appropriate for elementary school-aged children. RCASD reserves the right to ask that offensive clothing be changed, covered or the person wearing the offensive clothing leave the premises.
- Language shall be appropriate for elementary school aged children. No profanity or abusive language or actions will be tolerated.
- The contractor shall be responsible for securing their staging grounds and ensuring that there is no student or public access.
- The contractor shall take measures to ensure student safety around all construction work areas.
- Work hours are as follows unless approved by RCASD:
 - During School Year: 7am until 5 pm
 - Summer Recess: 6:30am until 6:00 pm
- Check in policy: Contractors and subcontractors shall follow RCASD Visitor policies for notifying the school's administrative office when arriving on the school grounds when school is in session.

Accepted by General Contractor and all Subcontractors

BY	
TITLE	
DATE	



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER First Western Insurance PO Box 3075 Rapid City, SD 57709-3075	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
INSURED Sample Certificate	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	INSURER A: A.M. Best Rated A or Better	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
INSURER F:		

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PRO-JECT ☐ LOC	☒ ☒	123456789	01/01/2013	01/01/2014	EACH OCCURRENCE \$ 1000000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50000 MED EXP (Any one person) \$ 5000 PERSONAL & ADV INJURY \$ 1000000 GENERAL AGGREGATE \$ 2000000 PRODUCTS - COMP/OP AGG \$ 2000000 \$
A	AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☒ HIRED AUTOS ☐ SCHEDULED AUTOS ☒ NON-OWNED AUTOS	☒ ☒	123456789	01/01/2013	01/01/2014	COMBINED SINGLE LIMIT (Ea accident) \$ 1000000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	UMBRELLA LIAB ☒ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☐ RETENTION \$	☒ ☒	123456789	01/01/2013	01/01/2014	EACH OCCURRENCE \$ 2000000 AGGREGATE \$ 2000000 \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	☐ Y ☒ N N/A	123456789	01/01/2013	01/01/2014	☒ WC STATU-TORY LIMITS ☐ OTH-ER E.L. EACH ACCIDENT \$ 500000 E.L. DISEASE - EA EMPLOYEE \$ 500000 E.L. DISEASE - POLICY LIMIT \$ 500000
		☐ ☐ ☐				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Rapid City Area School District 51-4 is additional insured under the auto liability and general liability including completed operations Form CG2037 (or comparable) and coverage is on a primary and non-contributory basis. Waiver of Subrogation applies to general liability and auto liability. The certificate holder named below will be given 30 day written notice of cancellation.

CERTIFICATE HOLDER Rapid City Area School District 51-4 300 6th Street Rapid City, SD 57701	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE

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ACORD 25 (2010/05)

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POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 37 07 04

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location And Description Of Completed Operations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 24 04 05 09

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph 8. Transfer Of
Rights Of Recovery Against Others To Us of Section
IV – Conditions:

We waive any right of recovery we may have against
the person or organization shown in the Schedule above
because of payments we make for injury or damage
arising out of your ongoing operations or "your work"
done under a contract with that person or organization
and included in the "products-completed operations
hazard". This waiver applies only to the person or
organization shown in the Schedule above.

RAPID CITY AREA SCHOOL DISTRICT 51-4
300 SIXTH STREET
RAPID CITY, SD 57701

SHOP DRAWING TRANSMITTAL

TRANSMITTAL NO.

1st Submittal
Resubmittal
Previous No.

DATE: _____

PROJECT: _____

CONTRACTOR: _____

PROJECT #: _____

Spec No.	Drawing Sheet	# of Transmit	Description

Contractor Review Stamp:

Engineer Review Stamp:

Subcontractor's Review Stamp:

I certify that the above submitted items have been
and are correct and in strict conformance with the Bid
except as otherwise stated.

Signature:

Notes/Comments:

WAIVER OF LIEN

DATE: _____ PO# _____

PROJECT: _____

LOCATION: _____

It is hereby requested that the Rapid City Area School District No. 51-4 pay to

_____ in full/partial payment for _____

_____ performed at or furnished to the School

(state nature of work performed and material furnished)

District property located at _____

The undersigned represents that the status of this contract is as follows:

1. Original Contract Sum	\$ _____	1. Total Completed to Date	\$ _____
2. Change Orders		2. Total <u>0</u> % Retainage	\$ _____
a. Total Additions	\$ _____	Total Earned Less	
b. Total Deductions	\$ _____	3. Retainage	\$ _____
3. Total Contract to Date	\$ _____	4. Less Previous Payments	\$ _____
		5. This Payment	\$ _____
		6. Payments in Process	\$ _____
		7. Balance Owing on Contract	\$ _____

The undersigned, being duly authorized to do so, acknowledges the accuracy of the above information and certifies to the following:

1. That all labor and material costs incurred in the performance of the undersigned's work on this project to and including the _____ day of _____, 20____, have been paid and that no other materials, suppliers or laborers performing work on supplying materials for the undersigned have any claim or lien right as of the above date.

2. That the undersigned has read SDCL 44-9-13 entitled MISAPPROPRIATION OF FUNDS BY CONTRACTOR, SUBCONTRACTOR OR SUPPLIER-THEFT, and understands the meaning of that statute.

3. That all labor performed and/or materials supplied by the undersigned in the performance of his/her/its work on the project have been in strict accordance with the plans and specifications for the construction of the project.

4. That the undersigned, **upon receipt of the payment of** \$ _____ for partial/full payment for labor performed or material furnished to the above premises to and including the _____ day of _____, 20____, hereby waives any rights to file mechanic's liens and waives all claims to which he might be entitled under Title 5 and Title 44 of SDCL and the Common Law of the State of South Dakota for all materials, supplies and services supplied to date.

FIRM _____ ADDRESS _____

By _____

TITLE _____ PHONE _____

SSN OR FED ID# _____ DATE _____

NOTE: This waiver must be signed by the owner, officer, or signatory authorized in writing by the owner or an officer of the firm to be paid.

READ THE FOLLOWING STATUTE CAREFULLY BEFORE SIGNING WAIVER OF LIEN:

SDCL 44-9-13 MISAPPROPRIATION OF FUNDS BY CONTRACTOR, SUBCONTRACTOR OR SUPPLIER-THEFT. Any contractor, subcontractor or supplier on any improvement of real estate, mines or public utilities within the purview of this chapter who knowingly uses more than five hundred dollars of the proceeds of any payment made to him on account of such improvement by the owner of such real estate or person having the improvement made, for any other purpose than the payment for labor, skill, materials, and machinery contributed to such improvement while any account for such labor, skill, material, or machinery furnished for such improvement up to the time of such payment remains unpaid and due and owing under the credit terms arranged is guilty of theft of the proceeds of such payment. It is not a violation of this section to withhold funds from a contractor, subcontractor or supplier pending the completion and final approval of this work or product.

RAPID CITY AREA SCHOOL DISTRICT
GENERAL CONTRACTOR WARRANTY FORM

_____, here-in-after the CONTRACTOR, does expressly affirm, promise and guarantee the Work, **[INSERT PROJECT NAME]**, as described in the Bid Documents, including materials, equipment and workmanship for a period of **two (2)** years from the date the Work was accepted by the Certificate of Final Completion.

CONTRACTOR further agrees in the event any or all of the Work fails to conform to the Bid Documents or require any maintenance, rebuilding, construction or reconstruction to keep the Work in conformity with the bid Documents or to bring the Work up to the Bid Document Specifications the CONTRACTOR will be responsible for all necessary costs whatsoever.

Rapid City Area School District (RCASD) will written notice (email can constitute written notice) to the CONTRACTOR stating the cause or kind of non-conformity of the defective work. Should the contractor fail to correct defective work within 60 days after receiving written notice, RCASD, at their option, correct defects and charge Subcontractor costs for such correction. Contractor agrees to pay such charges upon demand.

Dated this _____ day of _____, 20__.

CONTRACTOR

BY _____
Signature

Printed Name

TITLE _____

NOTARY CERTIFICATION

STATE OF SOUTH DAKOTA

COUNTY OF PENNINGTON

The foregoing instrument was acknowledged before
me by

_____ this ___ day of _____, 20__.

Notary Public

---SEAL---

Signature

Printed Name

My Commission Expires: _____

HOT WORK PERMIT

Seek an alternative/safer method if possible!

Before initiating hot work, ensure precautions are in place as required by NFPA 51B and ANSI Z49.1.

Make sure an appropriate fire extinguisher is readily available.

This Hot Work Permit is required for any operation involving open flame or producing heat and/or sparks. This work includes, but is not limited to, welding, brazing, cutting, grinding, soldering, thawing pipe, torch-applied roofing, or chemical welding.

Date _____	Hot work by ☐ employee ☐ contractor
Location/Building and floor _____ _____	Name (print) and signature of person doing hot work _____
Work to be done _____ _____	I verify that the above location has been examined, the precautions marked on the checklist below have been taken, and permission is granted for this work.
Time started _____ Time completed _____	Name (print) and signature of permit-authorizing individual (PAI) _____
THIS PERMIT IS GOOD FOR ONE DAY ONLY	

- ☐ Available sprinklers, hose streams, and extinguishers are in service and operable.
- ☐ Hot work equipment is in good working condition in accordance with manufacturer's specifications.
- ☐ Special permission obtained to conduct hot work on metal vessels or piping lined with rubber or plastic.

Requirements within 35 ft (11 m) of hot work

- ☐ Flammable liquid, dust, lint, and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.
- ☐ Floors swept clean and trash removed.
- ☐ Combustible floors wet down or covered with damp sand or fire-resistive/noncombustible materials or equivalent.
- ☐ Personnel protected from electrical shock when floors are wet.
- ☐ Other combustible storage material removed or covered with listed or approved materials (welding pads, blankets, or curtains; fire-resistive tarpaulins), metal shields, or noncombustible materials.
- ☐ All wall and floor openings covered.
- ☐ Ducts and conveyors that might carry sparks to distant combustible material covered, protected, or shut down.

Requirements for hot work on walls, ceilings, or roofs

- ☐ Construction is noncombustible and without combustible coverings or insulation.
- ☐ Combustible material on other side of walls, ceilings, or roofs is moved away.

Requirements for hot work on enclosed equipment

- ☐ Enclosed equipment is cleaned of all combustibles.
- ☐ Containers are purged of flammable liquid/vapor.
- ☐ Pressurized vessels, piping, and equipment removed from service, isolated, and vented.

Requirements for hot work fire watch and fire monitoring

- ☐ Fire watch is provided during and for a minimum of 1 hour after hot work, including any break activity.
- ☐ Fire watch is provided with suitable extinguishers and, where practical, a charged small hose.
- ☐ Fire watch is trained in use of equipment and in sounding alarm.
- ☐ Fire watch can be required in adjoining areas, above and below.
- ☐ Yes ☐ No Per the PAI/fire watch, monitoring of hot work area has been extended beyond 1 hour.



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Rapid Valley Elementary School Addition and Remodel
2601 Covington St.
Rapid City, SD 57703

THE OWNER:

(Name, legal status and address)

Rapid City Area Schools
625 9th St
Rapid City, SD 57701

THE ARCHITECT:

(Name, legal status and address)

Chamberlin Architects
725 St. Joseph, Ste. B1
Rapid City, SD 57701

ADDITIONS AND DELETIONS:

The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or

contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor

has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any

existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.3.1 The Contractor shall cooperate with Work of Owner and others.

- A. The Contract amount shall be equitably adjusted if coordination affects the Schedule of the Work or Responsibility for Performance.
- A. Review of the Contract Documents does not mean that the Contractor is responsible to find errors.
- A. Subject to the limitations and requirements of other Contract Documents, plan errors may result in additional compensation to the Contractor.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with

Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

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

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall

immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

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

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement

of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not

apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, 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. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor’s control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contractor shall be entitled to an equitable adjustment in the Contract Time and the Contract Sum. If delays are due to any of the foregoing should occur; such as Force Majeure or Acts of God - such as, but not limited to, Wars, Tariffs, Plagues, Epidemics, Pandemics, or Strikes - the Architect, the Owner and the Contractor will meet in an effort to discuss any extension of the Contract Time and an adjustment to the Contract Sum. If the Owner and the Contractor can agree on the extension of the Contract Time and an adjustment to the Contract Sum, the Owner and the Contractor will execute a Change Order confirming the same. If the Owner and the Contractor cannot agree upon an extension of the Contract Time and an adjustment to the Contract Sum, the Contractor may make a claim as provided in Article 15.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data

to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously

paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written

acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior

to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

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

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's

expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and

not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial

Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive

their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Additions and Deletions Report for AIA® Document A201® – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 09:54:30 MST on 12/08/2025.

Changes to original AIA text

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8.3.1, 15.3.2, 15.4-

PAGE 7

3.14, 6.2.5-

PAGE 15

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§ 3.2.3.1 The Contractor shall cooperate with Work of Owner and others.

- A. The Contract amount shall be equitably adjustment if coordination affects the Schedule of the Work or Responsibility for Performance.
- A. Review of the Contract Documents does not mean that the Constructor is responsible to find errors.
- A. Subject to the limitations and requirements of other Contract Documents, plan errors may result in additional compensation to the Contractor.

PAGE 30

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the the Contractor shall be entitled to an equitable adjustment in the Contract Time shall be extended for such reasonable time as the Architect may determine and the Contract Sum. If delays are due to any of the foregoing should occur: such as Force Majeure or Acts of God - such as, but not limited to, Wars, Tariffs, Plagues, Epidemics, Pandemics, or Strikes - the Architect, the Owner and the Contractor will meet in an effort to discuss any extension of the Contract Time and an adjustment to the Contract Sum. If the Owner and the Contractor can agree on the extension of the Contract Time and an adjustment to the Contract Sum, the Owner and the Contractor will execute a Change Order confirming the same. If the Owner and the Contractor cannot agree upon an extension of the Contract Time and an adjustment to

the Contract Sum, the Contractor may make a claim as provided in Article 15.

Variable Information

PAGE 1

Rapid Valley Elementary School Addition and Remodel

2601 Covington St.
Rapid City, SD 57703

Rapid City Area Schools
625 9th St
Rapid City, SD 57701

Chamberlin Architects

725 St. Joseph, Ste. B1

Rapid City, SD 57701

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 09:54:30 MST on 12/08/2025 under Order No. 20250134008 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ - 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)



AIA[®]

Document A312TM – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONSTRUCTION CONTRACT

Date:

Amount:

Description:

(Name and location)

BOND

Date:

(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

SURETY

Company: *(Corporate Seal)*

Signature: _____

Name

and Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature: _____

Name

and Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

**AIA**[®]**Document A312™ – 2010****Performance Bond****CONTRACTOR:***(Name, legal status and address)***SURETY:***(Name, legal status and principal place of business)***OWNER:***(Name, legal status and address)*

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONSTRUCTION CONTRACT

Date:

Amount:

Description:

*(Name and location)***BOND**

Date:

(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16**CONTRACTOR AS PRINCIPAL**Company: *(Corporate Seal)***SURETY**Company: *(Corporate Seal)*

Signature: _____ Signature: _____

Name _____ Name _____

and Title: _____ and Title: _____

*(Any additional signatures appear on the last page of this Performance Bond.)**(FOR INFORMATION ONLY — Name, address and telephone)***AGENT or BROKER:****OWNER'S REPRESENTATIVE:***(Architect, Engineer or other party:)*

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

**AIA**[®]**Document G701[™] – 2017****Change Order****PROJECT:** *(name and address)***CONTRACT INFORMATION:**

Contract For:

Date:

CHANGE ORDER INFORMATION:

Change Order Number:

Date:

OWNER: *(name and address)***ARCHITECT:** *(name and address)***CONTRACTOR:** *(name and address)***THE CONTRACT IS CHANGED AS FOLLOWS:***(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*

The original (Contract Sum) (Guaranteed Maximum Price) was

\$

The net change by previously authorized Change Orders

\$

The (Contract Sum) (Guaranteed Maximum Price) prior to this Change Order was

\$

The (Contract Sum) (Guaranteed Maximum Price) will be (increased) (decreased) (unchanged) by this Change Order in the amount of

\$

The new (Contract Sum) (Guaranteed Maximum Price), including this Change Order, will be

\$

The Contract Time will be (increased) (decreased) (unchanged) by

() days.

The new date of Substantial Completion will be

*NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.***NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.****ARCHITECT** *(Firm name)***CONTRACTOR** *(Firm name)***OWNER** *(Firm name)***SIGNATURE****SIGNATURE****SIGNATURE****PRINTED NAME AND TITLE****PRINTED NAME AND TITLE****PRINTED NAME AND TITLE****DATE****DATE****DATE**

Application and Certificate for Payment

TO OWNER:	PROJECT:	APPLICATION NO:	Distribution to:
		PERIOD TO:	OWNER ☐
FROM CONTRACTOR:	VIA ARCHITECT:	CONTRACT FOR:	ARCHITECT ☐
		CONTRACT DATE:	CONTRACTOR ☐
		PROJECT NOS:	FIELD ☐
			OTHER ☐

CONTRACTOR'S APPLICATION FOR PAYMENT
Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	\$
2. NET CHANGE BY CHANGE ORDERS	\$
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$
5. RETAINAGE:	
a. _____ % of Completed Work (Column D + E on G703)	\$
b. _____ % of Stored Material (Column F on G703)	\$
Total Retainage (Lines 5a + 5b, or Total in Column I of G703)	

6. TOTAL EARNED LESS RETAINAGE	\$
(Line 4 minus Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$
(Line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE	\$
9. BALANCE TO FINISH, INCLUDING RETAINAGE	\$
(Line 3 minus Line 6)	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$	\$
Total approved this month	\$	\$
TOTAL	\$	\$
NET CHANGES by Change Order	\$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:	By:	Date:
	State of:	
	County of:	
	Subscribed and sworn to before me this	day of
	Notary Public:	
	My commission expires:	

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED	\$
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)	

ARCHITECT:	Date:
By:	
This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.	

Continuation Sheet, Contractor-Subcontractor Version

AIA Document G702™, Application and Certification for Payment; G702™CMa-1992, Application and Certificate for Payment; or G732™-2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Subcontractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

[illegible]



AIA[®] Document G704[™] – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:
Date:

CERTIFICATE INFORMATION:

Certificate Number:
Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.

(Identify the Work, or portion thereof, that is substantially complete.)

ARCHITECT *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE OF SUBSTANTIAL COMPLETION

WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:

(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within () days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE

OWNER *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE



AIA[®] Document G714[™] – 2017

Construction Change Directive

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:

Date:

CCD INFORMATION:

Directive Number:

Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

The Contractor is hereby directed to make the following change(s) in this Contract:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits.)

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

☐ Lump Sum decrease of \$0.00

☐ Unit Price of \$ per

☐ Cost, as defined below, plus the following fee:
(Insert a definition of, or method for determining, cost)

☐ As follows:

2. The Contract Time is proposed to . The proposed adjustment, if any, is .

NOTE: The Owner, Architect and Contractor should execute a Change Order to supersede this Construction Change Directive to the extent they agree upon adjustments to the Contract Sum, Contract Time, or Guaranteed Maximum price for the change(s) described herein.

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

ARCHITECT *(Firm name)*

OWNER *(Firm name)*

CONTRACTOR *(Firm name)*

SIGNATURE

SIGNATURE

SIGNATURE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

DATE

DATE

DATE

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

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

1.3 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Extended Warranties in Early Procurement Package.

1. Base Bid: Provide standard 2-year warranty for LABOR only of the following, previously acquired plumbing, mechanical, and electrical equipment. Standard warranty period tentative timeframe: August 2026 – August 2028.
 - a. Bid Package #22A:
 - 1) B-4 – Condensing Boiler & BCP-4 – Boiler Circulating Pump for B-4
 - 2) HWP-1 – Secondary Heating Water Pump and peripherals & HWP-2 - Secondary Heating Water Pump and peripherals
 - b. Bid Package #23A:
 - 1) RTU-1 – Packaged Rooftop Air Handling unit, curb
 - 2) SF-1 – Fan Array Panel, Disconnect, Indoor rated controller, Blank-Off Plate & RF-1 - Fan Array Panel, Disconnect, Indoor rated controller, Blank-Off Plate
 - 3) HC-1 – Loose Hot Water Heating coil for AHU-1 Rebuild & CC-1 – Loose Chilled Water Cooling coil for AHU-1 Rebuild
 - c. Bid Package #26A:
 - 1) MH – I-Line panelboard, including Main Breaker, Sub-Breakers, GFP, Energy Reduction, and Injection Testing
 - 2) ML – I-Line panelboard, including Main Breaker and Sub-Breakers
 - d. Standard 2-year warranty for MATERIAL only of the above equipment is supplied by others.
2. Alternate: Provide additional 1-year extended warranty for LABOR only of the following, previously acquired plumbing, mechanical, and electrical equipment. Extended warranty period tentative timeframe: August 2028 – August 2029.
 - a. Bid Package #22A:
 - 1) B-4 – Condensing Boiler & BCP-4 – Boiler Circulating Pump for B-4
 - 2) HWP-1 – Secondary Heating Water Pump and peripherals & HWP-2 - Secondary Heating Water Pump and peripherals
 - b. Bid Package #23A:
 - 1) RTU-1 – Packaged Rooftop Air Handling unit, curb
 - 2) SF-1 – Fan Array Panel, Disconnect, Indoor rated controller, Blank-Off Plate & RF-1 - Fan Array Panel, Disconnect, Indoor rated controller, Blank-Off Plate
 - 3) HC-1 – Loose Hot Water Heating coil for AHU-1 Rebuild & CC-1 – Loose Chilled Water Cooling coil for AHU-1 Rebuild
 - c. Bid Package #26A:
 - 1) MH – I-Line panelboard, including Main Breaker, Sub-Breakers, GFP, Energy Reduction, and Injection Testing
 - 2) ML – I-Line panelboard, including Main Breaker and Sub-Breakers
 - d. Additional 1-year extended warranty for MATERIAL only of the above equipment is supplied by others.

B. Alternate No. 2: Entrance Canopy.

1. Base Bid: Construct Entrance Canopy
 2. Alternate (Deduct): Do not construct entrance canopy.
- C. Alternate No. 3A: Access Controls/Entry Audio-Visual (A-V) & Duress Security System.
1. Base Bid: Provide rough-ins for Access Controls/Entry A-V & Duress Equipment and raceways for associated wiring. Coordinate with JCBS to confirm routings/raceways details. Remove, store, safeguard, and salvage existing to JCBS as base bid.
 2. Alternate: Provide JCBS Access Controls Equipment and associated wiring, including all devices, programming, commissioning and training.
- D. Alternate No. 3B: Closed Circuit Television (CCTV) Security System & Security Speakers.
1. Base Bid: Provide rough-ins for CCTV Equipment and CAT 6 LAN cabling for CCTV Cameras and Security Speakers. Provide raceways for all associated wiring. Coordinate with JCBS to confirm routings/raceways details. Remove, store, safeguard, and salvage existing to JCBS as base bid.
 2. Alternate: Provide JCBS CCTV Equipment and cameras including all devices, programming, commissioning and training.
- E. Alternate No. 4A: Controls by Automated Logic as provided through Climate Control Systems.
1. Base Bid: Provide mechanical system with no controls other than integrated controls scheduled or specified for mechanical equipment.
 2. Alternate: Provide Direct Digital Control System as specified in mechanical specification sections 230900, 230910, and 230990 installed by Climate Control Systems using Automated Logic Controls.
- F. Alternate No. 4B: Controls by Johnson Controls Inc. provided through the JCI Rapid City office.
1. Base Bid: Provide mechanical system with no controls other than integrated controls scheduled or specified for mechanical equipment.
 2. Alternate: Provide Direct Digital Control System as specified in mechanical specification sections 230900, 230910, and 230990 installed by JCI Rapid City using Johnson Control equipment.
- G. Alternate No. 4C: Controls by Siemens Building Technologies, Inc. by G&R Controls.
1. Base Bid: Provide mechanical system with no controls other than integrated controls scheduled or specified for mechanical equipment.
 2. Alternate: Provide Direct Digital Control System as specified in mechanical specification sections 230900, 230910, and 230990 installed and serviced by G&R Controls using Siemens Building Technologies, Inc. equipment.

END OF SECTION 012300

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

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

1.2 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS

- A. Engineering Survey: Submit engineering survey of condition of building.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control and noise control when portions of building are occupied by Owner. Indicate proposed locations and construction of barriers.
- C. Schedule of selective demolition activities with starting and ending dates for each activity.
- D. Predemolition photographs or video.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.4 CLOSEOUT SUBMITTALS

- A. Inventory of items that have been removed and salvaged.

1.5 QUALITY ASSURANCE

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

1.6 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. Furniture and fixtures that are intended to be salvaged for future use.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.
- G. Arrange selective demolition schedule so as not to interfere with Owner's operations.

1.7 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. If questions arise about demolition of specific building components, engage the structural engineer of record to perform an evaluation to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

- g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 4. Maintain fire watch during and for at least one hour after flame-cutting operations.
 - 5. Owner's open flame cutting protocol shall supersede this specification.
 - 6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 7. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

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

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

3.6 CLEANING

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 03 1000 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 05 1200 - Structural Steel Framing: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
- B. ACI PRC-347 - Guide to Formwork for Concrete.
- C. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials.
- D. ACI SPEC-301 - Specifications for Concrete Construction.

PART 2 – PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
- D. Comply with relevant portions of ACI CODE-318, ACI PRC-347, and ACI SPEC-301.

2.02 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
- C. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

3.03 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.04 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

3.05 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI SPEC-117, unless otherwise indicated.

3.06 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

END OF SECTION 03 1000

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SECTION 03 2000 CONCRETE REINFORCING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 03 4500 - Precast Architectural Concrete: Reinforcement for precast concrete panels.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
- B. ACI MNL-66 - ACI Detailing Manual.
- C. ACI SPEC-301 - Specifications for Concrete Construction.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- E. CRSI (DA4) - Manual of Standard Practice.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI MNL-66 Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301.

PART 2 – PRODUCT

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Plain billet-steel bars.
- B. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16-gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted.

PART 3 – EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcing as follows:

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4000 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION 03 2000

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete for composite floor construction.
- B. Floors and slabs on grade.
- C. Concrete foundation walls and footings.
- D. Concrete foundations and anchor bolts for pre-engineered building.
- E. Joint devices associated with concrete work.
- F. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes.
- G. Concrete curing.
- H. Underslab vapor retarders.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
- B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide.
- C. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction.
- D. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- E. ACI PRC-305 - Guide to Hot Weather Concreting.
- F. ACI PRC-306 - Guide to Cold Weather Concreting.
- G. ACI PRC-308 - Guide to External Curing of Concrete.
- H. ACI SPEC-301 - Specifications for Concrete Construction.

- I. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- J. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- K. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- L. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
- M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
- N. ASTM C150/C150M - Standard Specification for Portland Cement.
- O. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
- P. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete.
- Q. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
- R. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
- S. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- T. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
- U. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.
- V. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete.
- W. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
- X. ASTM C1260 - Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method).
- Y. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- Z. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.
- AA. ASTM E1155/E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.
- BB. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

CC. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design for each mix design.
 - 1. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.
- D. Samples: Submit samples of underslab vapor retarder to be used.
- E. Material Test Reports: For the following, from qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates.
- F. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI 305R when concreting during hot weather. Do not place concrete when air temperatures are at or above 95 deg F at time of placement or expected to occur within 24 hours after placement of concrete. Do not place any flatwork concrete (slabs on grade, elevated slabs on deck, concrete toppings) when wind speed exceeds 20 mph at time of casting or anticipated to occur within 24 hours after placement of concrete. Do not place concrete on elevated decks when the total of the temperature (F) plus the wind speed (W mph) divided by 2 exceeds 95 $[(T + W/2) > 95]$ at time of placement or expected to occur within 24 hours after placement of concrete.
- C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

PART 2 - PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT MATERIALS

CAST-IN-PLACE CONCRETE

- A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, IL/IIL Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. Acquire aggregates for entire project from same source.
 - 2. Comply with ACI 302.1 with regard alkali reactivity requirements. See also structural general notes on plans.
- C. Fly Ash: ASTM C618, Class F.
- D. Calcined Pozzolan: ASTM C618, Class N.
- E. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.
- F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- G. Early Age Crack-Control Fiber Reinforcement: ASTM C1116/C1116M.
 - 1. Fiber Type: Alkali-resistant synthetic.
 - 2. Fiber Length: 0.75 inch, nominal.

2.04 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- D. Accelerating Admixture: ASTM C494/C494M Type C.
- E. Retarding Admixture: ASTM C494/C494M Type B.
- F. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder:
 - 1. Maintain permeance of less than 0.01 Perms [grains/(ft²*hr*inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).

2. Other performance criteria:
3. Strength: ASTM E1745, Class A;
 - a. Thickness: 15 mils minimum
4. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1.
5. Warranty: (a) compliance with the designated ASTM E1745 classification, and (b) no manufacturing defects in the product for, at least, the Life of the Building.
6. Provide one of the following products:
 - a. Basis of Design: Stego Wrap Vapor Barrier (15 mil) by Stego Industries LLC., (877) 464-7834, www.stegoindustries.com
 - b. Approved Alternate: Vaporguard by Reef Industries, (713) 507-4250.
 - c. Approved Alternate: Moistop Ultra 15 by Fortifiber, (800) 773-4777. www.fortifiber.com/product/moistop-ultra

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
 1. Complying with ASTM C881/C881M and of Type required for specific application.
- C. Waterstops: Hydrophylic rubber waterstop as supplied by Greenstreak Hydrotite, or approved equal.
- D. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch-deep sealant pocket after removal.

2.07 CURING MATERIALS

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
- B. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.
- C. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
- B. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.
- C. Fiber Reinforcement: Add to mix at rate of 1.5 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.

2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 2. Use latex bonding agent only for non-load-bearing applications.
- B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI PRC-304.
- B. Notify Engineer not less than 24 hours prior to commencement of placement operations.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, inserts, waterstops, and embedded parts will not be disturbed during concrete placement.

- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified in the structural notes

3.04 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 8 hours after placing; use 3/16-inch-thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for compliance with specified tolerances.
- B. Maximum Variation of Surface Flatness:
 - 1. Exposed Concrete Floors: 1/4 inch in 10 feet.
 - 2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
 - 3. Under Carpeting: 1/4 inch in 10 feet.
- C. Correct the slab surface if tolerances are less than specified.
- D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

- A. See structural notes for additional requirements
- B. Repair surface defects, including tie holes, immediately after removing formwork.
- C. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- D. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height.

1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
- E. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI PRC-302.1; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.
 2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI PRC-302.1; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
 3. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.
- F. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.07 CURING AND PROTECTION

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
 2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 3. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 50 cubic yards or less of each class of concrete placed.
- D. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- F. Perform one air content test for each set of test cylinders taken, following procedures of ASTM C231.
- G. Perform plastic unit weight test for each set of test cylinders taken.
- H. Record concrete temperature and ambient temperatures at time of testing.

3.09 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Engineer and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Engineer. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION 03 3000

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SECTION 03 4500 - PRECAST ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Architectural precast concrete wall panels.
- B. Architectural precast concrete accessories.
- C. Supports, anchors, and attachments.
- D. Grouting under panels.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete: Admixtures.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Reglets recessed in units.
- D. Section 07 9200 - Joint Sealants: Sealing perimeter and intermediate joints.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
- B. ACI SPEC-301 - Specifications for Concrete Construction.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- G. ASTM A492 - Standard Specification for Stainless Steel Rope Wire.
- H. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric).
- I. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

- J. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- K. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- L. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- M. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- N. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
- P. ASTM C150/C150M - Standard Specification for Portland Cement.
- Q. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete.
- R. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.
- S. ASTM C1088 - Standard Specification for Thin Veneer Brick Units Made from Clay or Shale.
- T. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
- U. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- V. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products.
- W. PCI MNL-120 - PCI Design Handbook.
- X. PCI MNL-122 - Architectural Precast Concrete: Fully Revised Manual Including New Sections, Extensive Updates, and Detailed Specifications to Meet Today's Construction Needs.
- Y. PCI MNL-123 - Connections Manual: Design and Typical Details of Connections for Precast and Prestressed Concrete.
- Z. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.
- C. Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, integral insulation, insulated panel system connectors, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.
 - 1. Include details of mix designs.
 - 2. Include structural design calculations.

1.06 QUALITY ASSURANCE

- A. Design Engineer Qualifications: Design precast concrete units under direct supervision of a Professional Structural Engineer experienced in design of precast concrete and licensed in the State in which the Project is located.
- B. Fabricator Qualifications:
 - 1. Firm having at least 3 years of documented experience in production of precast concrete of the type required.
 - 2. Plant certified under Precast/Prestressed Concrete Institute Plant Certification Program; product group and category A1 - Architectural Precast Concrete.
- C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.
- D. Single Source Requirement: Provide precast concrete of this section by one supplier. Supplier may use other manufacturers for specific products, but submittals and coordination for all precast products shall be the responsibility of a single supplier.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handling: Lift and support precast units only from support points.
- B. Blocking and Lateral Support During Transport and Storage: Use materials that are clean, non-staining, and non-harmful to exposed surfaces. Provide temporary lateral support to prevent bowing and warping.
- C. Protect units to prevent staining, chipping, or spalling of concrete.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Architectural Precast Concrete:

1. Wells Concrete.
2. Gage Brothers Concrete Products.
3. Taracon Precast.
4. Ola Precast.
5. Collins Precast.
6. Pete Lien & Sons.
7. Steinbauer Precast.
8. Engineered Concrete Products.
9. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PRECAST UNITS, GENERAL

A. Precast Architectural Concrete Units: Comply with PCI MNL-120, PCI MNL-122, PCI MNL-123, PCI MNL-135, and ACI CODE-318.

1. Design Loads: Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection loads as specified by the construction documents and applicable building codes
2. Calculate structural properties of units in accordance with ACI CODE-318.
3. Accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
4. Provide connections that accommodate building movement and thermal movement and adjust to misalignment of structure without unit distortion or damage.

B. Finish Type see construction documents for requirements

2.03 REINFORCEMENT

A. Tensioning Steel Tendon: ASTM A416/A416

B. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi).

C. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.

2.04 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
- B. Fine and Coarse Structural Aggregates: ASTM C33/C33M.
- C. Lightweight Structural Aggregate: ASTM C330/C330M.
- D. Color Additives: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.
 - 1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
 - 2. Color(s): To be selected by Architect from pigment manufacturer's full ran.
- E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- F. Grout:
 - 1. Non-shrink, non-metallic, minimum 10,000 psi, 28-day strength.

2.05 REVEAL AND ACCENT STRIPS

- A. Material: Non-staining, non-reactive, high-density polyethylene.
- B. Profile(s): As selected by Architect from manufacturer's standard range.

2.06 SUPPORT DEVICES

- A. Connecting and Support Devices; Anchors and Inserts: ASTM A36/A36M steel; hot-dip galvanized in accordance with ASTM A153/A153M.
 - 1. Clean surfaces of rust, scale, grease, and foreign matter.
 - 2. Galvanize after fabrication in accordance with requirements of ASTM A123/A123M for items exposed to exterior or in pool areas
- B. Bolts, Nuts, and Washers: ASTM A307 heavy hex bolts, Type A, hot-dip galvanized, with matching ASTM A563/A563M nuts and matching washers.
- C. Primer: Zinc rich type.

2.07 INSULATION

- A. Manufacturer's standard integral rigid insulation.
- B. Panel R-value: R-15 minimum

2.08 FABRICATION

- A. Fabricate in compliance with PCI MNL-117 and PCI MNL-135.
- B. Maintain plant records and quality control program during production of precast units. Make records available upon request.
- C. Use rigid molds, constructed to maintain precast unit uniform in shape, size, and finish.
- D. Use form liners in accordance with manufacturer's instructions.
- E. Maintain consistent quality during manufacture.
- F. Fabricate connecting devices, plates, angles, items fit to steel framing members, inserts, bolts, and accessories. Fabricate to permit initial placement and final attachment.
- G. Embed reinforcing steel, anchors, inserts plates, angles, and other cast-in items.
- H. Locate hoisting devices to permit removal after erection.
- I. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- J. Minor patching in plant is acceptable, providing structural adequacy and appearance of units is not impaired.

2.09 FABRICATION TOLERANCES

- A. Comply with PCI MNL-117 and PCI MNL-135 and as specified in construction documents (whichever is more restrictive).

2.10 SOURCE QUALITY CONTROL

- A. Provide testing and analysis of concrete mix.
- B. Take 4 concrete test cylinders for every 50 cu yds of concrete placed; make and cure in accordance with ASTM C31/C31M.
- C. Take 1 slump tests for every 4 test cylinders in accordance with ASTM C143/C143M.
- D. Take one air entrainment test cylinders for each set of exterior concrete test cylinders taken.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that building structure, anchors, devices, and openings are ready to receive work of this section.

3.02 PREPARATION

- A. Provide for erection procedures and induced loads during erection. Maintain temporary bracing in place until final support is provided.

3.03 ERECTION

- A. Erect units without damage to shape or finish. Replace or repair damaged panels.
- B. Erect units level and plumb within allowable tolerances.
- C. Align and maintain uniform horizontal and vertical joints as erection progresses.
- D. When units require adjustment beyond design or tolerance criteria, discontinue affected work; advise Engineer.
- E. Weld units in place. Perform welding in accordance with AWS D1.1/D1.1M.
- F. Touch-up field welds and scratched or damaged primed painted surfaces.
- G. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers. Pack grout to base of unit.

3.04 TOLERANCES

- A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135, except as specifically amended below and as given in construction documents (whichever is most restrictive)
 - 1. Plan Location from Building Grid Datum: Plus or minus 3/8 in.
 - 2. Top Elevation from Nominal Top Elevation: Plus or minus 3/8 inch.
 - 3. Maximum Plumb Variation Over Height of Structure or 100 ft (whichever is less): Plus or minus 1/2 inch.
 - 4. Exposed Joint Dimension: Plus or minus 3/16 inch.

3.05 PROTECTION

- A. Protect installed members from subsequent construction operations.

END OF SECTION 03 4500

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SECTION 05 1200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members.
- B. Base plates, shear stud connectors.
- C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

- A. Section 05 2100 - Steel Joist Framing.
- B. Section 05 3100 - Steel Decking: Support framing for small openings in deck.

1.03 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual.
- B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- E. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
- F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- H. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- I. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- J. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- K. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric).
- L. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.

- M. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- N. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).
- O. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
- P. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
- Q. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- R. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- S. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.
- T. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- U. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172.
- V. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections.
- W. SSPC-SP 3 - Power Tool Cleaning.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections.
 - 3. Indicate cambers.
 - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.05 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."
- B. Structural steel members designated as architecturally-exposed structural steel (AESS) to also comply with Section 05 1213.
- C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.
- D. Fabricator Qualifications: A qualified steel fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant.
- E. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Steel Angles, Plates, and Channels: ASTM A36/A36M.
- B. Steel W Shapes, Tees and Channels: ASTM A992/A992M.
- C. Cold-Formed Structural Tubing (Square: ASTM A500/A500M, Grade B.
- D. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.
- E. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A and galvanized in compliance with ASTM A153/A153M Class C.
- F. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.
- G. Tension Control Bolts: Twist-off type; ASTM F3125/F3125M.
- H. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563/A563M nuts and ASTM F436/F436M Type 1 washers.
- I. Headed Anchor Rods: ASTM F1554 Grade 36, plain.
- J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- K. Grout: ASTM C1107/C1107M; non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
 - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

- L. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- M. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Fabricate connections for bolt, nut, and washer connectors.
- C. Develop required camber for members.

2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC-SP 3.
- B. Shop prime structural steel members. Do not prime surfaces that will be field welded or in contact with concrete.
- C. Galvanize structural steel members to comply with ASTM A123/A123M.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC 303.
- B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Field weld components and shear studs indicated on shop drawings.
- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
- E. Do not field cut or alter structural members without approval of Engineer.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

- G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for non-shrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Welded Connections: Visually inspect all field-welded connections and test as specified in testing schedules on structural drawings:

END OF SECTION 05 1200

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SECTION 05 1213 - ARCHITECTURALLY-EXPOSED STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Additional requirements for structural steel members designated as architecturally-exposed structural steel (AESS).

1.02 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: General requirements for structural steel members, including AESS framing specified in this section.
- B. Section 09 9113 - Exterior Painting: Finish coat requirements and coordination with primer and surface preparation specified in this section.
- C. Section 09 9123 - Interior Painting: Finish coat requirements and coordination with primer and surface preparation specified in this section.
- D. Section 09 9600 - High-Performance Coatings: Finish coat requirements and coordination with primer and surface preparation specified in this section.

1.03 DEFINITIONS

- A. Architecturally-Exposed Structural Steel: Structural steel complying with designated AESS category as defined in AISC 303.

1.04 REFERENCE STANDARDS

- A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
- B. AISC 325 - Steel Construction Manual.
- C. AISC 360 - Specification for Structural Steel Buildings.
- D. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- F. ASTM A1085/A1085M - Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS).
- G. ASTM A992/A992M - Standard Specification for Structural Steel Shapes.
- H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- I. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.

- J. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- K. SSPC-SP 1 - Solvent Cleaning.
- L. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Detailing for fabrication of AESS components.
 - 1. Provide erection documents clearly indicating which members are AESS members and the AESS category of each part.
 - 2. Include details that clearly identify AESS requirements found in this specification. Provide connections for AESS consistent with concepts shown on drawings.
 - 3. Indicate welds by AWS A2.4 symbols, distinguishing between shop and field welds, and show size, length and type of each weld. Identify grinding, finish and profile of welds as defined by the designated AESS category.
 - 4. Indicate which surfaces or edges are exposed and what class of surface preparation is being used.
 - 5. Indicate special tolerances and erection requirements as noted on drawings or defined by the designated AESS category.

1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that is experienced in fabricating AESS similar to that indicated on this Project and has a history of successful projects.
- B. Erector Qualifications: A qualified erector who is experienced in erecting AESS similar to that indicated on this Project and has a history of successful projects.
- C. Welder Qualifications: Welding processes and welding operators qualified within previous 12 months in accordance with AWS D1.1/D1.1M and dated no more than 12 months before start of scheduled welding work.
- D. Comply with applicable provisions of AISC 303, Section 10 for the designated AESS category.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle finished pieces in accordance with Section 10 of AISC 303, using nylon-type slings, or chains with softeners, or wire ropes with softeners such that they are not damaged.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Comply with Section 05 1200, except as amended in this section for aesthetic purposes.

2.02 FABRICATION

- A. Fabricate and assemble AEES in shop to greatest extent possible. Locate field joints in AEES assemblies at concealed locations or as approved by Engineer. Detail AEES assemblies to minimize field handling and expedite erection.
- B. Permissible tolerances for member depth, width, out of square, and camber and sweep to be as specified in ASTM A6/A6M, ASTM A500/A500M, and ASTM A1085/A1085M.
- C. Use special care in handling and shipping of AEES both before and after shop painting to minimize damage to any shop finish. Use nylon-type slings or softeners when using chains or wire rope slings.
- D. Welded Connections:
 - 1. Comply with AWS D1.1/D1.1M and Section 05 1200.
 - 2. Assemble and weld built-up sections by methods that will maintain alignment of members without warp exceeding tolerances of this section.
- E. Surface Preparation:
 - 1. Remove blemishes or unsightly surfaces resulting from temporary braces or fixtures.
 - 2. Remove backing and run out tabs.
- F. Fabricate AEES in accordance with categories defined in AISC 303, as follows:
 - 1. AEES 1: Basic elements.
 - 2. AEES 2: Feature elements viewed at a distance greater than 20 feet (feature elements not in close view).
 - 3. AEES 3: Feature elements viewed at a distance less than 20 feet (feature elements in close view).
 - 4. AEES 4: Showcase elements with special surface and edge treatment beyond fabrication (showcase elements).

2.03 SHOP PRIMING

- A. Surface Preparation:
 - 1. Comply with SSPC-SP 6/NACE No.3.
 - 2. Remove weld spatter, slivers and similar surface discontinuities.

- B. Shop prime structural steel members. Do not prime surfaces that will be field welded or in contact with concrete.

2.04 MATERIALS

- A. General: Meet requirements of 05 1200 as amended below.

2.05 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Structural Requirements:
 - 1. Comply with quality control requirements per AISC 360, Chapter N and AISC 303, Section 10. Refer to Section 05 1200 for additional requirements.
- C. AEES 1 and 2 Acceptance: Architect to observe AEES in the shop at a viewing distance consistent with final installation and determine acceptability based on qualification data and submittals. Quality assurance agency has no responsibility for enforcing requirements related to aesthetic effect.
- D. AEES 3,4, and C Acceptance: Architect to observe AEES in the shop at a viewing distance consistent with final installation and determine acceptability based on approved mock-up. Quality assurance agency has no responsibility for enforcing requirements related to aesthetic effect.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Erector to check all AEES members upon delivery for twist, kinks, gouges or other imperfections which may result in rejection of appearance of member. Coordinate remedial action with fabricator prior to erecting steel.

3.02 PREPARATION

- A. Handle, lift and align pieces using nylon straps or chains with softeners required to maintain appearance of AEES through process of erection.

3.03 ERECTION

- A. AEES 1 and 2: Basic elements; feature elements not in close view:
 - 1. Employ special care to handle and erect AEES. Erect finished pieces using nylon straps or chains with softeners such that they are not damaged.
 - 2. Place weld tabs for temporary bracing and safety cabling at points concealed from view in completed structure or where approved by Engineer during pre-installation meeting. Obtain Engineer approval of methods for removing temporary devices and finishing AEES members prior to erection.

3. AESS Erection Tolerances: Erect to standard frame tolerances for structural steel per Chapter 7 of AISC 303.
 4. Set AESS accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
 5. Remove blemishes or unsightly surfaces resulting from temporary braces or fixtures.
 6. Remove all backing and run out tabs.
 7. When temporary braces or fixtures are required to facilitate erection, take care to avoid any blemishes, holes or unsightly surfaces resulting from use or removal of such temporary elements.
 8. Welded Connections: Comply with AWS D1.1/D1.1M and Section 05 1200. Appearance and quality of welds to be consistent. Employ methods that will maintain alignment of members without warp exceeding tolerance of this section.
 9. Remove weld spatter exposed to view.
 10. Grind off projections larger than 1/16 inch at field butt and plug welds.
 11. Continuous Welds: Where continuous welding is noted on drawings, provide continuous welds of a uniform size and profile.
- B. AESS 3: Feature elements in close view:
1. Erect to requirements of AESS 1 and 2 and as follows:
 2. Field Welding: Weld profile, quality, and finish to be consistent with mock-ups approved prior to fabrication.
 3. Provide a continuous appearance to all welded joints including tack welds. Provide joint filler at intermittent welds.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. AESS 1 and 2 Acceptance: Engineer to observe AESS in place and determine acceptability based on qualification data and submittals.
- C. AESS 3,4, and C Acceptance: Engineer to observe AESS in place and determine acceptability based on qualification data and submittals as well as on approved mock- up.

3.05 CLEANING

- A. Touch-up Painting: Complete cleaning and touch-up painting of field welds, bolted connections, and abraded areas of shop paint to blend with adjacent surfaces of AESS. Perform

touch-up work in accordance with manufacturer's instructions and as specified in Section 09 9113, 09 9123, and 09 9600.

END OF SECTION 05 1213

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SECTION 05 2100 - STEEL JOIST FRAMING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Open web steel joists, with bridging, attached seats and anchors.
- B. Loose bearing members, such as plates or angles, and anchor bolts for site placement.
- C. Supplementary framing for floor and roof openings greater than 18 inches.

1.02 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: Grouting base plates and bearing plates. Superstructure framing.
- B. Section 05 1200 - Structural Steel Framing: Superstructure framing.
- C. Section 05 3100 - Steel Decking: Bearing plates and angles.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- B. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- C. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric).
- D. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
- E. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- F. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- G. SJI 100 - Standard Specifications for K-Series, LH-Series, and DLH-Series Open Web Steel Joists, and for Joist Girders.
- H. SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Joist Girders.
- I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
- J. SSPC-SP 2 - Hand Tool Cleaning.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, and attachments.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables of SJI "Specifications."
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and dated no more than 12 months before start of scheduled welding work.
- C. Erector Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Transport, handle, store, and protect products to SJI requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Steel Joists:
 - 1. Canam Group Inc: www.canam-steeljoists.ws
 - 2. New Millennium Building Systems: www.newmill.com/#sle.
 - 3. Nucor-Vulcraft Group: www.vulcraft.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Open Web Joists: SJI Type K Joists:
 - 1. Provide bottom and top chord extensions as indicated.
 - 2. Minimum End Bearing on Steel Supports: Comply with referenced SJI standard.
 - 3. Minimum End Bearing on Concrete or Masonry Supports: Comply with referenced SJI standard.
 - 4. Finish: Shop primed.
- B. Open Web Joists: SJI 100 Type LH Joists:

1. Provide bottom and top chord extensions as indicated.
 2. Minimum End Bearing on Steel Supports: Comply with referenced SJI standards.
 3. Minimum End Bearing on Masonry or Concrete Supports: Comply with referenced SJI standards.
 4. Finish: Shop primed.
- C. Anchor Bolts, Nuts and Washers: ASTM A307 hot-dip galvanized per ASTM A153/A153M Class C.
- D. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.
- E. Tension Control Bolts: Twist-off type; ASTM F3125/F3125M.
- F. Structural Steel for Supplementary Framing and Joist Leg Extensions: ASTM A572/A572M.
- G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03 FINISH

- A. Shop prime joists as specified.
- B. Prepare surfaces to be finished in accordance with SSPC-SP 2.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 ERECTION

- A. Erect joists with correct bearing on supports.
- B. Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb, and in true alignment.
- C. Coordinate the placement of anchors for securing loose bearing members furnished as part of the work of this section.
- D. After joist alignment and installation of framing, field weld joist seats to steel bearing surfaces.
- E. Install supplementary framing for floor and roof openings greater than 18 inches.

- F. Do not permit erection of decking until joists are braced, bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
- G. Do not field cut or alter structural members without approval of joist manufacturer.
- H. After erection, prime welds, damaged shop primer, damaged galvanizing, and surfaces not shop primed, except surfaces specified not to be primed.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch.
- B. Maximum Offset from True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Welded Connections: Visually inspect all field-welded connections as per requirements given in drawings.

END OF SECTION 05 1200

SECTION 05 3100 - STEEL DECKING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Acoustical roof deck.
- B. Roof deck.
- C. Composite floor deck.
- D. Metal form deck.
- E. Supplementary framing for openings up to and including 12 inches.
- F. Bearing plates and angles.
- G. Stud shear connectors.
- H. Acoustical insulation in roof deck flutes.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete topping over metal deck.
- B. Section 03 4100 - Precast Structural Concrete: Placement of embedded steel anchors, dovetail slots, bearing plates, joist seats and other steel connectors in precast concrete.
- C. Section 05 1200 - Structural Steel Framing: Support framing for openings larger than 18 inches and shear stud connectors.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.
- E. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.
- F. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- G. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel.

- H. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172.
- I. ICC-ES AC70 - Acceptance Criteria for Power-Actuated Fasteners Driven into Concrete, Steel and Masonry Elements.
- J. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks.
- K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
- L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.
- B. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Cut plastic wrap to encourage ventilation.
- B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Steel Deck:
 - 1. Canam Steel Corporation; ____: www.canam-steeljoists.ws.
 - 2. Cordeck, Inc; ____: www.cordeck.com/#sle.
 - 3. New Millennium Building Systems; ____: www.newmill.com/#sle.
 - 4. Nucor-Vulcraft Group; ____: www.vulcraft.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 STEEL DECK

- A. Acoustical Roof Deck: Non-composite type, steel sheet with plain vertical flute faces perforated with 1/8-inch diameter holes staggered 3/8 inch on center:
 - 1. Ungalvanized Steel Sheet: ASTM A1008/A1008M, Designation SS, Grade 33, Type 1.
 - 2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
 - 3. Structural Properties: As indicated
 - 4. Side Joints: Lapped, mechanically fastened.
 - 5. End Joints: Lapped, mechanically fastened.
- B. Roof Deck: Non-composite type, fluted steel sheet:
 - 1. Ungalvanized Steel Sheet: ASTM A1008/A1008M, Designation SS, Grade 33, Type 1.
 - 2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
 - 3. Structural Properties: As in
 - 4. Side Joints: Lapped, mechanically fastened.
 - 5. End Joints: Lapped, mechanically fastened.
- C. Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:
 - 1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G60/Z180 galvanized coating.
 - 2. Structural Properties: Profile and gage, as indicated.
 - 3. Span Design: 3-span minimum.
 - 4. Side Joints: Lock seam or lapped, mechanically fastened.
 - 5. End Joints: Lapped, welded.
- D. Metal Form Deck: Corrugated sheet steel:
 - 1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 - 2. Structural Properties: Profile and gage, as indicated.
 - 3. Side Joints: Lapped, mechanically fastened.

4. End Joints: Lapped, mechanically fastened.

2.03 ACCESSORY MATERIALS

- A. Bearing Plates and Angles: ASTM A36/A36M steel, galvanized per ASTM A123/A123M.
- B. Stud Shear Connectors: Made from ASTM A108 Grade 1015 bars.
- C. Welding Materials: AWS D1.1/D1.1M.
- D. Fasteners: Galvanized hardened steel, self-tapping.
- E. Powder Actuated Mechanical Fasteners: Steel; with knurled shank and forged ballistic point. Comply with applicable requirements of ICC-ES AC70.
- F. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
- G. Mechanical Sidelap Connectors: Steel; hex washer head undercut with reverse serrations and self-piercing or stitch point at
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- J. Acoustical Insulation: Glass fiber type, minimum .75 lb/cu ft density; profiled to suit deck.

2.04 FABRICATED DECK ACCESSORIES

- A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 20 gauge, 0.0359 inch thick sheet steel; of profile and size as indicated; finished same as deck.
- B. Roof Sump Pans: Formed sheet steel, 14-gauge, 0.0747-inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.
- B. On steel supports provide minimum 1-1/2-inch bearing.

- C. Fasten deck to steel support members at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
- D. Clinch lock seam side laps.
- E. At mechanically fastened male/female side laps fasten at 24 inches on center maximum.
- F. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.
- G. Weld deck in accordance with AWS D1.3/D1.3M.
- H. At deck openings from 6 inches to 18 inches in size, provide 2 by 2 by 1/4 inch steel angle reinforcement. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and mechanically attach to deck at each flute.
- I. At deck openings greater than 18 inches in size, provide steel angle reinforcement. as specified in drawings
- J. Where deck changes direction, install 12-inch minimum wide sheet steel cover plates, of same thickness as deck. Mechanically attach at 12 inches on center maximum.
- K. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- L. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.
- M. Weld stud shear connectors through steel deck to structural members below.
- N. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

3.03 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000 and as indicated on drawings.
- B. Roof Deck Attachment: Visually inspect all roof deck attachments.

END OF SECTION 05 3100

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SECTION 05 4000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud exterior wall framing.

1.02 RELATED REQUIREMENTS

- A. Section 05 3100 - Steel Decking.

1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
- B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
- G. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers.
- H. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to metal framing systems, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations
- C. Product Data: Provide manufacturer's data on factory-made connectors and mechanical fasteners, showing compliance with requirements.

- D. Manufacturer's Installation Instructions: For lateral-force resisting systems, indicate welding procedure specifications.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Structural Framing:
 - 1. ClarkDietrich; _____: www.clarkdietrich.com/#sle.
 - 2. Steel Construction Systems; _____: www.steelconsystems.com/#sle.
 - 3. The Steel Network, Inc; _____: www.SteelNetwork.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Connectors:
 - 1. ClarkDietrich; _____: www.clarkdietrich.com/#sle.
 - 2. Simpson Strong-Tie; _____: www.strongtie.com/#sle.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING SYSTEM

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Shop-fabricate cold-formed framing systems and connectors to the greatest extent possible.
- C. Deliver to project site in largest practical sections.

2.03 STRUCTURAL FRAMING COMPONENTS

- A. Wall Studs, Jamb Studs, Headers, and Track Sections: AISI S240; c-shaped studs and u-shaped track sections in stud-matching nominal width and compatible height.
 - 1. Structural Grade: As required to meet design criteria.
 - 2. Corrosion Protection Coating Designation: CP 60 in accordance with AISI S240.

2.04 MISCELLANEOUS CONNECTIONS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot-dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

2.05 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Galvanizing Repair: Touch up bare steel with zinc-rich paint in compliance with ASTM A780/A780M.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- D. Water-Resistive Barrier: ICC-ES AC38 Grade D and 60-minute plastic sheet.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.02 INSTALLATION - GENERAL

- A. Install structural members and connections in compliance with ASTM C1007.

3.03 INSTALLATION OF STUDS

- A. Align floor and ceiling tracks; locate wall layout. Secure in place with fasteners at maximum 16 inches on center.
- B. Install wall studs plumb and level. Place stud at 16 inches on center maximum or as indicated; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method
- C. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- D. Splicing of studs is not permitted.
- E. Install intermediate studs above and below openings to align with wall stud spacing.

- F. Provide deflection allowance in stud track, directly below horizontal building framing at non-loadbearing framing.
- G. Attach cross studs to studs for attachment of fixtures anchored to walls.
- H. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- I. Touch-up field welds and damaged corrosion protected surfaces with primer.

3.04 INSTALLATION OF WALL SHEATHING

- A. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.
 - 1. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges, and ends.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.

3.06 TOLERANCES

- A. Maximum Variation from True Position: 1/2 inch.
- B. Maximum Variation of any Member from Plane: 1/2 inch.

END OF SECTION 05 4000

SECTION 055133.13 – METAL LADDERS (Manufactured)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum Fixed Vertical Ladders.

1.2 REFERENCES

- A. ANSI A14.3: Ladders - Fixed - Safety Requirements.
- B. OSHA 1910.23: Ladders.
- C. OSHA 1910.28: Duty to have fall protection and falling object protection.
- D. OSHA 1910.29: Fall protection systems and falling object protection-criteria and practices.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
- C. Shop Drawings for Ladders:
 - 1. Plan and section of ladder installation.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products until installation inside under cover. If stored outside, under a tarp or suitable cover.

1.5 WARRANTY

- A. Limited Warranty: Five years against defective material and workmanship, covering parts only, no labor or freight. Defective parts, if deemed so by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant which warrants same.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Precision Ladders, LLC, which is located at: P. O. Box 2279 ; Morristown, TN 37816-2279; Toll Free Tel: 800-225-7814; Tel: 423-586-2265; Email: info@PrecisionLadders.com; Web: www.PrecisionLadders.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 6000.

2.2 ALUMINUM FIXED VERTICAL LADDER

- A. Aluminum Fixed Vertical Ladder and Components: Ladder, fall arrest system, walk-thru, side rails, cage, rest platforms, floor mounting brackets, security doors, security gates and finishes.
 - 1. Model: Model FLH-04 Standard Aluminum Fixed Vertical Ladder as manufactured by Precision Ladders LLC.
 - 2. Capacity: Unit shall support a 1,500 lb (680 kg) loading without failure.
 - 3. Performance Standard: Units designed and manufactured to meet or exceed ANSI A14.3, OSHA 1910.23, OSHA 1910.28 and OSHA 1910.29.
- B. Components:
 - 1. Ladder Stringer: 2-1/2 inch by 1-1/16 inch by 1/8 inch (64 mm by 27 mm by 3 mm) extruded 6005-T5 aluminum channel. Pitch: 90 degrees.
 - 2. Ladder Tread: 2-1/4 inch by 3/4 inch by 1/4 inch (57 mm by 19 mm by 6 mm) extruded 6005-T5 aluminum with deeply serrated top surface.
 - 3. Ladder Mounting Bracket: 8-1/2 inch by 2 inch by 3 inch by 1/4 inch thick (216 mm by 51 mm by 76 mm by 6 mm) aluminum angle.
 - 4. Walk-Thru:
 - a. Hand Rails: 1-1/4 inch (32 mm) aluminum square tube with rounded edges.
 - b. Mounting Brackets: 4 inch by 4 inch by 1/4 inch (102 mm by 102 mm by 6 mm) aluminum.
 - c. Side Rails: 42 inch (1067 mm) side rail extension for through ladder exits.
 - 5. Security Door: 0.125 inch (3 mm) 3003-H14 aluminum panel 84 inches (2134 mm) tall with padlock provision.
 - 6. Finishes:
 - a. Standard: Mill finish on aluminum ladder components.

2.3 FABRICATION

- A. Completely fabricate ladder ready for installation before shipment to the site.

PART 3 EXECUTION

3.1 EXAMINATION

- A. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.2 INSTALLATION

- A. Install in accordance with approved submittals.

3.3 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 055133.13

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood blocking and nailers.
 - 2. Plywood backing panels.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. For each type of process and factory-fabricated product.
 - 2. For preservative-treated wood products.

1.3 INFORMATIONAL SUBMITTALS

- A. Material Certificates:
 - 1. For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
 - 2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.
- B. Evaluation Reports: For the following, from ICC-ES:
 - 1. Wood-preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Engineered wood products.
 - 4. Shear panels.
 - 5. Power-driven fasteners.
 - 6. Post-installed anchors.
 - 7. Metal framing anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: Comply with DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content:

1. Boards: 15 percent.
2. Dimension Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 PRESERVATIVE TREATMENT

A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

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

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

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

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATMENT

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
 - 1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:
 - 1. Concealed blocking.
 - 2. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

- A. Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Grounds.
- B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.6 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC58, ICC-ES AC193, or CC-ES AC308 as appropriate for the substrate.

2.7 METAL FRAMING ANCHORS

- A. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 (Z180) coating designation.
 - 1. Use for interior locations unless otherwise indicated.
- B. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.

2.8 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets:
 - 1. Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.
 - 2. Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

- B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- C. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install shear wall panels to comply with manufacturer's written instructions.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Do not splice structural members between supports unless otherwise indicated.
- G. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- H. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- I. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
 - 2. ICC-ES evaluation report for fastener.

END OF SECTION 061000

SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.

1.2 PREINSTALLATION MEETINGS

- ##### A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

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

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer

B. Field quality control reports.

1.5 CLOSEOUT SUBMITTALS

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

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - 1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program
 - 2. Installer Qualifications: Manufacturer of product or Licensed participant in AWI's Quality Certification Program

1.7 FIELD CONDITIONS

- A. Environmental Limitations with Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 20 and 50 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. Provide labels and certificates from AWI certification program indicating that woodwork complies with requirements of grades specified.
- B. Architectural Woodwork Standards Grade: Premium.
- C. Type of Construction: Frameless
- D. Door and Drawer-Front Style: Reveal overlay.
 - 1. Reveal Dimension: 1/2 inch (13 mm)
- E. Laminate Cladding for Exposed Surfaces
 - 1. Standards: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
 - a. Horizontal Surfaces: Grade HGS
 - b. Postformed Surfaces: Grade HGP.
 - c. Vertical Surfaces: Grade HGS
 - 2. Edges: PVC edge banding, 3.0 mm thick, matching laminate in color, pattern, and finish
 - 3. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels

- F. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- G. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - 1. Join subfronts, backs, and sides with glued dovetail joints
- H. Basis of Design: Provide the products indicated below or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. PLAM1: Formica High-Pressure Decorative Laminate, Color: 9038 Natural White Oak, Texture: 58 Matte, Use: Casework body, doors and drawers
 - b. PLAM2: SEE 12 3623.13 PLASTIC LAMINATE CLAD COUNTERTOPS
 - c. PLAM3: Wilsonart High-pressure Decorative Laminate, Color: 7943K Colombian Walnut, Texture: 07 Textured Gloss, Use: End panels at existing casework
 - d. PLAM4: Formica High-Pressure Decorative Laminate, Color: 5792 Inked Oak, Texture: PG Pure Grain, Use: Decorative Wall Panels

2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - 1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - 1.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
 - 3. Softwood Plywood: DOC PS 1
 - 4. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
 - 5. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials that are acceptable to authorities having jurisdiction as determined by testing performed on identical products by a qualified testing agency.

1. Use treated materials that comply with requirements of referenced quality standard. Do not use materials that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
 1. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
 - a. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.
 - b. Satin Stainless Steel: ANSI/BHMA 630.
- B. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 170 degrees of opening, self-closing.
 1. Basis of design: Blum Clip Top Blumotion 170 degree hinge with soft-close built into the hinge cup.
- C. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011
 1. Basis of Design: Basis-of-Design: Amerock Everyday Heritage 3 ¾ inch center pull, Model: BP52996G10, Color Satin Nickle (17S)
- D. Shelf Rests: ANSI/BHMA A156.9, B04013; angled metal shelf rest with riveted pin
- E. Drawer Slides: ANSI/BHMA A156.9
 1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides with self-close and soft-close
- F. Hanging File Inserts
 1. Basis of Design: Basis of Design: Hafele Hanging File System, letter width, Model: 422.74.310
- G. Door Locks: ANSI/BHMA A156.11, E07121.
- H. Drawer Locks: ANSI/BHMA A156.11, E07041.
- I. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- J. Grommets for Cable Passage: 1-1/4-inch (32-mm)OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
 1. Color: Black

- K. Vents for air circulation: Rectangular vent grille
 - 1. Minimum Dimensions: 3 inches high by 9 inches wide with attachment flange to fasten grille through casework doors.
 - 2. Material: Plastic
 - 3. Color: Black
 - 4. Installation: mechanically or adhesive mount flange to casework for fixed installation.
 - 5. Location: Art room storage cabinets.
- L. Metal Trims:
 - 1. Profile: J-channel trim with attachment leg to cap exposed edges of PLAM wainscot panel.
 - a. Material: Anodized Aluminum
 - b. Finish: Satin
- M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.
- N. Low Profile Shelf Support Brackets, Original Granite Knee Utility Counter Bracket
 - 1. Model: USB-10-06
 - 2. Length: 10 inches
 - 3. Material: Steel
 - 4. Color: Black
 - 5. Location: 210 Corridor
- O. See 12 3623.13 Plastic Laminate Clad Counter Tops for counter top and bracket information.

2.5 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesive for Bonding Plastic Laminate: unpigmented contact cement
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive

2.6 FABRICATION

- A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- B. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

- C. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual."
 - 1. For glass in frames, secure glass with removable stops.
 - 2. For exposed glass edges, polish and grind smooth.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.
- B. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.
 - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with [o. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips

3.2 FIELD QUALITY CONTROL

- A. Inspections: Provide inspection of installed Work through AWT's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.
 - 1. Inspection entity shall prepare and submit report of inspection.

END OF SECTION 06411

SECTION 066400 - PLASTIC PANELING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes plastic sheet paneling.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For plastic paneling and trim accessories.

PART 2 - PRODUCTS

2.1 PLASTIC SHEET PANELING - FRP1

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.
 - 1. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - a. Marlite Standard FRP, Face: Smooth
 - 2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
 - a. Class: A
 - b. Flame-Spread Index: 25 or less.
 - c. Smoke-Developed Index: 450 or less.
 - 3. Nominal Thickness: Not less than 0.09 inch (2.3 mm)
 - 4. Surface Finish: Smooth
 - 5. Color: As indicated on Finish Schedule
 - 6. Trim Types: PVC Inside corners, outside corners, division bars, j-trim for top, bottom and edge applications.

2.2 PLASTIC SHEET PANELING - FRP2

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.

1. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - a. Marlite Symmetrix Subway Vertical, Face: 12x24" Tile Configuration
2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
 - a. Class: C
 - b. Flame-Spread Index: 25 or less.
 - c. Smoke-Developed Index: 450 or less.
3. Nominal Thickness: Not less than 0.09 inch (2.3 mm)
4. Surface Finish: Patterned with contrasting bevels
5. Color: As indicated on Finish Schedule
6. Trim Types:
 - a. Inside Corner, A551
 - b. Outside Corner, A560
 - c. Edge, A570
 - d. Material: Anodized aluminum

2.3 ACCESSORIES

- A. Trim Accessories: Manufacturer's standard PVC and one-piece aluminum extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges. Formed in material as indicated with basis of design product descriptions.
- B. Sealant: Mildew-resistant, single-component, neutral-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- C. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels

3.2 INSTALLATION

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with adhesive and screws. Do not fasten through panels.
- D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
- F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 066400

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SECTION 071113 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Cold-applied, emulsified-asphalt dampproofing.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for method of application, primer, number of coats, coverage or thickness, and protection course.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain primary dampproofing materials and primers through one source from a single manufacturer. Provide secondary materials recommended by manufacturer of primary materials.

1.4 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.
- B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has cured.

PART 2 - PRODUCTS

2.1 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ChemMasters Corp.
 - 2. Degussa Building Systems; Sonneborn Brand Products.
 - 3. Gardner Gibson, Inc.
 - 4. Henry Company.
 - 5. Karnak Corporation.
 - 6. Koppers Inc.
 - 7. Malarkey Roofing Products.

8. Meadows, W. R., Inc.
9. Tamms Industries, Inc.

- B. Fibered Brush and Spray Coats: ASTM D 1227, Type II, Class 1.
- C. Brush and Spray Coats: ASTM D 1227, Type III, Class 1.
- D. VOC Content: 0.25 lb/gal. or less.

2.2 PROTECTION COURSE

- A. Protection Course: Unless perimeter insulation or drain board is indicated on exterior face of foundation, provide unfaced, fan-folded, extruded-polystyrene board insulation, nominal thickness 1/4 inch with compressive strength of not less than 8 psi per ASTM D 1621.

2.3 MISCELLANEOUS MATERIALS

- A. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended by manufacturer.
- B. Asphalt-Coated Glass Fabric: ASTM D 1668, Type I.
- C. Patching Compound: Manufacturer's fibered mastic of type recommended by dampproofing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for surface smoothness and other conditions affecting performance of work.
 1. Proceed with dampproofing application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.
 2. Test for surface moisture according to ASTM D 4263.

3.2 PREPARATION

- A. Protection of Other Work: Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.
- B. Clean substrates of projections and substances detrimental to work; fill voids, seal joints, and apply bond breakers if any, as recommended by prime material manufacturer.
- C. Apply patching compound for filling and patching tie holes, honeycombs, reveals, and other imperfections; cover with asphalt-coated glass fabric.

3.3 APPLICATION, GENERAL

- A. Comply with manufacturer's written recommendations unless more stringent requirements are indicated or required by Project conditions to ensure satisfactory performance of dampproofing.
 - 1. Apply additional coats if recommended by manufacturer or if required to achieve coverages indicated.
- B. Apply dampproofing to footings and foundation walls where opposite side of wall faces building interior.
 - 1. Extend 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.
 - 2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where shown as "reinforced," by embedding an 8-inch-wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.
 - 3. Do not apply Dampproofing to foundation walls indicated to receive Waterproofing.

3.4 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. On Concrete Foundations: Apply 2 brush or spray coats at not less than 1.5 gal./100 sq. ft. for first coat and 1 gal./100 sq. ft. for second coat, 1 fibered brush or spray coat at not less than 3 gal./100 sq. ft., or 1 trowel coat at not less than 4 gal./100 sq. ft..

3.5 INSTALLATION OF PROTECTION COURSE

- A. Where indicated, install protection course over completed-and-cured dampproofing. Comply with dampproofing material manufacturer's written recommendations for attaching protection course.
 - 1. Support protection course with spot application of adhesive of type recommended by protection board manufacturer over cured coating.

3.6 CLEANING

- A. Remove dampproofing materials from surfaces not intended to receive dampproofing.

END OF SECTION 07 1113

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Polyisocyanurate foam-plastic board insulation (Perimeter Foundation Insulation).
 - 2. Glass-fiber blanket insulation.

1.2 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Polyisocyanurate foam-plastic board insulation.
 - 2. Glass-fiber blanket insulation.

1.3 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.
 - 1. Sign, date, and post the certification in a conspicuous location on Project site.
- B. Product test reports.
- C. Research reports.

PART 2 - PRODUCTS

2.1 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

- A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Carlisle Coatings & Waterproofing Inc.
 - b. Firestone Building Products.
 - c. Johns Manville; a Berkshire Hathaway company.
 - d. The Dow Chemical Company.
 - 2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 - 3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.

2.2 GLASS-FIBER BLANKET INSULATION

- A. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Certainteed; SAINT-GOBAIN.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Owens Corning.
 - 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 - 3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.

2.3 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
 - 1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
 - 2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.
 - 3. Polyurethane Pour-In-Place Insulation: Closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84, specifically formulated for pour-in-place applications.
- B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.
- C. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.2 INSTALLATION OF SLAB INSULATION

- A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
 - 1. If not otherwise indicated, extend insulation a minimum of 48 inches below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches (610 mm) in from exterior walls.

3.3 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors.
- C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch (76-mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
 - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

END OF SECTION 072100

SECTION 072413 - POLYMER-BASED EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. EIFS-clad barrier-wall assemblies that are field applied over substrate.

1.2 PREINSTALLATION MEETINGS

- ##### A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- ##### A. Product Data: For each EIFS component, trim, and accessory.

- ##### B. Samples: For each exposed product and for each color and texture specified.

- ##### C. Shop Drawings: Provide shop drawings to include, at a minimum:

1. Elevations of building showing where expansion joints are recommended by the manufacturer.
2. Manufacturer's details used at each wall condition.

1.4 INFORMATIONAL SUBMITTALS

- ##### A. Manufacturer certificates.

- ##### B. Product certificates.

- ##### C. Product test reports.

- ##### D. Evaluation Reports: For EIFS, including insulation fasteners and flexible membrane flashing, from ICC-ES.

1.5 CLOSEOUT SUBMITTALS

- ##### A. Maintenance data.

1.6 QUALITY ASSURANCE

- ##### A. Installer Qualifications: An installer certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers.

- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, to set quality standards for materials and execution, and to set quality standards for fabrication and installation.
 - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. BASF Corporation; Wall Systems.
 - 2. Dryvit Systems, Inc.
 - 3. Senergy; BASF Corp.
 - 4. Sto Corp.
 - 5. Stuc-O-Flex International, Inc.
 - 6. Or equal.
- B. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as tested and compatible with EIFS components.

2.2 PERFORMANCE REQUIREMENTS

- A. EIFS Performance: Comply with ASTM E 2568 and ICC-ES AC219 and with the following:
 - 1. Weathertightness: Resistant to water penetration from exterior.
 - 2. Impact Performance: ASTM E 2568, High impact resistance.
 - 3. Bond Integrity: Free from bond failure within EIFS components or between EIFS and substrates, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
 - 4. Moisture drainage system between insulation and substrate.

2.3 EIFS MATERIALS

- A. Primer/Sealer: EIFS manufacturer's standard substrate conditioner designed to protect substrates from moisture penetration and to improve the bond between substrate and insulation adhesive.
- B. Flexible-Membrane Flashing: Cold-applied, self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
- C. Insulation Adhesive: EIFS manufacturer's standard formulation designed for indicated use; compatible with substrate.

- D. Molded, (Expanded) Rigid Cellular Polystyrene Board Insulation (EPS): Comply with ASTM C 578, Type I.
 - 1. Foam Build-Outs: Provide with profiles and dimensions indicated on Drawings.
- E. Reinforcing Mesh: Double layer of balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multiend strands with retained mesh tensile strength of not less than 120 lbf/in. (21 dN/cm) according to ASTM E 2098.
- F. Base-Coat Materials: EIFS manufacturer's standard mixture.
- G. Waterproof Adhesive/Base-Coat Materials: EIFS manufacturer's standard waterproof formulation
- H. Primer: EIFS manufacturer's standard factory-mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.
- I. Finish-Coat Materials: EIFS manufacturer's acrylic-based coating equal.
 - 1. Color: Custom color to match Architect's color sample.
 - 2. Texture: Sandblast
- J. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written instructions; manufactured from UV-stabilized PVC; and complying with ASTM D 1784 and ASTM C 1063.

PART 3 - EXECUTION

3.1 EIFS INSTALLATION

- A. Comply with ASTM C 1397, ASTM E 2511, and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate.
- B. Primer/Sealer: Apply over [gypsum sheathing] <Insert substrate> substrates and where required by EIFS manufacturer for improving adhesion of insulation to substrate.
- C. Flexible-Membrane Flashing: Apply and lap to shed water; seal at openings, penetrations, terminations, and where required by EIFS manufacturer. Prime substrates if required and install flashing to comply with EIFS manufacturer's written instructions and details.
- D. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints,[at windowsills,] and elsewhere as indicated. Coordinate with installation of insulation.
- E. Board Insulation: Adhesively attach insulation to substrate.
 - 1. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and EIFS lamina.
- F. Expansion Joints: Install at locations indicated and where required by EIFS manufacturer.

- G. Waterproof Adhesive/Base Coat: To exposed surfaces of insulation, apply in minimum thickness recommended in writing by EIFS manufacturer over sloped surfaces. Windowsills, parapets and foam build-outs.
- H. Base Coat: Apply to exposed surfaces of insulation and foam build-outs in minimum thickness recommended in writing by EIFS manufacturer, but not less than 1/16-inch (1.6-mm) dry-coat thickness.
- I. Reinforcing Mesh: Embed reinforcing mesh in wet base coat to produce wrinkle-free installation with mesh continuous at corners, overlapped not less than 2-1/2 inches (64 mm) or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written instructions. Do not lap reinforcing mesh within 8 inches (200 mm) of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are invisible.
- J. Double-Layer Reinforcing-Mesh Application: Where indicated or required, apply second base coat and second layer of reinforcing mesh, overlapped not less than 2-1/2 inches (64 mm) or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written instructions in same manner as first application. Do not apply until first base coat has cured.
- K. Additional Reinforcing Mesh: Apply strip reinforcing mesh around openings, extending 4 inches (100 mm) beyond perimeter. Apply additional 9-by-12-inch (230-by-300-mm) strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch- (200-mm-) wide, strip reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than 4 inches (100 mm) on each side of corners.
- L. Foam Build-Outs: Fully embed reinforcing mesh in base coat.
- M. Double Base-Coat Application: Where indicated, apply second base coat in same manner and thickness as first application, except without reinforcing mesh. Do not apply until first base coat has cured.
- N. Finish Coat: Apply over dry primed base coat, maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.

END OF SECTION 072413

SECTION 072600 - VAPOR RETARDERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Polyethylene vapor retarders.

B. Related Requirements:

1. Section 072100 "Thermal Insulation" for vapor retarders integral with insulation products.
2. Section 033000 "Cast-in-Place Concrete" for below-slab vapor retarders.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.

PART 2 - PRODUCTS

2.1 POLYETHYLENE VAPOR RETARDERS

- A. Polyethylene Vapor Retarders: ASTM D 4397, 6-mil- (0.15-mm-) thick sheet, with maximum permeance rating of 0.1 perm (5.7 ng/Pa x s x sq. m).

PART 3 - EXECUTION

3.1 INSTALLATION OF VAPOR RETARDERS ON FRAMING

- A. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives, vapor retarder fasteners, or other anchorage system as recommended by manufacturer. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
- B. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs and sealing with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Locate all joints over framing members or other solid substrates.

- C. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.
- D. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

END OF SECTION 072600

SECTION 072726 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Vapor-permeable, fluid-applied air barriers.

1.3 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.
 - 2. Include attendance by General Contractor, installer, manufacturer's technical rep, adjacent and affected subcontractors. Also include Owner and Architect.
 - 3. Conduct presinstallation conference not less than two (2) weeks before start of installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.

- a. Include documentation showing product is part of approved NFPA 285 tested assemblies used on the Project.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
 1. Include manufacturer's letter certifying product compatibility with roofing, including special detailing requirements if separation is required.
- C. Field quality-control reports.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 1. Include not less than three (3) years experience installing the specified product on projects of similar scope.
- B. Mockups: Build mockups to set quality standards for materials and execution.
 1. Build integrated mockups of exterior wall assembly at location determined with Architect at pre-installation meeting, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - a. Coordinate construction of mockups to permit inspection of air barrier before external insulation and cladding are installed.
 - b. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
 - c. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Protect stored materials from direct sunlight.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.
 - 1. Protect substrates from environmental conditions that affect air-barrier performance.
 - 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
- B. Low-Emitting Paints and Coatings: Provide products that comply with South Coast Air Quality Management District (SCAQMD) Rule 1113 OR California Air Resource Board (CARB) 2007-Suggested Control Measures (SCM) for Architectural Coatings, and comply with the California Department of Public Health (CDPH) Standard Method v1.1-2010, using the applicable exposure scenario.

2.2 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E 2357.
- C. NFPA 285 Compliance: Provide product that passes NFPA 285 testing as part of an approved assembly. Coordinate fluid-applied membrane air barrier with evaluation report and requirements for:
 - 1. Metal stud gage, spacing, fastening lateral bracing.
 - 2. Mineral wool required at floor levels.
 - 3. Perimeter fire barrier system, if any.
 - 4. Exterior sheathing thickness, fastening, and joint treatment.

5. Maximum allowable foam insulation thickness.
6. Allowable exterior finishes.
7. Other evaluation report requirements.

2.3 HIGH-BUILD AIR BARRIERS, VAPOR PERMEABLE

- A. High-Build, Vapor-Permeable Air Barrier: Synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 35 mils or thicker over smooth, void-free substrates.
1. Synthetic Polymer Type:
 - a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following, or approved substitution by one of the following:
 - 1) Grace Construction Products; W.R. Grace & Co. -- Conn.; Perm-A-Barrier VP.
 - 2) Henry Company, Sealants Division; Air-Bloc 33MR.
 - 3) Tremco Incorporated; ExoAir 230.
 2. Physical and Performance Properties:
 - a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
 - b. Vapor Permeance: Minimum 10.0 perms; ASTM E 96/E 96M, Desiccant Method, Procedure A.
 - c. Ultimate Elongation: Minimum 200 percent; ASTM D 412, Die C.
 - d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D 4541.
 - e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 - f. UV Resistance: Can be exposed to sunlight for 90 days according to manufacturer's written instructions.

2.4 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.
- B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.
- C. Liquid Flashing:
1. Provide manufacturer's recommended liquid flashing.

2. Provide primer as required by manufacturer.
- D. Transition Strips (Self-Adhering Membrane):
1. Provide manufacturer's recommended transition strips.
 2. Provide primer as required by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
 3. Verify that substrates are visibly dry and free of moisture.
 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.
- H. Bridge Control joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints

with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 ACCESSORIES INSTALLATION

- A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
 - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 - 2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
 - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
 - 1. Transition Strip: Roll firmly to enhance adhesion.
- F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.
- G. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
- H. Seal top of through-wall flashings to air barrier with an additional 6-inch- wide, transition strip.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired

areas in strip direction.

3.4 PRIMARY AIR-BARRIER MATERIAL INSTALLATION

- A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.
 - 1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
 - 3. Where multiple prime coats are needed to achieve required bond, allow adequate drying time between coats.
- B. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.
 - 1. Vapor-Permeable, High-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than 35 mils , applied in one or more equal coats.
- C. Do not cover air barrier until it has been tested and inspected by testing agency.
- D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

3.5 FIELD QUALITY CONTROL

- A. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Air-barrier dry film thickness.
 - 3. Continuous structural support of air-barrier system has been provided.
 - 4. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 5. Site conditions for application temperature and dryness of substrates have been maintained.
 - 6. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 7. Surfaces have been primed, if applicable.
 - 8. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
 - 9. Termination mastic has been applied on cut edges.
 - 10. Strips and transition strips have been firmly adhered to substrate.
 - 11. Compatible materials have been used.

12. Transitions at changes in direction and structural support at gaps have been provided.
 13. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 14. All penetrations have been sealed.
- B. Air barriers will be considered defective if they do not pass tests and inspections.
1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 2. Remove and replace deficient air-barrier components for retesting as specified above.
- C. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
- D. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials according to air-barrier manufacturer's written instructions.
 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION

SECTION 074213.23 - METAL COMPOSITE MATERIAL WALL AND SOFFIT PANELS (MCM / ACM)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes metal composite material wall and soffit panel rainscreen system.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include fabrication and installation layouts of metal composite material panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, and accessories; and special details.
- C. Samples: For each type of metal composite material panel indicated.
 - 1. Structural: 12 inch × 12 inch (305 × 305 mm) sample composite panels in thickness specified from an available stock color, including clips, anchors, supports, fasteners, closures and other panel accessories, for assembly approval. Include panel assembly samples not less than 24 inches × 24 inches (610 × 610 mm) showing 4-way joint.
 - 2. Include separate sets of drawdown samples on aluminum substrate, not less than 3 inches × 5 inches (76 × 127 mm), of each color and finish selected for color approval.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Warranties: Samples of special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal composite material panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal composite material panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal composite material panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E330:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
 - 3. Normal Deflection: Deflection of perimeter framing member not to exceed L/175 normal to plane of the wall; deflection of individual panels not to exceed L/60.
 - 4. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction not to exceed 1/16 inch (1.6 mm).
- B. Water and Air Leakage: Provide systems that have been tested and certified to conform to the following criteria:
 - 1. Pressure Equalized Rain Screen Systems.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
 - 2. Buckling, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
 - 3. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

2.2 METAL COMPOSITE MATERIAL WALL PANELS

- A. Metal Composite Material Wall Panel Systems: Provide factory-formed and -assembled, metal composite material wall panels fabricated from two metal facings that are bonded to a solid,

extruded thermoplastic core; formed into profile for installation method indicated. Include attachment assemblies components, and accessories required for weathertight system.

1. Basis-of-Design Product: Subject to compliance with requirements, provide ALUCOBOND PLUS; “The Classic Collection” panels and “Dry Reveal” system, or equal.
 - a. Other manufacturers meeting the requirements of this specification may be considered if they can match the specified color.

B. Composite Metal Panels:

1. Core: Thermoplastic material that meets performance characteristics specified when fabricated into composite assembly.
2. Face Sheets: Aluminum alloy 3105 H14, 0.020 inch (0.51 mm) thick and as follows:
 - a. Coil coated with a fluoropolymer paint finish that meets or exceeds values expressed in AAMA 2605 where relevant to coil coatings.
 - b. Coil coated with specified finish [Less than 1000 ft² (93 m²) quantities].
 - c. Thermally bonded in a continuous process, under tension, to the core material.
3. Bond Integrity: Tested for resistance to delamination as follows:
 - a. Peel Strength (ASTM D1781): 22.5 in-lb/in (100 N-m/m) minimum.
4. Fire Performance:
 - a. Flamespread (ASTM E84): Class A (4 and 6 mm).
 - b. Smoke Developed (ASTM E84): Class A (4 and 6 mm).
 - c. Surface Flammability (Modified ASTM E108): Pass (4 and 6 mm).
 - d. V-O Rating (4 mm): Comply with UL 94.
5. Product Transparency:
 - a. Provide a Product Transparency Declaration (PTD) for the Composite metal panels
6. Production Tolerances:
 - a. Width: +/- 2 mm.
 - b. Length: +/- .012” per ft (1 mm/meter).
 - c. Thickness (4 mm Panel): +/- 0.008 inch (0.2 mm).
 - d. Thickness (6 mm Panel): +/- 0.012 inch (0.3 mm).
 - e. Bow: Maximum 0.5% length or width.
 - f. Squareness: Maximum 0.2 inch (5 mm).
 - g. Edges of sheets shall be square and trimmed with no displacement of aluminum sheets or protrusion of core material.

C. Panel Thickness: 4 mm.

D. Attachment Assembly Components: Formed from extruded aluminum.

E. Attachment Assembly: Manufacturer's standard.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal composite material panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal composite material panels unless otherwise indicated.
 - 1. Color of exposed accessories shall match the panel color.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal composite material panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal composite material panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal composite material panels by means of plastic caps or factory-applied coating.

2.4 FABRICATION

- A. General: Fabricate and finish metal composite material panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Fabricate metal composite material panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

2.5 FINISHES

- A. Panels and Accessories:
 - 1. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal composite material panel manufacturer's written recommendations.

3.2 METAL COMPOSITE MATERIAL PANEL INSTALLATION

- A. Attachment Assembly, General: Install attachment assembly required to support metal composite material wall panels and to provide a complete wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
 - 1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
- B. General:
 - 1. Install panels plumb, level and true in compliance with fabricator's recommendations.
 - 2. Anchor panels securely in place in accordance with fabricator's approved shop drawings.
 - 3. Comply with fabricator's instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
 - 4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25 inch in 20 feet (6.4 mm in 6.1 m), noncumulative.

3.3 FIELD QUALITY REQUIREMENTS

- A. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.

3.4 ADJUSTING

- A. Adjusting:
 - 1. Repair panels with minor damage such that repairs are not discernible at a distance of 10 feet (3 m).
 - 2. Remove and replace panels damaged beyond repair.
 - 3. Remove protective film immediately after installation of joint sealers and immediately prior to completion of composite metal panel work.
 - 4. Remove from project site damaged panels, protective film and other debris attributable to work of this section.

3.5 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal composite material panels are installed, unless otherwise indicated in manufacturer's written installation

instructions. On completion of metal composite material panel installation, clean finished surfaces as recommended by metal composite material panel manufacturer. Maintain in a clean condition during construction.

3.6 PROTECTION

A. Protection: Protect installed product's finish surfaces from damage during construction.

1. Institute protective measures as required to ensure that installed panels will not be damaged.

END OF SECTION 074213.23

SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered thermoplastic polyolefin (TPO) roofing system.
2. Roof insulation (Tapered).
3. Cover board.
4. Vapor Retarder

1.2 DEFINITIONS

- ##### A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 PREINSTALLATION MEETINGS

- ##### A. Preinstallation Roofing Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- ##### A. Product Data: For each type of product.
- ##### B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
- ##### C. Samples for Verification: For the following products:
1. Sheet roofing, of color required.

1.5 CLOSEOUT SUBMITTALS

- ##### A. Maintenance Data: For roofing system to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- ##### A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Carlisle SynTec Incorporated.
 - 2. Elevate (Formerly Firestone Building Products).
 - 3. GenFlex Roofing Systems.
- B. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
- B. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:
 - 1. Corner Uplift Pressure: 41 lbf/sq. ft. (2.0 kPa/sq. m).
 - 2. Perimeter Uplift Pressure: 28 lbf/sq. ft. (1.3 kPa/sq. m).
 - 3. Field-of-Roof Uplift Pressure: 16 lbf/sq. ft. (0.8 kPa/sq. m).
- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 TPO ROOFING

- A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, flexible TPO sheet.
 - 1. Thickness: 60 mils (1.5 mm), nominal.
 - 2. Exposed Face Color: White.

2.4 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
 - 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as TPO sheet.
- C. Bonding Adhesive: Manufacturer's standard.
- D. Slip Sheet: Manufacturer's standard, of thickness required for application.
- E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.
- F. Miscellaneous Accessories: Provide metal termination bars, metal battens, pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 ROOF INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. Elevate (Formerly Firestone Building Products).
 - c. Johns Manville; a Berkshire Hathaway company.
- B. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48) unless otherwise indicated.
- C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- D. Thermal Resistance: Provide continuous roof insulation with a minimum thermal resistance (R-value) of R-30.

2.6 INSULATION ACCESSORIES

- A. Fasteners: Factory-coated steel fasteners and metal or plastic plates, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

- B. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch (13 mm) thick.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; GlasRoc Sheathing.
 - b. Georgia-Pacific Building Products; Dens Deck Prime.
 - c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
- C. Vapor Retarder: Minimum 6 mil poly below insulation with taped joints.

2.7 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.
 - 1. Size: Approximately 36 by 60 inches (914 by 1524 mm).

PART 3 - EXECUTION

3.1 ROOFING INSTALLATION, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

3.2 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Install tapered insulation under area of roofing to conform to slopes indicated.
- C. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches (68 mm) or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- D. Mechanically Fastened and Adhered Insulation: Install each layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
 2. Set each subsequent layer of insulation in insulation adhesive, firmly pressing and maintaining insulation in place.
- E. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches (150 mm) in each direction. Loosely butt cover boards together and fasten to roof deck.
1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.3 ADHERED ROOFING INSTALLATION

- A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.
- B. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.
- D. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.
- E. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.
1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.
- F. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.4 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.5 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 075423

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formed low-slope roof sheet metal fabrications.
2. Formed wall sheet metal fabrications.
3. Copings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Distinguish between shop- and field-assembled work.
3. Include identification of finish for each item.
4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.5 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:
 1. Design Pressure: As indicated on Drawings.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
 1. Exposed Coil-Coated Finish:
 - a. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Color: Match existing metal flashing and trim.
- C. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation or aluminum-zinc alloy-coated steel sheet according to ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation, Grade 40 (Grade 275); prepainted by coil-coating process to comply with ASTM A 755/A 755M.

1. Exposed Coil-Coated Finish:
 - a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color:
 - a. At EIFS parapets: To be selected from manufacturer's standard colors.
 - b. At ACM panel parapets: To match ACM panels. Pac Clad "Cardinal Red" is currently the only approved cap flashing at ACM panels.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Grace Construction Products; W.R. Grace & Co. -- Conn.; Grace Ice and Water Shield HT.
 - b. Owens Corning; WeatherLock Metal High Temperature Underlayment.
 - c. Protecto Wrap Company; Protecto Jiffy Seal Ice & Water Guard HT.
 2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C) or higher.
 3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C) or lower.
- B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

- b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
 - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
- 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
- 3. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.
- G. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Obtain field measurements for accurate fit before shop fabrication.
 - 2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- F. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.
 - 1. Fabricate from the Following Materials:
 - a. Aluminum: 0.050 inch (1.27 mm) thick.
 - b. Galvanized Steel: 0.028 inch (0.71 mm) thick.
 - c. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) thick.
- B. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.
 - 1. Fabricate from the Following Materials:
 - a. Aluminum: 0.050 inch (1.27 mm) thick.
 - b. Galvanized Steel: 0.040 inch (1.02 mm) thick.
 - c. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch (1.02 mm) thick.
- C. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Aluminum: 0.040 inch (1.02 mm) thick.
 - 2. Galvanized Steel: 0.028 inch (0.71 mm) thick.
 - 3. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) thick.
- D. Counterflashing and Flashing Receivers: Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch (0.81 mm) thick.
 - 2. Galvanized Steel: 0.022 inch (0.56 mm) thick.
 - 3. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch (0.56 mm) thick.
- E. Roof-Penetration Flashing: Fabricate from the following materials:
 - 1. Galvanized Steel: 0.028 inch (0.71 mm) thick.
 - 2. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch (0.71 mm) thick.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 - 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 - 5. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
 - 1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.

- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not solder metallic-coated steel and aluminum sheet.
 - 2. Do not use torches for soldering.
 - 3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate.
- C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm).
- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.4 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Through-Wall Flashing: Installation of through-wall flashing is specified in Section 042000 "Unit Masonry."
- C. Reglets: Installation of reglets is specified in Section 042000 "Unit Masonry."

3.5 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof curbs.
2. Equipment supports.
3. Roof hatches with ladder assist post.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory.
- B. Shop Drawings: For roof accessories.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 WARRANTY

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ROOF CURBS

- A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, integral metal cant, and integrally formed deck-mounting flange at perimeter bottom.

- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Material (Contractor's option):
 - 1. Zinc-coated (galvanized) steel sheet, 0.064 inch (1.63 mm) thick.
 - 2. Material: Aluminum sheet, 0.090 inch (2.28 mm) thick.
 - 3. Finish: Mill
- D. Construction:
 - 1. Curb Profile: Manufacturer's standard compatible with roofing system.
 - 2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
 - 3. Fabricate curbs to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.
 - 4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.
 - 5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
 - 6. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
 - 7. Liner: Same material as curb, of manufacturer's standard thickness and finish.
 - 8. Nailer: Factory-installed wood nailer, continuous around curb perimeter.
 - 9. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb, of size and spacing required to meet wind uplift requirements.
 - 10. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch (19-mm) thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
 - 11. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.2 EQUIPMENT SUPPORTS

- A. Equipment Supports: Unless otherwise indicated in mechanical drawings or specifications, provide rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded corner joints, integral metal cant, and integrally formed structure-mounting flange at bottom.
- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Material: Zinc-coated (galvanized) or mill finish aluminum.
- D. Construction:
 - 1. Curb Profile: Manufacturer's standard compatible with roofing system.

2. Curb height: 12-inches minimum above roof insulation.
3. Liner: Same material as equipment support, of manufacturer's standard thickness and finish.
4. Nailer: Factory-installed continuous wood nailers 3-1/2 inches (90 mm) wide, continuous around support perimeter.
5. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
6. Platform Cap: Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch (19-mm) thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
7. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
8. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
9. Fabricate equipment supports to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.
10. Sloping Roofs: Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.

2.3 ROOF HATCH

- A. Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, integral metal cant, and integrally formed deck-mounting flange at perimeter bottom.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Acudor Products, Inc.
 - b. Babcock-Davis.
 - c. Bilco Company (The).
 - d. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - e. Metallic Products Corp.
 - f. Milcor; Commercial Products Group of Hart & Cooley, Inc.
- B. Type and Size: Single-leaf lid, 30 by 36 inches (750 by 900 mm).
- C. Loads: Minimum 40-lbf/sq. ft. (1.9-kPa) external live load and 20-lbf/sq. ft. (0.95-kPa) internal uplift load.
- D. Hatch Material: Zinc-coated (galvanized), Aluminum-zinc alloy-coated steel sheet, or mill finish aluminum.
- E. Construction:
 1. Insulation: Polyisocyanurate board.

- a. R-Value: 12.0 minimum according to ASTM C 1363.
 2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
 3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
 4. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
 5. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
 6. Fabricate curbs to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.
 7. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.
- F. Hardware: Spring operators, hold-open arm, stainless-steel spring latch with turn handles, galvanized or stainless -steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
- G. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.
1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
 2. Height: 42 inches (1060 mm) above finished roof deck.
 3. Material: Steel tube.
 4. Post: 1-5/8-inch- (41-mm-) diameter pipe.
 5. Finish: Manufacturer's standard baked enamel or powder coat.

2.4 METAL MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation[and mill phosphatized for field painting where indicated].
1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.
 2. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil (0.005 mm).
 3. Exposed Coil-Coated Finish: Prepainted by the coil-coating process to comply with ASTM A 755/A 755M. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - a. Two-Coat Fluoropolymer Finish: AAMA 621. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight.
 4. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils (0.05 mm).

5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).
- B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
 1. Mill Finish: As manufactured.
 2. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil (0.013 mm).
- C. Aluminum Extrusions and Tubes: ASTM B 221 (ASTM B 221M), manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.
- D. Stainless-Steel Sheet and Shapes: ASTM A 240/A 240M or ASTM A 666, Type 304.
- E. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.
- F. Steel Tube: ASTM A 500/A 500M, round tube.
- G. Galvanized-Steel Tube: ASTM A 500/A 500M, round tube, hot-dip galvanized according to ASTM A 123/A 123M.
- H. Steel Pipe: ASTM A 53/A 53M, galvanized.

2.5 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, thickness and thermal resistivity as indicated.
- C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches (38 mm) thick.
- D. Underlayment:
 1. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
 2. Polyethylene Sheet: 6-mil- (0.15-mm-) thick polyethylene sheet complying with ASTM D 4397.
 3. Slip Sheet: Building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m) minimum, rosin sized.
 4. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or

SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

5. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
 - E. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.
 - F. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.
 - G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.
 - H. Asphalt Roofing Cement: ASTM D 4586/D 4586M, asbestos free, of consistency required for application.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.
 1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
- C. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.
- B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."
- C. Clean exposed surfaces according to manufacturer's written instructions.
- D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Latex joint sealants.

1.2 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples: For each kind and color of joint sealant required.
- C. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Preconstruction laboratory test reports.
- C. Preconstruction field-adhesion-test reports.
- D. Field-adhesion-test reports.
- E. Sample warranties.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
 - 3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with masonry substrates.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

1.6 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. **(JS-1)** Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

2. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Joints between plant-precast architectural concrete units.
 - c. Control and expansion joints in unit masonry.
 - d. Other joints as indicated on Drawings.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Sika Corporation; Joint Sealants.
 - e. Tremco Incorporated.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.
 1. **(JS-2)** Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 2. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in stone flooring.
 - c. Control and expansion joints in brick flooring.
 - d. Control and expansion joints in tile flooring.
 - e. Other joints as indicated on Drawings.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
 4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Corporation; Construction Systems.
 - b. Pecora Corporation.
- B. Urethane, M, NS, 25, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Use NT.
 1. **(JS-3)** Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

2. Joint Locations:
 - a. Expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.
 - c. Vertical joints on exposed surfaces of unit masonry and concrete walls.
 - d. Joints on underside of plant-precast structural concrete beams and planks.
 - e. Other joints as indicated on Drawings.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. BASF Corporation; Construction Systems.
 - b. Sherwin-Williams Company (The).

2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
- C. **(JS-5)** Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
 3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Tremco Incorporated.
- D. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 1. **(JS-6)** Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
 2. Joint Locations:

- a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - c. Other joints as indicated on Drawings.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Pecora Corporation.
 - b. Sherwin-Williams Company (The).
 - c. Tremco Incorporated.

2.5 CONCEALED MASTIC

A. (JS-7) Joint-Sealant Application: Concealed mastics.

1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
 - c. Other joints as indicated on Drawings.
2. Joint Sealant: Butyl-rubber based.
3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Tremco Incorporated.

2.6 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Alcot Plastics Ltd.
 - b. BASF Corporation; Construction Systems.
 - c. Construction Foam Products; a division of Nomaco, Inc.

- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove laitance and form-release agents from concrete.
 - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.3 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

END OF SECTION 079200

SECTION 079219 - ACOUSTICAL JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes acoustical joint sealants.
- B. Locations: Where indicated on Drawings and in Execution section, and at walls enclosing the following rooms:
 - 1. All classrooms.
 - 2. All offices.

1.2 ACTION SUBMITTALS

- A. Product Data: For each acoustical joint sealant.
- B. Samples: For each kind and color of acoustical joint sealant required.
- C. Acoustical-Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

1.4 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C 834.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. GE Construction Sealants; Momenive Performance Materials Inc.
 - b. Grabber Construction Products.
 - c. Hilti, Inc.
 - d. Pecora Corporation.
 - e. Tremco Incorporated.
 - f. USG Corporation.
 - 2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.
- B. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- C. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- D. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- E. Where voids in concealed areas are too large for acoustical sealants, spray foam may be used.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies and locations indicated in Summary: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C 919, ASTM C 1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.

END OF SECTION 079219

SECTION 080671 – DOOR HARDWARE SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding Doors.
 - 3. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical and access control door hardware.
 - 3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
 - 4. Automatic operators.
 - 5. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section “Door Hardware”.
 - 2. Division 08 Section “Automatic Door Operators”.
- D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives.

The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should

be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
 2. The supplier is responsible for handling and sizing all products.
 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 087100 – Door Hardware.
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. MR - Markar
 3. PE - Pemko
 4. SU - Securitron
 5. RO - Rockwood
 6. RU - Corbin Russwin
 7. NO - Norton Rixson
 8. OT - Other
 9. AK - Alarm Controls
 10. SE - Securitech

Hardware Sets

Set: 1.0

Doors: 200

2 Continuous Hinge (ALUM) PT	<u>FM_SLF-HD1 PT x Required Length</u>		PE
2 Electric Power Transfer	<u>EL-CEPT</u>	630	SU
1 Mullion	<u>CR9xx(B)KM M57</u>		RU
1 Rim Exit Device, Exit Only	<u>ED5200S EO M92 MELR</u>	630	RU
1 Rim Exit Device, Nightlatch	<u>ED5200S K157ET M92 MELR</u>	630	RU

1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Concealed Overhead Holder/Stop	1-x36	630	NO
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Gasketing	Included by Aluminum door supplier		OT
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing (Mullion)	5110_		PE
2 Sweep	18061_		PE
1 Threshold	252x3 _FG		PE
1 Card Reader	Provided By Security Contractor		OT
1 Horn / Strobe	Provided By Others		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open."

Set: 2.0

Doors: 159

2 Continuous Hinge (ALUM) PT	_FM_SLF-HD1 PT x Required Length		PE
2 Electric Power Transfer	EL-CEPT	630	SU
1 Mullion	CR9xx(B)KM M57		RU
1 Rim Exit Device, Exit Only	ED5200S EO M92 MELR	630	RU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M92 MELR	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU

1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Concealed Overhead Holder/Stop	1-x36	630	NO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Automatic Opener	6000 series - mounting as req'd	689	NO
1 Gasketing	Included by Aluminum door supplier		OT
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing (Mullion)	5110_		PE
2 Sweep	18061_		PE
1 Threshold	252x3 _FG		PE
1 Card Reader	Provided By Security Contractor		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
2 Door Switch	505		NO
1 Power Supply	AQL series		SU

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

Door normally closed and locked.

Entrance by valid card to card-reader.

Free egress at all times.

Valid card to card-reader allows locked side actuator switch to function for activating automatic operator for ingress.

Inside (egress side) actuator switch is always functional to activate automatic operator for accessibility needs.

Loss of power maintains security from locked side of opening, automatic door operator loses the electrically open operation, yet operator will function as a normal mechanical door closer - Entrance by mechanical key only. Door monitored for door ajar or forced open.

Set: 3.0

Doors: 173, 209, 211, 225A, 225B, 229A, 229B

1 Continuous Hinge (ALUM) PT	_FM_SLF-HD1 PT x Required Length		PE
1 Electric Power Transfer	EL-CEPT	630	SU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M92 MELR	630	RU

1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Pull	RM201 Mtg-Type as req'd	US32D	RO
1 Concealed Overhead Holder/Stop	1-x36	630	NO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Gasketing	Included by Aluminum door supplier		OT
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Sweep	18061_		PE
1 Threshold	252x3_FG		PE
1 Card Reader	Provided By Security Contractor		OT
1 Horn / Strobe	Provided By Others		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open. Alarm / strobe (by others) will alert when door is propped open.

Set: 4.0

Doors: 104, 107, 128, 162

2 Continuous Hinge	HG315 x Length req'd CTP	630	MR
2 Electric Power Transfer	EL-CEPT	630	SU
1 Mullion	CR9xx(B)KM M57		RU
1 Rim Exit Device, Exit Only	ED5200S EO M92 MELR	630	RU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M92 MELR	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU

2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Surface Closer (UNI)	DC6210 A11	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing (Mullion)	5110_		PE
1 Gasketing	2891_PK (Head), 290_PK (Jamb x2)		PE
2 Sweep	18061_		PE
1 Threshold	252x3_FG		PE
1 Horn / Strobe	Provided By Others		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open. Alarm / strobe (by others) will alert when door is propped open.

Set: 5.0

Doors: 106

1 Continuous Hinge	HG315 x Length req'd CTP	630	MR
1 Electric Power Transfer	EL-CEPT	630	SU
1 Electrified Rim Exit, Fail Secure	ED5200S N9905ET M92	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer (UNI)	DC6210 A11	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing	2891_PK (Head), 290_PK (Jamb x2)		PE
1 Sweep	18061_		PE
1 Threshold	252x3_FG		PE
1 Card Reader	Provided By Security Contractor		OT
1 Horn / Strobe	Provided By Others		OT

1 Frame Harness	QC-C3000P	MK
1 Door Harness	QC-C**** x Required Length	MK
1 Position Switch	DPS-M/W_	SU
1 Power Supply	AQL series	SU
1 Wiring Diagram	Elevation and Point to Point as Specified	OT

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open. Alarm / strobe (by others) will alert when door is propped open.

Set: 6.0

Doors: 208D

2 Continuous Hinge	HG315 x Length req'd CTP	630	MR
2 Electric Power Transfer	EL-CEPT	630	SU
1 Mullion	CR9xx(B)KM M57		RU
2 Rim Exit Device, Exit Only	ED5200S EO M92	630	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Surface Closer (UNI)	DC6210 A11	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing (Mullion)	5110_		PE
1 Gasketing	2891_PK (Head), 290_PK (Jamb x2)		PE
2 Sweep	18061_		PE
1 Threshold	252x3_FG		PE
1 Horn / Strobe	Provided By Others		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: 1. Door position switch monitors open/closed status.

2. Motion sensor (REX) signals alarm system of an authorized exit without alarm condition.

Set: 7.0

Doors: 208C

1 Continuous Hinge	HG315 x Length req'd CTP	630	MR
1 Electric Power Transfer	EL-CEPT	630	SU
1 Rim Exit Device, Exit Only	ED5200S EO M92	630	RU
1 Surface Closer (UNI)	DC6210 A11	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing	2891_PK (Head), 290_PK (Jamb x2)		PE
1 Sweep	18061_		PE
1 Threshold	252x3_FG		PE
1 Horn / Strobe	Provided By Others		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: 1. Door position switch monitors open/closed status.

2. Motion sensor (REX) signals alarm system of an authorized exit without alarm condition.

Set: 8.0

Doors: 299

1 Continuous Hinge	HG315 x Length req'd	630	MR
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer (UNI)	DC6210 A11	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Rain Guard	346_ x Width of Frame Head (Omit at Overhangs)		PE
1 Gasketing	2891_PK (Head), 290_PK (Jamb x2)		PE
1 Sweep	18061_		PE
1 Threshold	252x3_FG		PE

Set: 9.0

Doors: 159A

2 Continuous Hinge (ALUM) PT	<u>FM_SLF-HD1 PT x Required Length</u>		PE
2 Electric Power Transfer	EL-CEPT	630	SU
1 Mullion	CR9xx(B)KM M57		RU
1 Rim Exit Device, Exit Only	ED5200S EO M92 MELR	630	RU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M92 MELR	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Concealed Overhead Holder/Stop	1-x36	630	NO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Automatic Opener	6000 series - mounting as req'd	689	NO
1 Gasketing	Included by Aluminum door supplier		OT
1 Gasketing (Mullion)	5110_		PE
1 Card Reader	Provided By Security Contractor		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
2 Door Switch	505		NO
1 Power Supply	AQL series		SU

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

Door normally closed and locked.

Entrance by valid card to card-reader.

Free egress at all times.

Valid card to card-reader allows locked side actuator switch to function for activating automatic operator for ingress.

Inside (egress side) actuator switch is always functional to activate automatic operator for accessibility needs.

Loss of power maintains security from locked side of opening, automatic door operator loses the electrically open operation, yet operator will function as a normal mechanical door closer - Entrance by mechanical key only. Door monitored for door ajar or forced open.

Set: 10.0

Doors: 202

2 Continuous Hinge (ALUM)	<u>_FM_SLF-HD1 x Required Length</u>		PE
1 Mullion	CR9xx(B)KM M57		RU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M52	630	RU
1 Rim Exit Device, Exit Only	ED5200S EO M52	630	RU
3 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
2 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	Included by Aluminum door supplier		OT
1 Gasketing (Mullion)	5110_		PE

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

Set: 11.0

Doors: 210A

1 Continuous Hinge (ALUM)	<u>_FM_SLF-HD1 x Required Length</u>		PE
1 Rim Exit Device, Nightlatch (Alarmed)	ED5200S K157ET M61	630	RU
2 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Pull	RM201 Mtg-Type as req'd	US32D	RO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Electromagnetic Holder	998M	689	NO
1 Gasketing	Included by Aluminum door supplier		OT
1 Card Reader	Provided By Security Contractor		OT

Notes: Coordinate hardware with Aluminum Door and Frame manufacturer. Provide special templates, brackets, spacers, drop plates and fasteners as required. Confirm hardware finish with architect prior to ordering.

-Egress side card-reader for shunting exit device alarm.

Operation:

** Doors normally held open by electromagnetic holders and will be released to close upon activation of fire alarm.

**Power to electromagnetic holders and relay to fire alarm by others.

Set: 12.0

Doors: 105, 112, 224

6 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Mullion	CR9xx(B)KM M57		RU
1 Electrified Rim Exit, Fail Secure	ED5200S N9905ET M92	630	RU
1 Rim Exit Device, Dummy	ED5200S N950ET M92	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Electromagnetic Holder	998M	689	NO
1 Gasketing	S88_ (size as required)		PE
1 Gasketing (Mullion)	5110_		PE
1 Card Reader	Provided By Security Contractor		OT
2 Frame Harness	QC-C3000P		MK
2 Door Harness	QC-C**** x Required Length		MK
2 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open.

Operation:

** Doors normally held open by electromagnetic holders and will be released to close upon activation of fire alarm.

**Power to electromagnetic holders and relay to fire alarm by others.

Set: 13.0

Doors: 208B

6 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Mullion	CR9xx(B)KM M57		RU
1 Rim Exit Device, Nightlatch	ED5200S K157ET M52	630	RU
1 Rim Exit Device, Exit Only	ED5200S EO M52	630	RU
3 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Mullion Cylinder Kit	CRMCK1 _ - type as req'd (match existing keying)	626	RU
2 Pull	RM201 Mtg-Type as req'd	US32D	RO
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE
1 Gasketing (Mullion)	5110_		PE

Set: 14.0

Doors: 106A

3 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Rim Exit Device, Nightlatch	ED5200S N957ET	630	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 15.0

Doors: 160B

3 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
3 Hinge, Hvy Wt, QC	T4A3786 QCxx (size per spec)	US26D	MK

1 Fail Secure Lock	ML20906-SEC NSA M92	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE
1 Card Reader	Provided By Security Contractor		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open.

Set: 16.0

Doors: 158, 159B

2 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Hinge, Hvy Wt, QC	T4A3786 QCxx (size per spec)	US26D	MK
1 Fail Secure Lock	ML20906-SEC NSA M92	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE
1 Card Reader	Provided By Security Contractor		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Door Release	TS-18		AK
1 Power Supply	AQL series		SU

1 Wiring Diagram	Elevation and Point to Point as Specified	OT

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader or by remote release.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open.

Set: 17.0

Doors: 158A

2 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Hinge, Hvy Wt, QC	T4A3786 QCxx (size per spec)	US26D	MK
1 Fail Secure Lock	ML20906-SEC NSA M92	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Electromagnetic Holder	998M	689	NO
1 Gasketing	S88_(size as required)		PE
1 Card Reader	Provided By Security Contractor		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Door Release	TS-18		AK
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified	OT	

Notes: Door normally closed and locked.

Entrance by presenting a valid card to card-reader or by remote release.

Egress allowed at all times.

Loss of power maintains security from lock side, entrance by mechanical key only.

Door monitored for door ajar and forced open.

Operation:

** Doors normally held open by electromagnetic holders and will be released to close upon activation of fire alarm.

**Power to electromagnetic holders and relay to fire alarm by others.

Set: 18.0

Doors: 159C

2 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Hinge, Hvy Wt, QC	T4A3786 QCxx (size per spec)	US26D	MK
1 Fail Secure Lock	ML20987-SEC NSA	626	RU
2 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Gasketing	S88_ (size as required)		PE
2 Card Reader	Provided By Security Contractor		OT
1 Frame Harness	QC-C3000P		MK
1 Door Harness	QC-C**** x Required Length		MK
1 Position Switch	DPS-M/W_		SU
1 Power Supply	AQL series		SU
1 Wiring Diagram	Elevation and Point to Point as Specified		OT

Notes: Application:

-Caution: not used for marked egress openings.

Door normally closed and locked from both sides of opening.

Ingress or egress by presenting a valid card to card-reader.

Loss of power maintains door security from either side of opening, ingress and egress by mechanical key only.

Door monitored for door ajar or forced open.

Set: 19.0

Doors: 117

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
3 Silencer	608/609		RO

Set: 20.0

Doors: 114A, 118A

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Overhead Holder/Stop	9-x36	630	NO
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
3 Silencer	608/609		RO

Set: 21.0

Doors: 115B, 164, 181, 201, 207

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 22.0

Doors: 160A, 212

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Overhead Holder/Stop	9-x36	630	NO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 23.0

Doors: 103, 105B, 126

6 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Dust Proof Strike	570	US26D	RO
2 Manual Flush Bolt	555 / 557	US26D	RO
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
2 Surface Overhead Holder/Stop	9-x36	630	NO
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Silencer	608/609		RO

Set: 24.0

Doors: 205

6 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Dust Proof Strike	570	US26D	RO
2 Manual Flush Bolt	555 / 557	US26D	RO
1 Storeroom Lock	ML2057 NSA	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
2 Mounting Bracket	2601_	US28	RO
1 Coordinator	2600 series (mounting as req'd)	US28	RO
2 Surface Closer (Stop-arm)	DC6210 A4	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 25.0

Doors: 122, 122A, 157B, 157C, 157D, 158C, 159D, 160C, 167A, 206

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Entrance Lock	ML2053 NSA M34	626	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 26.0

Doors: 103B, 103D

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Entrance Lock	ML2053 NSA M34	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Armor Plate	K1050 36" high CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE

Set: 27.0

Doors: 158B, 203

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Entrance Lock	ML2053 NSA M34	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Overhead Holder/Stop	9-x36	630	NO
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Gasketing	S88_(size as required)		PE

Set: 28.0

Doors: 101, 102, 168, 216, 217, 218, 219, 220, 221, 222, 223, 226, 227, 228, 231, 232, 237, 238

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Classroom Intruder Lock	ML2072 NSA V01	626	RU
2 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE

Notes: -

Set: 29.0

Doors: 121, 157E

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Constant Supervision Lock	49PL11	626	SE
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Surface Closer (Stop-arm)	DC6210 A4	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Notes: Constant Supervision Lock by Securitech. Single point with paddle.

Set: 30.0

Doors: 109, 110, 233, 234, 235, 236

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Passage Latch	ML2010 NSA	626	RU
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_ (size as required)		PE

Set: 31.0

Doors: 112B

2 Hinge	TA2714	US26D	MK
1 Passage Latch	ML2010 NSA	626	RU
1 Door Stop	400 series as req'd	US26D	RO
3 Silencer	608/609		RO

Set: 32.0

Doors: 100

3 Hinge (Qty as Specified)	TA2714 (size per spec, NRP as applicable)	US26D	MK
1 Passage Latch	ML2010 NSA	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO

1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE

Set: 33.0

Doors: 115, 120, 124, 159E

3 Hinge (Qty as Specified)	TA2314 (size per spec, NRP as applicable)	US32D	MK
1 Privacy Lock	ML2030 NSA M34 V21	626	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Mop Plate	K1050 4" high 4BE CSK	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE
1 Coat Hook	RM812	US26D	RO

Notes: mop plate at in-swing only.

Set: 34.0

Doors: 204

3 Hinge (Qty as Specified)	TA2314 (size per spec, NRP as applicable)	US32D	MK
1 Privacy Lock	ML2030 NSA M34 V21	626	RU
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Mop Plate	K1050 4" high 4BE CSK	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
1 Gasketing	S88_(size as required)		PE
1 Coat Hook	RM812	US26D	RO

Notes: mop plate at in-swing only.

Set: 35.0

Doors: 153

6 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
2 Push Pull	RM251 Mtg-Type as req'd	US32D	RO
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU

2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Door Stop	400 series as req'd	US26D	RO
1 Astragal	305CN		PE
1 Gasketing	S88_(size as required)		PE

Set: 36.0

Doors: 130, 131, 163, 165, 179, 180

3 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Pull Plate	111x70C	US32D	RO
1 Push Plate	70C	US32D	RO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Door Stop	400 series as req'd	US26D	RO
3 Silencer	608/609		RO

Set: 37.0

Doors: 208A

3 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
1 Deadlock	ML2012	626	RU
2 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Pull Plate	111x70C	US32D	RO
1 Push Plate	70C	US32D	RO
1 Surface Overhead Holder/Stop	9-x36	630	NO
1 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
1 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
1 Gasketing	S88_(size as required)		PE

Notes: Application:

-Caution: not used for marked egress openings. Coordinate installation and prep for mortise dead lock with push / pull plates.

Set: 38.0

Doors: e104A, e105, e106B, e107A, e113, e114, e127, e128A, e136, e138, e141, e143, e148, e149, e150, e161, e162A, e167, e173A, e176

1 Hardware	Hardware is Existing to remain (Field Verify)	OT

Set: 39.0

Doors: e125, e160B

1 Entrance Lock	ML2053 NSA M34	626	RU
1 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Hardware	Balance of hardware existing to remain		OT

Notes: Application:

-Field verify existing conditions and field modify existing door and/or frame, as required, to accept new hardware specified.

-Immediately inform the Architect of product that may not work with the existing frame and/or door conditions.

Set: 40.0

Doors: e108, e111, e118, e119, e133, e134, e135, e137, e140, e142, e145, e146, e151, e152, e154, e155, e167A, e169, e170, e171, e172, e174, e175, e177, e178

1 Classroom Intruder Lock	ML2072 NSA V01	626	RU
2 Cylinder	Corbin Russwin - type as req'd (match existing keying)	626	RU
1 Hardware	Balance of hardware existing to remain		OT

Notes: Application:

-Field verify existing conditions and field modify existing door and/or frame, as required, to accept new hardware specified.

-Immediately inform the Architect of product that may not work with the existing frame and/or door conditions.

Set: 41.0

Doors: 210B

6 Hinge (Qty as Specified), Hvy Wt	T4A3786 (size per spec, NRP as applicable)	US26D	MK
2 Surface Vert Rod Exit, Exit Only	ED5470 EO M55	630	RU
2 Surface Closer	DC6200 A3 / DC6210 A10 - mounting as req'd	689	RU
2 Kick Plate	K1050 10" (high) CSK BEV	US32D	RO
2 Electromagnetic Holder	998M	689	NO
1 Astragal	305CN		PE
1 Gasketing	S88_(size as required)		PE

Notes: Operation:

** Doors normally held open by electromagnetic holders and will be released to close upon activation of fire alarm.

**Power to electromagnetic holders and relay to fire alarm by others.

END OF SECTION 080671

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SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 01 Section "General Conditions".
2. Division 04 Section "Masonry".
3. Division 06 Section "Rough Carpentry".
4. Division 06 Section "Finish Carpentry".
5. Division 08 Section "Operations and Maintenance".
6. Division 08 Section "Flush Wood Doors".
7. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
8. Division 08 Section "Glazing".
9. Division 08 Section "Door Hardware".
10. Division 08 Section "Automatic Door Operators".
11. Division 09 Sections "Painting".
12. Division 26 Section "Electrical"

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. SDI-113 Standard Practice for Determining the Steady-State Thermal Transmittance of Steel Door & Frame Assemblies.
10. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
11. ASTM C1199 - Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
12. ASTM E1423 - Practice for Determining Steady State Thermal Transmittance of Fenestration Systems.
13. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
14. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
15. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
16. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
17. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
18. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
19. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
 1. Elevations of each door design.
 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of anchorages, joints, field splices, and connections.
 6. Details of accessories.
 7. Details of moldings, removable stops, and glazing.
 8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
 1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40" above sill) or UL 10C.
 - 1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
 - 2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
 - 3. Smoke Control Door Assemblies: Comply with NFPA 105.
 - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.
- D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.
- E. Energy Efficient Exterior Openings: Comply with minimum thermal ratings, based on SDI-113, ASTM C1363, ASTM C1199 and ASTM E1423. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.
 - 1. Thermal Performance (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with SDI-113, ASTM C1363, ASTM C1199 and ASTM E143 and meet or exceed the following requirements:
 - a. Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.34, R-Value 2.92, including insulated door, thermal-break frame and threshold.
 - 2. Air Infiltration (Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283 to meet or exceed the following requirements:
 - a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).
- F. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and

frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:

1. CECO Door Products (C), or equal.
2. Curries Company (CU) or equal.

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.
 1. Design: Flush panel.
 2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds or thermally enhanced stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".
 - a. Provide 22-gauge steel stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
 - b. Thermal properties to rate at a fully operable minimum U-Factor 0.34 and R-Value 2.92, including insulated door, thermal-break frame and threshold.
 - c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.
 3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053 inch - 1.3-mm) thick steel, Model 2.
 4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
 6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".

7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, or one-piece polystyrene core, securely bonded to both faces.
 - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
 3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
 4. Vertical Edges: Vertical edges to have the face sheets spot welded and filled full height with an epoxy filler. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
 5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
 6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
 7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Manufacturers Basis of Design:
1. Curries Company (CU) - Polystyrene Core - 707 Series, or equal.
 2. Curries Company (CU) - Energy Efficient - 777 Trio-E Series, or equal.
- 2.4 HOLLOW METAL FRAMES
- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16" positive thermal break and integral vinyl weatherstripping.
- C. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
 2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
 3. Manufacturers Basis of Design:

- a. Curries Company (CU) - M Series, or equal.
 - b. Curries Company (CU) - Mercury 3 Thermal Break TQ Series, or equal.
- D. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
 - 1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
 - 2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
 - 3. Manufacturers Basis of Design:
 - a. Curries Company (CU) - M Series, or equal.
- E. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- F. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.
 - 3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.6 LOUVERS

- A. Metal Louvers: Unless otherwise indicated provide louvers to meet the following requirements.
 - 1. Blade Type: Vision proof inverted V or inverted Y.
 - 2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.
- B. Louvers for Fire Rated Doors: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire protection rating of 1-1/2 hours and less.
 - 1. Manufacturers: Subject to compliance with requirements, provide louvers to meet rating indicated.

2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

2.7 LIGHT OPENINGS AND GLAZING

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.8 ACCESSORIES

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.9 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.
- C. Hollow Metal Doors:
 1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
 2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
 3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.

4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
5. Electrical Raceways: Provide hollow metal doors to receive electrified hardware with concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through-wire transfer hardware or wiring harness specified in hardware sets in Division 08 Sections "Door Hardware" and "Access Control Hardware". Wire nut connections are not acceptable.

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Electrical Knock Out Boxes: Factory weld 18 gauge electrical knock out boxes to frame for electrical hardware preps; including but not limited to, electric through wire transfer hardware, electrical raceways and wiring harnesses, door position switches, electric strikes, magnetic locks, and jamb mounted card readers as specified in hardware sets in Division 08 Sections "Door Hardware" and "Access Control Hardware".
 - a. Provide electrical knock out boxes with a dual 1/2-inch and 3/4-inch knockouts.
 - b. Conduit to be coordinated and installed in the field (Division 26) from middle hinge box and strike box to door position box.
 - c. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 08 Section "Door Hardware".
 - d. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.
9. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
10. Jamb Anchors: Provide number and spacing of anchors as follows:

- a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches on-center and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
- b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
11. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
12. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
 1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.10 STEEL FINISHES

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.
- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.
- E. Verify tolerances against manufacturers installations instructions for tornado and hurricane storm shelter openings.

3.3 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
 - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
 - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

- a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
- b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
- c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
- d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

3.5 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

END OF SECTION 081113

SECTION 08 1416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid-core doors with plastic-laminate faces.
 - 2. Existing plastic laminate doors
 - 3. Factory fitting flush wood doors to frames and factory machining for hardware.

1.2 SUBMITTALS

- A. Bundled Submittal: Make submittal related to Sections listed below in a single package. Include product data, shop drawings, and schedule data.
 - 1. Section 081113 – Hollow Metal Doors and Frames.
 - 2. Section 081416 – Flush Wood Doors.
 - 3. Section 087100 – Door Hardware.
- B. Product Data: For each type of door indicated. Include details of core and edge construction and trim for openings.
- C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Dimensions and locations of blocking.
 - 2. Indicate dimensions and locations of mortises and holes for hardware.
 - 3. Indicate dimensions and locations of cutouts.
- D. Samples for Verification:
 - 1. Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each color, texture, and pattern of plastic laminate required.
- E. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain doors from single manufacturer.
- B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."

- C. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - c. Delamination.
 - 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Solid-Core Doors With High Pressure Laminate Faces: Provide VT Industries, or subject to compliance with requirements including color, provide equal product by one of the following:
 - 1. Algoma Hardwoods, Inc.
 - 2. Eggers Industries.
 - 3. Graham; an Assa Abloy Group company.
 - 4. Marshfield Doors.

2.2 DOOR CONSTRUCTION, GENERAL

2.3 PLASTIC-LAMINATE-FACED DOORS

A. Interior Solid-Core Doors:

1. Grade: Custom.
2. Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, Grade HGS.
3. Colors, Patterns, and Finishes:
 - a. Formica High Pressure Laminate, Color: 9038 Natural White Oak, Texture: 26 Oiled Wood
4. Exposed Vertical Edges: Plastic laminate that matches faces, applied before faces.
5. Core: Particleboard.
 - a. Provide blocking above and below glazing for the installation of blinds and anchoring clips where noted on the door schedule.
6. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before faces and crossbands are applied. Faces are bonded to core using a hot press.

2.4 EXISTING PLASTIC-LAMINATE-FACED DOORS

A. Resurfaced Existing Plastic Laminate Doors

1. Description: Resurface all exposed surfaces of existing laminate doors with pressure sensitive architectural film. Paint metal trims and frames.
 - a. See Specification 09 7726 Architectural Film and Finish Schedule for product and color information.
 - b. See Specification 09 9123 and Finish Schedule Interior painting for paint information
 - c. Remove existing hardware, kick plates and trims. Clean surface as required by manufacture.
 - d. Install film as directed by manufacturer.
 - e. Reinstall new and existing door hardware, kick plates and re-painted trims.

2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 1. Comply with requirements in NFPA 80 for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
 1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

2. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- C. Openings: Cut and trim openings through doors in factory.
 1. Light Openings: Stop glazing with 3/8-inch-thick wood trim to match door veneer species. Provide width of stop so that the edge is flush with face of door.
 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."
 - a. Coordinate with window covering installer for blind locations noted on door schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames before hanging doors.
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
- C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
 1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes access doors and frames for walls and ceilings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of access door and frame and for each finish specified.
- C. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Exposed Flanges:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Babcock-Davis.
 - b. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - c. Larsens Manufacturing Company.
 - d. Milcor; Commercial Products Group of Hart & Cooley, Inc.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Wall and ceiling.
4. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch (1.63 mm), 16 gage, factory primed.
5. Frame Material: Same material, thickness, and finish as door.
6. Latch and Lock: Cam latch, hex-head wrench operated with interior release.

2.2 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- D. Frame Anchors: Same material as door face.
- E. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.3 FABRICATION

- A. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
- C. Latch and Lock Hardware:
 - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
 - 2. Keys: Furnish two keys per lock and key all locks alike.

2.4 FINISHES

- A. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 083113

SECTION 08 4113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior storefront framing.
2. Exterior manual-swing entrance doors and door-frame units.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

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

- B. Shop Drawings: Include plans, elevations, sections, full-size details, and attachments to other work.

1. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

- C. Samples: For each exposed finish required.

- D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams.

1.4 INFORMATIONAL SUBMITTALS

- A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- B. Structural Loads:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- C. Deflection of Framing Members: At design wind pressure, as follows:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19.1 mm), whichever is less.
 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch (3.2 mm), whichever is smaller.
 - a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.
- D. Structural: Test according to ASTM E 330 as follows:
1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
 2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- E. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
1. Fixed Framing and Glass Area:
 - a. Maximum air leakage of 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
 2. Entrance Doors:
 - a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
 - b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. (2.54 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).
- F. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:
1. No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).
- G. Energy Performance: Certify and label energy performance according to NFRC as follows:
1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.44 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
 2. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 25 as determined according to NFRC 500.
- H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America; an Alcoa company; Trifab 451T and 601T, or a comparable products by one of the following:
1. EFCO Corporation.
 2. Manko

2.3 FRAMING

- A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Construction: Thermally broken.
 2. Glazing System: Retained mechanically with gaskets on four sides.
 3. Glazing Plane: Center.
 4. Finish: Dark Bronze Anodized
 5. Fabrication Method: Field-fabricated stick system.
- B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Materials:
1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209 (ASTM B 209M).
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
 - c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - d. Structural Profiles: ASTM B 308/B 308M.
 2. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
 - a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
 - c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's glazed entrance doors for manual-swing operation.
1. Product: Kawneer 500 Tuffline, or equal.

2. Door Construction: 2-inch (50.8-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
3. Door Design: Refer to door elevations on drawings.
4. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.

2.5 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."
- B. General: Provide entrance door hardware and entrance door hardware sets indicated in Section 087100 "Door Hardware" for each entrance door to comply with requirements in this Section.
 1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products complying with BHMA standard referenced.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
 3. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
- C. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
 1. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.
- D. Hinges: Refer to 087100.
- E. Panic Exit Devices: Refer to 087100.
- F. Cylinders: Refer to 087100.
- G. Strikes: Refer to 087100.
- H. Operating Trim: Refer to 087100.
- I. Closers: Manufacturer's Standard unless specified in 087100.
- J. Refer to 087100.

- K. Weather Sweeps: Manufacturer's Standard unless specified in 087100.
- L. Thresholds: Refer to 087100.

2.6 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.

2.7 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Provisions for field replacement of glazing from interior.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.8 ALUMINUM FINISHES

- A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

- B. Color: Dark bronze

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 079200 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 088000 "Glazing."

G. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

3.2 FIELD QUALITY CONTROL

A. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.
 - a. Perform a minimum of three tests in areas as directed by Architect.

- B. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Automatic operators.
 - 4. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 01 Section "General Conditions".
 - 2. Division 06 Section "Rough Carpentry".
 - 3. Division 06 Section "Finish Carpentry".
 - 4. Division 08 Section "Operations and Maintenance".
 - 5. Division 08 Section "Hollow Metal Doors and Frames".
 - 6. Division 08 Section "Flush Wood Doors".
 - 7. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
 - 8. Division 08 Section "Automatic Door Operators".
 - 9. Division 26 Section "Electrical"
- D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.

8. State Building Codes, Local Amendments.

- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.
- B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.2 BUTT HINGES

- A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.
 - b. Provide single acting spring hinges of the type and style as specified.
 - c. Provide double acting spring hinges of the type and style as specified.
5. Manufacturers:
 - a. Hager Companies (HA) - BB Series, 5-knuckle.
 - b. Ives (IV) - 5BB Series, 5-knuckle.
 - c. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.3 CONTINUOUS HINGES

- A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 - 1. Manufacturers:
 - a. Pemko (PE).
- B. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed stainless pin, and twin self-lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 - 1. Manufacturers:
 - a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR).

2.4 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets with a 1-year warranty. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
 - 1. Manufacturers:
 - a. McKinney (MK) - QC (# wires) Option.
- B. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
 - 1. Manufacturers:
 - a. Pemko (PE) - EL-CEPT Series.
 - b. Securitron (SU) - EL-CEPT Series.
- C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length

required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

- a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
- b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

- a. McKinney (MK) - QC-C Series.

2.5 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
 - a. Door Controls International (DC).
 - b. Ives (IV).
 - c. Rockwood (RO).

- B. Coordinators: ANSI/BHMA A156.3 door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:
 - a. Door Controls International (DC).
 - b. Ives (IV).
 - c. Rockwood (RO).

- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.

3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10" clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:
 - a. Burns Manufacturing (BU).
 - b. Ives (IV).
 - c. Rockwood (RO).

2.6 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU).
- B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
 1. Threaded mortise cylinders with rings and cams to suit hardware application.
 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 4. Tubular deadlocks and other auxiliary locks.
 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 6. Keyway: Match Facility Standard.
- C. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Field verify and key cylinders to match Owner's existing system.
- D. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).

- E. Construction Keying: Provide construction master keyed cylinders.
- F. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.7 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.
 - 1. Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).

2.8 MORTISE LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.
 - 1. Electromechanical locksets shall have the following functions and features:
 - a. Universal Molex plug-in connectors that have standardized color-coded wiring and are available in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
 - b. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
 - c. Options to be available for request-to-exit or enter signaling, latchbolt and deadbolt monitoring.
 - d. Two-year limited warranty on electrified functions.
 - 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML2000 Series.
 - b. No Substitution.

2.9 DEADLOCKS AND LATCHES

- A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DL4000 Series.
- b. No Substitution.

- B. Mortise Deadlocks, Large Case: ANSI/BHMA A156.13 Grade 1 Certified Products Directory (CPD) listed large case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. One piece stainless steel bolts with a 1" throw. Deadlocks to be products of the same source manufacturer and keyway as other locksets.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - ML2000 Series.
- b. No Substitution.

2.10 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

- B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.11 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the

- proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
 5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 6. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
 7. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 8. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 9. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 10. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 11. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 12. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.
1. Electromechanical exit devices shall have the following functions and features:
 - a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
 - b. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
 - c. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.
 - d. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.
 - e. Five-year limited warranty for electromechanical features.
 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. No Substitution.

- C. Security Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed rim panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be constructed of high grade, heat treated, corrosion resistant nickel steel alloy, and have a full 3/4" throw projection with slide action positive deadlocking.
 - 1. Static Load Force Resistance: Minimum 3000 lbs. certified independent tested.
 - 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000S / ED5000S Series.
 - b. No Substitution.
- D. Steel Removable Mullions: ANSI/BHMA A156.3 steel removable mullions with options for fire rating, locking, through-wire electrification and hurricane compliance as specified.
 - 1. Provide mullions with functions and features as follows:
 - a. Provide keyed removable feature where specified in the Hardware Sets.
 - b. Provide stabilizers and mounting brackets as required.
 - 2. Manufacturers:
 - a. Same as exit device manufacturer.

2.12 SURFACE DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 - 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
 - 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - 3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
 - 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 - 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size,

frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC6000 Series.

2.13 ELECTROHYDRAULIC DOOR OPERATORS

- A. Electrohydraulic Door Operators (High Traffic): Provide ANSI/BHMA A156.19 Certified Products Directory (CPD) listed low energy operators that meet ANSI/BHMA A156.4 requirements and are UL listed for use on fire rated doors and UL10C certified that comply with requirements for the Americans with Disabilities Act (ADA). Operators shall be verified by GreenCircle to offer energy savings of 19% when compared to similar products to accommodate openings up 250 pounds and 48" wide. Provide accessories such as custom templates, special mounting brackets, spacers and drop plates as needed for proper installation. Operators shall accommodate openings up to 200 pounds and 48" wide. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide operators with features as follows:

- a. Non-handed with push and pull side mounting.
- b. Operates as mechanical surface closer during close cycles, when door is opened manually or if power is off.
- c. Activation by push button, hands-free or radio frequency devices.
- d. On board electronics to collect usage and cycle count data to facilitate preventative maintenance/diagnostics.
- e. Two-year limited warranty.
- f. Wi-Fi interface where the operator is a secure, password protected WiFi hot spot with no connection to building's IT required.
 - 1) Simple setup with no app required.
 - 2) View status and make adjustments without removing the cover.
 - 3) Built-in logic to support single use restroom applications with no external relay boards, logic modules, position switches required.
- g. Mounting backplate to simplify and speed up installation.

2. Operators shall have the following functionality:

- a. Adjustable Hold Open: Amount of time a door will stay in the full open position after an activation.
- b. Blow Open for Smoke Ventilation: Door opens when signal is received from alarm system allowing air or smoke to flow through opening. Door will stay open until signal from alarm system is stopped.
- c. Infinite Hold Open: Door will hold open at set position until power is turned off.
- d. Obstruction Detection: Door closes if it hits an obstruction while opening; door will reverse to open position if it hits an obstruction while closing. Door will stop once it hits an obstruction and will rest against the obstruction until removed.
- e. Open Delay: Delays operator opening for locking hardware.

- f. Overload Safety Shut-Off: After two minutes of receiving a door activation signal, inverter times out and door closes to prevent motor/inverter damage.
 - g. Presence Detector Input: Input for external sensor to detect presence at door open or close position only.
 - h. Push & Go: As the door is manually opened, the operator "senses" movement and opens door to the full-open position.
 - i. Selector Mode Switch: Off disables the signal inputs unless Blow Open is activated, on activates the signal inputs, hold open activates the unit (unless Blow Closed is activated) to the hold open position.
 - j. Vestibule Delay: When the wall switch is pressed, first door in vestibule will open. Second door will open once vestibule door delay has expired. Delay is adjustable.
3. Manufacturers:
- a. Norton Rixson (NO) - 6000 Series.

2.14 SURFACE MOUNTED CLOSER HOLDERS

- A. Electromagnetic Door Holders: ANSI A156.15, Grade 1 electromagnetic door holder/releases with a minimum 25 to 40 pounds holding power and fail-safe operation; power failure releases door to close.
1. Manufacturers:
- a. Norton Rixson (NO) - 900 Series.
 - b. Sargent Manufacturing (SA) - 1560 Series.

2.15 ARCHITECTURAL TRIM AND ACCESSORIES

- A. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1" less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.
1. Provide protective trim with functions and features as follows:
- a. Meets ADA requirements for smooth bottom door surfaces.
 - b. UL Classified options for use on fire-rated doors up to 3 hours.
 - c. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.
 - d. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.
 - e. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.
 - f. Fasteners included; adhesive-backed options available for select models.
 - g. Ten-year limited warranty.
2. Manufacturers:

- a. Hager Companies (HA).
- b. Rockwood (RO).
- c. Trimco (TC).

2.16 DOOR STOPS AND HOLDERS

- A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 - 1. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood (RO).
 - c. Trimco (TC).
- B. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 - 1. Manufacturers:
 - a. Norton Rixson (NO).

2.17 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. Pemko (PE).
 - 2. Reese Enterprises, Inc. (RE).

2.18 ELECTRONIC ACCESSORIES

- A. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.
 - 1. Manufacturers:
 - a. Alarm Controls (AK) - TS Series.
 - b. Securitron (SU) - PB Series.
- B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Manufacturers:
 - a. Alarm Controls (AK) - CP1-1026 Series.
 - b. Sargent Manufacturing (SA) - 3280 Series.
 - c. Securitron (SU) - DPS Series.
- C. Intelligent Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
 - 1. Power supplies shall meet all functions and features as specified herein.
 - a. UL listed dual voltage 12 or 24 VDC field selectable continuous output.
 - b. Dedicated fast charger to prolong battery life with low battery cutoff to protect batteries from deep discharge.
 - c. Enhanced surge immunity for input/output protection
 - d. Separate, dedicated battery charging circuit to keep locks cooler.
 - e. Dual-color LED visual notification to prevent applying incorrect voltages to the power supply.
 - f. Instant auto-switch to battery on AC loss.
 - g. Expandable up to 16 outputs in the standard enclosure

- h. Integrated fire alarm interface to allow main output shutdown or disconnect on a per output basis when using an R8 output module.
- i. Network ready and remotely manage locks and connected devices when using an M8 managed output module on network models.
- j. Lifetime replacement, no-fault, no questions asked warranty.

2. Manufacturers:

- a. Securitron (SU) - AQL Series.

2.19 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.20 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handing and sizing all products.
 - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 - 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Glass for windows, doors, interior borrowed lites and storefront framing.
2. Glazing sealants and accessories.

1.2 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Preconstruction adhesion and compatibility test report.

1.5 QUALITY ASSURANCE

- A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.7 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 5 years from date of Substantial Completion.

- C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Vitro Architectural Glass (Formerly Oldcastle); Solarban 60, or a comparable product by one of the following:
 1. Guardian Glass; SunGuard.
 2. Pilkington North America.
 3. Viracon, Inc.
- B. Color: To be selected from manufacturer's standard colors.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the International Building Code and ASTM E 1300.
 - 1. Design Wind Pressures: As indicated on Structural Drawings.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
 - 2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
 - 3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
 - 2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
 - 3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
 - 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass[as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass[as needed to comply with "Performance

Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.
- B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
- C. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer or cast-in-place and cured-transparent-resin interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seals.
 - 2. Perimeter Spacer: Manufacturer's standard spacer material and construction.

2.7 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

- B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Dow Corning Corporation.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.
 - c. Pecora Corporation.
 - d. Sika Corporation.
 - e. Tremco Incorporated.

2.8 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.9 MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- E. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Apply heel bead of elastomeric sealant.
- F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.3 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 WINDOW ACCESSORIES

- A. Window speak-thru
 - 1. Basis of Design: CRL No Draft Speak Thru, Model: 834A
 - a. Material: Satin Anodized Aluminum
 - b. Operation: Mechanical, unpowered
 - c. Diameter 5 inches
 - d. Gasket Material: Cork

3.6 CLEANING AND PROTECTION

- A. Immediately after installation remove nonpermanent labels and clean surfaces.

- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

3.7 MONOLITHIC GLASS SCHEDULE

- A. Clear fully tempered float glass.
 - 1. Minimum Thickness: 6 mm.
 - 2. Safety glazing required.
 - 3. Locations: Where non-insulated safety glazing is indicated or required by code, except at offices.

3.8 LAMINATED GLASS SCHEDULE

- A. Clear laminated glass with two plies of clear annealed float glass.
 - 1. Minimum Thickness of Each Glass Ply: 4 mm.
 - 2. Interlayer Thickness: 0.030 inch (0.76 mm).
 - 3. Safety glazing required.
 - 4. Locations: As indicated on Drawings.

3.9 INSULATING GLASS SCHEDULE

- A. Low-E-coated, clear insulating glass.
 - 1. Basis-of-Design Product: PPG, Solarban 60 Low-E Insulating-Glass Units or equal.
 - 2. Overall Unit Thickness: 1 inch (25 mm).
 - 3. Minimum Thickness of Each Glass Lite: 6 mm.
 - 4. Outdoor Lite: Annealed float glass.
 - 5. Interspace Content: Air.
 - 6. Indoor Lite: Annealed float glass.
 - 7. Low-E Coating: Pyrolytic on second surface.
 - 8. Visible Light Transmittance: 70 percent minimum.
 - 9. Winter Nighttime U-Factor: 0.29 maximum.
 - 10. Summer Daytime U-Factor: 0.27 maximum.
 - 11. Solar Heat Gain Coefficient: .38.
 - 12. Outdoor Visible Reflectance: 11 percent maximum.
 - 13. Shading Coefficient: 0.44.
- B. Low-E-coated, clear insulating, safety glass.

1. Basis-of-Design Product: PPG, Solarban 60 Low-E Insulating-Glass Units or equal.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Air.
6. Indoor Lite: Fully tempered float glass.
7. Low-E Coating: Pyrolytic on second surface.
8. Visible Light Transmittance: 70 percent minimum.
9. Winter Nighttime U-Factor: 0.29 maximum.
10. Summer Daytime U-Factor: 0.27 maximum.
11. Solar Heat Gain Coefficient: .38.
12. Outdoor Visible Reflectance: 11 percent maximum.
13. Shading Coefficient: 0.44.
14. Safety glazing required.
15. Location: Where insulated, safety glazing is indicated or required by code, unless indicated otherwise.

C. Low-E-coated, clear insulating, laminated glass.

1. Basis-of-Design Product: PPG, Solarban 60 Low-E Insulating-Glass Units or equal.
2. Overall Unit Thickness: 1 inch (25 mm).
3. Minimum Thickness of Each Glass Lite: 6 mm.
4. Outdoor Lite: Fully tempered float glass.
5. Interspace Content: Air.
6. Indoor Lite: laminated glass.
7. Low-E Coating: Pyrolytic on second surface.
8. Visible Light Transmittance: 70 percent minimum.
9. Winter Nighttime U-Factor: 0.29 maximum.
10. Summer Daytime U-Factor: 0.27 maximum.
11. Solar Heat Gain Coefficient: .38.
12. Outdoor Visible Reflectance: 11 percent maximum.
13. Shading Coefficient: 0.44.
14. Safety glazing required.
15. Location: As indicated on Drawings.

END OF SECTION 08 8000

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association the Steel Framing Industry Association or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C 645.

1. Steel Studs and Tracks:
 - a. Minimum Base-Metal Thickness: 0.0269 inch (0.683 mm).
 - b. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Single Long-Leg Track System: ASTM C 645 top track with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into

- top track and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.
 - 2. Double-Track System: ASTM C 645 top outer tracks, inside track with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
 - 3. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
- 1. Minimum Base-Metal Thickness: 0.0269 inch (0.683 mm).
- E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
- 1. Minimum Base-Metal Thickness: 0.0179 inch (0.455 mm).
 - 2. Depth: As indicated on Drawings.
- F. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-metal thickness of 0.0179 inch (0.455 mm), and depth required to fit insulation thickness indicated.
- G. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. ClarkDietrich Building Systems; RC Deluxe.
 - b. MRI Steel Framing, LLC; Resilient Furring Channel (RC-1).
 - c. SCAFCO Steel Stud Company; Serenity-1 RC.
 - d. Steel Construction Systems; RC 1/Serenity.
 - 2. Configuration: Asymmetrical.

2.2 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.
- B. Hanger Attachments to Concrete:
- 1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES, AC01, AC193, AC58, or AC308 as appropriate for the substrate.
 - a. Uses: Securing hangers to structure.
 - b. Type: Torque-controlled, expansion anchor torque-controlled, adhesive anchor or adhesive anchor.

- c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
 - d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.
- D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch (1.367 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
 - 1. Depth: 1-1/2 inches (38 mm).
- E. Furring Channels (Furring Members):
 - 1. Cold-Rolled Channels: 0.0538-inch (1.367-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
 - 2. Steel Studs and Tracks: ASTM C 645.
 - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm).
 - b. Depth: 1-5/8 inches (41 mm).
 - 3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.
 - a. Minimum Base-Metal Thickness: 0.0296 inch (0.752 mm).

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide the following:
 - 1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- E. Direct Furring:
 - 1. Screw to wood framing.
 - 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
- F. Z-Shaped Furring Members:

1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced 24 inches (610 mm) o.c.
 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.
- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.3 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 5. Do not attach hangers to steel roof deck.
 6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

- D. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 09 2900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Tile backing panels.
3. Texture finishes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each texture finish indicated on same backing indicated for Work.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.8 mm).
2. Long Edges: Tapered.

C. Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch (15.9 mm), Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.3 TILE BACKING PANELS

- A. Provide Glass-Mat, Water-Resistant Backing Board, ASTM C 1178/C 1178M, with manufacturer's standard edges.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; GlasRoc Tile Backer.
 - b. National Gypsum Company; eXP Tile Backer.
 - c. USG Corporation; USG Durock™ Glass-Mat Tile Backerboard.
 - 2. Core: 5/8 inch (15.9 mm), Type X.
 - 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 - 1. Material: Paper-faced galvanized-steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
 - b. Bullnose bead.
 - c. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - d. L-Bead: L-shaped; exposed long flange receives joint compound.
 - e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - f. Expansion (control) joint.
 - g. Curved-Edge Cornerbead: With notched or flexible flanges.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
 - 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.

4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
- C. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
- D. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."
- F. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

2.7 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Non-Aggregate Finish: Premixed, vinyl texture finish for spray application.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; ProRoc Easi-Tex Spray Texture.
 - b. National Gypsum Company; ProForm BRAND Perfect Spray EM.
 - c. USG Corporation; BEADEX FasTex Wall and Ceiling Spray Texture.
 2. Texture:
 - a. Light Orange Peel, typical unless noted otherwise.
 - b. Where indicated as "smooth" and behind wall covering: No texture.

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

- A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

- B. Comply with ASTM C 840.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- E. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - 2. Level 2: Panels that are substrate for tile.
 - 3. Level 4, Typical: At panel surfaces that will be exposed to view and receive a textured finish or wall covering, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
 - 4. Level 5: At surfaces exposed to view as indicated on the drawings
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
 - b. Texture: Smooth

3.2 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

3.3 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pressed floor tile.
 - 2. Glazed wall tile.
 - 3. Tile backing panels - See Specification 09 2900
 - 4. Crack isolation membranes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples:
 - 1. Each type and composition of tile and for each color and finish required.
 - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials to the Owner that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent (but no less than one full box) of amount installed for each type, composition, color, pattern, and size indicated.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer is a Five-Star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.
 - 2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
 - 3. Installer employs only Ceramic Tile Education Foundation Certified Installers for Project.

- B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup of each type of floor tile installation.
 - 2. Build mockup of each type of wall tile installation.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide Standard-grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

2.2 TILE PRODUCTS

A. Pressed Floor Tile Type, Glazed - CT7

- 1. Basis of Design: Subject to compliance to the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - a. MILEstone Porcelain Tile, Style: Plaster 2.0 Floor
- 2. Composition: Impervious natural clay or porcelain
- 3. Face Size: 32 by 32 inches (813 by 813 mm)
- 4. Face Size Variation: Rectified
- 5. Thickness: 3/8 inch (9.5 mm)
- 6. Face: Pattern of design indicated, with square edges
- 7. Dynamic Coefficient of Friction: Not less than 0.42.
- 8. Glaze: Matte, opaque
- 9. Tile Color and Pattern: As indicated in the Finish Schedule
- 10. Grout Color: As selected by Architect from manufacturer's full range
- 11. Trims: See section 2.8 Miscellaneous Materials

B. Glazed Wall Tile Type – CT1 through 6

1. Basis of Design: Subject to compliance to the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:

- a. MILEstone Porcelain Tile, Style: Plaster 2.0 Glazed Wall Tile

2. Module Size: 6 by 24 inches (152 by 610 mm)
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch (8 mm).
5. Face: Pattern of design indicated, with manufacturer's standard edges
6. Finish: Matte, opaque glaze.
7. Tile Color: As indicated in the Finish Schedule
8. Tile Pattern A: Stacked rows of CT 1 through 6, 75% CT1 randomly blended with equal parts of CT 2,3,4,5&6
9. Grout Color: As selected by Architect from manufacturer's full range.
10. Trims: See section 2.8 Miscellaneous Materials

2.3 TILE BACKING PANELS – SEE SPECIFICATION SECTION 09 2900 GYPSUM BOARD

2.4 CRACK ISOLATION MEMBRANES

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch (4-mm) nominal thickness.

1. Basis of Design: Schluter DITRA for Crack Suppression

2.5 SETTING MATERIALS

- A. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 1. Basis of Design: Mapei Keraflex Plus
 2. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
 3. For wall applications, provide nonsagging mortar.

2.6 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Modified Single Component Grout: ANSI A118.6
 1. Basis of Design: Mapei Keracolor S Sanded
- C. Water-Cleanable Epoxy Grout: ANSI A118.3

1. Basis of Design: Mapei Kerapoxy CQ, 100% solids epoxy grout

2.7 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic, designed specifically for flooring applications; stainless steel, ASTM A276/A276M or ASTM A666, 300 Series exposed-edge material.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product as approved by the Architect:

- a. Schluter Systems L.P.

- a)
 - a) Metal Cove with movement zone, DILEX-HKS, V2A E Stainless Steel 304, Use: Wall tile to floor tile cove
 - b) Metal Cove, DILEX-AHKA, AE Satin Anodized Aluminum, Use: Wall tile to non-tile flooring
 - c) Edge and Cap Trims: QUADDEC, V2A E Stainless Steel 304, Use: Wainscot cap, outside corners, vertical terminations

Metal Wall Base – See 10 2600 Wall and Door Protection

- C. Movement Joint Sealant: Mapesil T or equal

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

- B. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.
 - c. Tile floors consisting of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Pressed Floor Tile: 1/8 inch (3.2 mm)
 - 2. Glazed Wall Tile: 1/8 inch (3.2 mm)
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- J. Metal Edge Strips: Install at locations indicated
- K. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- L. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

3.4 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 1. TCNA F125-Full: Thinset mortar on crack isolation membrane.
 - a. Ceramic Tile Type: CT7
 - b. Thinset Mortar: Modified dry-set mortar.
 - c. Grout: Water-cleanable epoxy grout.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
 1. TCNA W245 or TCNA W248: Thinset mortar on glass-mat, water-resistant gypsum backer board.
 - a. Ceramic Tile Type: CT1 through CT6, See pattern information
 - b. Thinset Mortar: Modified dry-set mortar.
 - c. Grout: High-performance sanded grout.

END OF SECTION 093013

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.
- C. Delegated-Design Submittal: For seismic restraints for ceiling systems.
 - 1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, and coordinated with each other, using input from installers of the items involved.
- B. Product test reports.
- C. Research reports.
- D. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic restraints for ceiling systems.
- B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7
- C. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E1264.
 - 2. Smoke-Developed Index: 25 or less.

2.2 ACOUSTICAL PANELS, APC1

- A. Basis of Design: Subject to compliance to the requirements below provide the product indicated or a coparable product as approved by the Architect five (5) days prior to the bid date.
 - 1. USG Acoustical Ceiling Panel, Style: 2220 Radar Climaplust, Color: White
- B. Acoustical Panel Standard: Manufacturer's standard panels according to ASTM E1264.
- C. Classification: Type III, Form 2, Pattern C
- D. Color: White
- E. Light Reflectance (LR): 0.84
- F. Ceiling Attenuation Class (CAC): 33
- G. Noise Reduction Coefficient (NRC): 0.55
- H. Edge/Joint Detail: Reveal sized to fit flange of exposed suspension-system members
- I. Thickness: 5/8 inch (15 mm)
- J. Modular Size: 24 by 24 inches (610 by 610 mm)
- K. Trim: Coordinate with Roller Shade provider for ceiling trim components for the shade pocket enclosure above the ceiling. See shade details for additional information.

2.3 ACOUSTICAL PANELS, APC2

- A. Basis of Design: Subject to compliance to the requirements below provide the product indicated or a coparable product as approved by the Architect five (5) days prior to the bid date.

1. USG Kitchen Lay-in Ceiling Panel, Style: 2210 Kitchen Lay-in Climaplus, Color: White
- B. Acoustical Panel Standard: Manufacturer's standard panels according to ASTM E1264.
- C. Classification: Type III, Form 2, Pattern C
- D. Color: White
- E. Light Reflectance (LR): 0.84
- F. Ceiling Attenuation Class (CAC): 33
- G. Noise Reduction Coefficient (NRC): 0.55
- H. Edge/Joint Detail: Reveal sized to fit flange of exposed suspension-system members
- I. Thickness: 5/8 inch (15 mm)
- J. Modular Size: 24 by 24 inches (610 by 610 mm)
- K. Trim: Coordinate with Roller Shade provider for ceiling trim components for the shade pocket enclosure above the ceiling. See shade details for additional information.

2.4 METAL SUSPENSION SYSTEM

- A. Basis of Design: Subject to compliance to the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date.
 1. USG DONN DX/DXL
- B. Metal Suspension-System Standard: Manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M.
- C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; pre-painted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.
 1. Structural Classification: Heavy-duty system.
 2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 3. Face Design: Flat, flush.
 4. Cap Material: Cold-rolled steel
 5. Cap Finish: Painted in color as selected from manufacturer's full range

2.5 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Hold-Down Clips: Manufacturer's standard hold-down.

- C. Impact Clips: Manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- D. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical panels in place during a seismic event.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Coordinate with Roller Shade provider for ceiling trim components for the shade pocket enclosure above the ceiling. See shade details for additional information.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated.
- B. Layout openings for penetrations centered on the penetrating items.

3.2 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
- B. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

END OF SECTION 095113

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Thermoset-rubber base.
 - 2. Vinyl molding accessories.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

PART 2 - PRODUCTS

2.1 THERMOSET-RUBBER BASE - RB1

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Tarkett Johnsonite, Collection: Baseworks Style: Coved
- B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
- C. Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm)
- E. Lengths: Cut lengths 48 inches (1219 mm) long or coils in manufacturer's standard length
- F. Outside Corners: Preformed
- G. Inside Corners: Preformed
- H. Colors: As indicated on Finish Schedule

2.2 RUBBER MOLDING ACCESSORY

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Tarkett Johnsonite Resilient Transition Strip
- B. Profile and Dimensions: 1/8 inch to .080 inch reducer, Slim Line SLT-XX-B
 - 1. Locations: LVT to VT locations
 - 2. Colors: As indicated on the Finish Schedule
- C.

2.3 INSTALLATION MATERIALS

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

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

- D. Do not install resilient products until materials are the same temperature as space where they are to be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.2 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.

3.3 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

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SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid vinyl floor tile.
2. Luxury vinyl tile.
3. Vinyl composition floor tile
4. Vinyl composition sport striping

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and pattern specified.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 SOLID VINYL FLOOR TILE, VT1 through 12

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
1. Patcraft Solid Viny Tile, Style: I768V NuMix

- B. Tile Standard: ASTM F1700.
 - 1. Class: Class I, Monolithic Vinyl Tile
 - 2. Type: A, Smooth Surface
- C. Thickness: 0.125 inch (3.2 mm)
- D. Size: 36 by 36 inches (914 by 914 mm)
- E. Colors and Patterns: As indicated on the Finish Schedule.
- F. Adhesive System for Manufacturer's 25-year warranty:
 - 1. 4200 Resilient Adhesive
- G. Polish System: Urethane top coat as recommended by the Manufacturer
 - 1. Ultra Durable Technologies, Epic Urethane

2.3 LUXURTY VINYL FLOOR TILE - LVT 1 through 6

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Patcraft Luxury Vinyl Tile, Style: I746V Polychrome
- B. Tile Standard: ASTM F3261
 - 1. Class: 1, Type B embossed
- C. Wearing Layer Thickness: Grade 1 Commercial, 20mil (0.02 inches, 0.508 mm)
- D. Overall Thickness: 0.098 inch (2.5 mm)
- E. Size: 9 by 48 inches (22.9 by 121.9 cm)
- F. Colors and Patterns: As indicated On the Finish Schedule

2.4 LUXURTY VINYL FLOOR TILE – LVT7

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Mohawk Luxury Vinyl Tile, Collection: Taking Root, Style: Mycotexture Flex 2.5
- B. Tile Standard: ASTM F3261
 - 1. Class: 1, Type B embossed
- C. Wearing Layer Thickness: Grade 1 Commercial, 20mil (0.02 inches, 0.508 mm)
- D. Overall Thickness: 0.098 inch (2.5 mm)
- E. Size: 18 by 36 inches

- F. Colors and Patterns: As indicated on the Finish Schedule

2.5 VINYL COMPOSITION FLOOR TILE - VCT1

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Armstrong Vinyl Composition Tile, Collection: Standard Excelon Imperial Texture
- B. Tile Standard: ASTM F1066, Class 2, through pattern
- C. Wearing Surface: Smooth
- D. Thickness: 0.125 inch (3.2 mm)
- E. Size: 12 by 12 inches (305 by 305 mm).
- F. Colors and Patterns: As indicated on the Finish Schedule.
- G. Striping: integrated basketball and volleyball court striping

2.6 VINYL COMPOSITION FLOOR TILE – VCT2

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Armstrong Vinyl Composition Tile, Collection: Feature Tiles and Stripes
- B. Tile Standard: ASTM F1066, Class 2, through pattern
- C. Wearing Surface: Smooth
- D. Thickness: 0.125 inch (3.2 mm)
- E. Colors and Patterns: 74 feet by 42 feet Junior High Basketball Court
 - 1. Color: 50790 Black

2.7 VINYL COMPOSITION FLOOR TILE – VCT3

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Armstrong Vinyl Composition Tile, Collection: Feature Tiles and Stripes
- B. Tile Standard: ASTM F1066, Class 2, through pattern
- C. Wearing Surface: Smooth
- D. Thickness: 0.125 inch (3.2 mm)

- E. Colors and Patterns: 60 feet by 30 feet Volleyball Court using 2 by 24 inch stripes
 - 1. Color: 50862 Red

2.8 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

2.9 INSTALLATION ACCESSORIES

- A. Finishing Strips: Provide profile indicated of stainless steel, ASTM A276/A276M or ASTM A666, 300 Series exposed-edge material, unless noted otherwise.
 - 1. Resilient Transition LVT to VT – See Specification 09 6513
 - 2. Metal Edge Trim: Schluter VINPRO-S, ACGB Brushed Chrome Anodized Aluminum
 - a. LVT or VT to CPT
 - b. LVT or VT to RSN (Over existing quarry tile)
 - 1) Install metal trims at RSN locations prior to installation of epoxy resin material to ensure clean fit to VT.
 - c. VT to Existing Quarry Tile
 - 3. Metal Reducer Trim: Schluter VINPRO-U, ACGB Brushed Chrome Anodized Aluminum
 - a. CPT to RSN (new construction)
 - b. VT to PT (Epoxy flooring system)
 - c. CPT (walk-off) to WM (Walk off mat)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.

4. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.2 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 1. Lay tiles in pattern indicated.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 1. Lay tiles with grain running in one direction in pattern of colors and sizes indicated
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.

- H. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
 - 1. See Product section for specific information for adhesive types for extended manufacturer's warranty.
- I. Urethane floor sealer for solid vinyl tile: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor sealer.
 - 1. See Product section for specific information for sealer and finish information.
 - 2. Apply the number of coats as indicated by manufacturer or manufacturer's approved finishing product.
- J. Floor wax for vinyl composition tile
 - 1. Apply 3 coats of manufacturer's recommended floor wax
- K. Protect flooring from adjacent work for duration of construction.

END OF SECTION 096519

SECTION 096723 - RESINOUS FLOORING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This section includes the following:
 - 1. Resinous flooring system as shown on the drawings and in schedules.

1.3 SYSTEM DESCRIPTION

- A. The work shall consist of preparation of the substrate, the furnishing and application of a cementitious urethane based self-leveling seamless flooring system with decorative colored quartz aggregate broadcasts, resinous grout and topcoat.
- B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/4 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
- C. Cove base to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of coating system and each color and gloss of topcoat indicated.
- C. Product List: Use same designations indicated on Drawings and in Exterior High-Performance Coating Schedule and Interior High-Performance Coating Schedule. Include color designations and product runs (batch numbers).

1.2 MATERIAL MAINTENANCE SUBMITTAL

- A. Furnish extra materials to the Owner that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish quantity equal to 3 percent of amount installed, but not less than one full gallon, for each type and color, indicated.

1.5 QUALITY ASSURANCE

- A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.

- B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
- E. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping
 - 1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
- B. Storage and Protection
 - 1. The Applicator shall be provided with a dry storage area for all components. The area shall be between 60 F and 85 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
 - 2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the Engineer or other personnel.
- C. Waste Disposal
 - 1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

- A. Site Requirements
 - 1. Application may proceed while air, material and substrate temperatures are between 60 F and 85 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
 - 2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
 - 3. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.
- B. Conditions of new concrete to be coated with cementitious urethane material.
 - 1. Concrete shall be moisture cured for a minimum of 3 days and have fully cured a minimum of 5 days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
 - 2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
 - 3. Sealers and curing agents should not to be used.
 - 4. Concrete shall have a minimum design strength of 3.500 psi. and a maximum water/cement ratio of 0.45
 - 5. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements

1. The Owner shall be responsible for the removal of foodstuffs from the work area.
2. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

- A. Manufacturer's standard warranty.

PART 2 – PRODUCTS

2.1 FLOORING - RSN

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:

1. Sika DecoDur Flake FX (self leveling broadcast colored flake), epoxy resin double broadcast and aliphatic resinous topcoat seamless flooring system.

D. System Materials:

1. Primer: Sika 161, 8-10 MILS
2. Broadcast coat: Sika 264, 10-12 MILS
 - e. Flake: Sika Decorative Flake, Color: As indicated on Finish Schedule
3. Second Broadcast coat: Sika 217, 10-12 MILS
 - e. Flake: Sika Decorative Flake, Color: As indicated on Finish Schedule
4. Topcoat: Sika 217
5. Metal Trims: to be installed by adjacent flooring trades

E. Conditions:

1. DecoDur Flake system is intended for application over existing Quarry Tile Floor. See preparation information below.
2. Intended existing locations: Existing multi-user restrooms and existing classroom toilet rooms.
3. Intended new locations: new classroom toilet rooms.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.

1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

- A. General

2. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted.
 - a. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - b. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed.
 - c. Remove surface-applied protection if any.
3. Moisture Testing: Perform tests recommended by manufacturer and as follows.
 - a. Perform anhydrous calcium chloride test ASTM F 1869-98. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 20 lbs/1,000 sf/24 hrs.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 99% relative humidity level measurement.
 - c. If the vapor drive exceeds 99% relative humidity or 20 lbs/1,000 sf/24 hrs then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
2. Mechanical surface preparation
 - a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
 - b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
 - c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
 - d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
3. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufacturer's recommendations

3.3 APPLICATION

A. General

1. The system shall be applied in Four distinct steps as listed below:
 - a. Substrate preparation
 - b. Topping/overlay application with colored quartz aggregate broadcast.
 - c. Resin application with colored quartz aggregate broadcast.
 - d. Topcoat application.

2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
 4. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
 4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
 5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.
- B. Edges at transitions to adjacent flooring materials shall be trimmed with a low-profile metal trim as indicated in the design details.
1. Topping
 - a. The topping shall be applied as a self-leveling system as specified by the Architect. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
 - b. The topping shall be comprised of three components, a resin, hardener and filler as supplied by the Manufacturer.
 - c. The hardener shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. SL Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
 - d. The topping shall be applied over horizontal surfaces using 1/2 inch "v" notched squeegee, trowels or other systems approved by the Manufacturer.
 - e. Immediately upon placing, the topping shall be degassed with a loop roller.
 - f. Colored quartz aggregate shall be broadcast to excess into the wet material at the rate of 0.8 lbs/sf
 - g. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
 2. Second Broadcast Coat
 - a. The broadcast coat shall be comprised of two components, a resin, and hardener as supplied by the Manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.
 - b. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
 - c. The broadcast coat shall be applied over horizontal surface with the flake broadcast to excess into the wet material at the rate of 0.5 lbs/sf
 - d. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
 3. Topcoat
 - a. The finished floor will have a nominal thickness of 1/4 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
 - a. Temperature
 1. Air, substrate temperatures and, if applicable, dew point.
 - b. Coverage Rates
 1. Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.5 CLEANING AND PROTECTION

- A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
- B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

END OF SECTION 096723

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Modular carpet tile.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

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

- B. Shop Drawings: For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Pattern type, location, and direction.
4. Type, color, and location of insets and borders.
5. Type, color, and location of edge, transition, and other accessory strips.
6. Transition details to other flooring materials.

- C. Samples: For each exposed product and for each color and texture required.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.

- B. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

1.7 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Limited Lifetime Warranty against defects
 - a. 15 year limited warranty for staining and colorfastness

PART 2 - PRODUCTS

2.1 CARPET TILE – CPT1

- A. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Mannington Commercial, Collection: Frenemy, Style; Stock Brights
- B. Color: As indicated in the Finish Schedule
- C. Fiber Content: 100 percent nylon 6, 6
- D. Dye Method: Solution dyed
- E. Pile Characteristic: Level-loop pile
- F. Density: 4, 975
- G. Gage: 1/10 ends per inch
- H. Total Weight: 17 oz./sq. yd. (g/sq. m) for finished carpet tile.
- I. Backing/Backcoating: Infinity 2 Modular
- J. Size: 24 by 24 inches (610 by 610 mm)
- K. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment
 - 2. Antimicrobial Treatment: manufacturer's standard treatment that protects carpet tiles.
- L. Installation Method: Horizontal Brick Ashlar

2.2 CARPET TILE – CPT2

- A. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Tarkett Commercial, Style: 11339 Balance

- B. Color: As indicated in the Finish Schedule
- C. Fiber Content: 100 percent nylon 6, 6
- D. Dye Method: Solution dyed
- E. Pile Characteristic: Level-loop pile
- F. Tuft Density: 125.44
- G. Gauge: 5/64
- H. Face Weight: 14 oz./sq. yd. (g/sq. m)
- I. Backing/Backcoating: Ethos
- J. Size: 24 by 24 inches (610 by 610 mm)
- K. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment
 - 2. Antimicrobial Treatment: manufacturer's standard treatment that protects carpet tiles.
- L. Installation Method: Vertical Ashlar

2.3 CARPET TILE – CPT3

- A. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Mannington Commercial, Collection: Quadrant, Style: Align
- B. Color: As indicated in the Finish Schedule
- C. Fiber Content: 100 percent nylon 6, 6
- D. Dye Method: Solution dyed
- E. Pile Characteristic: Level-loop pile
- F. Density: 4, 975
- G. Gage: 1/10 ends per inch
- H. Total Weight: 17 oz./sq. yd. (g/sq. m) for finished carpet tile.
- I. Backing/Backcoating: reEvolve II Cushion, PVC free
- J. Size: 24 by 24 inches (610 by 610 mm)
- K. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment

2. Antimicrobial Treatment: manufacturer's standard treatment that protects carpet tiles.

L. Installation Method: Horizontal Brick Ashlar

2.4 WALK OFF CARPET TILE – CPT3&4

A. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:

1. Tarkett Commercial, Collection: Assertive Series, Style; Assertive Stria Walk-off Carpet

B. Colors: As indicated in the Finish Schedule

C. Fiber Content: TDX Nylon

D. Dye Method: Solution dyed

E. Pile Characteristic: Level-loop pile

F. Density: 9,164

G. Gage: 5/64 ends per inch

H. Face Weight: 28 oz./sq. yd. (g/sq. m) for finished carpet tile.

I. Backing/Backcoating: FlexAire

J. Size: 24 by 24 inches (610 by 610 mm)

K. Applied Treatments:

1. Soil-Resistance Treatment: Manufacturer's standard treatment
2. Antimicrobial Treatment: manufacturer's standard treatment that protects carpet tiles.

L. Installation Method: Quarter Turn Monolithic

1. Pattern: Where indicated for CPT3&4 blend provide 70% CPT3 randomly blended with 30% CPT4.

2.5 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

C. Finishing Strips: Provide profile indicated of stainless steel, ASTM A276/A276M or ASTM A666, 300 Series exposed-edge material, unless noted otherwise.

1. Resilient Transition LVT to VT – See Specification 09 6513

2. Metal Edge Trim: Schluter VINPRO-S, ACGB Brushed Chrome Anodized Aluminum
 - a. LVT or VT to CPT
 - b. LVT or VT to RSN (Over existing quarry tile)
 - 1) Install metal trims at RSN locations prior to installation of epoxy resin material to ensure clean fit to VT.
 - c. VT to Existing Quarry Tile
3. Metal Reducer Trim: Schluter VINPRO-U, ACGB Brushed Chrome Anodized Aluminum
 - a. CPT to RSN (new construction)
 - b. VT to PT (Epoxy flooring system)
 - c. CPT (walk-off) to WM (Walk off mat)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Concrete Slabs:

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile and carpet tile with attached cushion.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns recommended in writing by carpet tile manufacturer
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.
- I. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 096816 - SHEET CARPETING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tufted carpet.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For carpet installation, showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
2. Carpet type, color, and dye lot.
3. Seam locations, types, and methods.
4. Pattern type, repeat size, location, direction, and starting point.
5. Pile direction.
6. Types, colors, and locations of edge, transition, and other accessory strips.
7. Transition details to other flooring materials.

C. Samples: For each exposed product and for each color and texture required.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association at the **Commercial II** certification level.

1.7 WARRANTY

- A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: [10] <Insert number> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TUFTED CARPET – CPT5

- A. Basis of Design: Subject to compliance with the requirements below, provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Tarkett Commercial, Collection: Dynamic Edit, Style: 11612 Flame Edit
- B. Color: As indicated in the Finish Schedule
- C. Fiber Content: 100 percent nylon 6, 6
- D. Dye Method: Solution dyed
- E. Pile Characteristic: Level-loop pile
- F. Density: 8,571
- G. Gage: 10 stitches per inch
- H. Face Weight: 15 oz./sq. yd. (g/sq. m) for finished carpet tile.
- I. Backing: Pownerbond RS, Peel & Stick
- J. Pattern Match: None
- K. Roll Width: 6 feet wide
- L. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment
 - 2. Antimicrobial Treatment: manufacturer's standard treatment that protects carpet tiles.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by **carpet** manufacturer.
- B. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.
- C. Metal Trims: See 09 6813 for a list of required trims.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Concrete Slabs:
 - 1. Moisture Testing: Perform tests so that each test area does not exceed **1000 sq. ft. (304.8 sq. m)** and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of **3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m)** in 24 hours.
 - b. Perform additional moisture tests recommended in writing by **adhesive and carpet** manufacturers. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet manufacturer's written installation instructions for preparing substrates.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions **1/8 inch (3 mm)** wide or wider, and protrusions more than **1/32 inch (0.8 mm)**, unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by **adhesive and carpet** manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 INSTALLATION

- A. Comply with the Carpet and Rug Institute's CRI 104 and **carpet manufacturer's** written installation instructions for the following:

1. Preapplied adhesive installation.
- B. Comply with carpet manufacturer's written instructions and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.
- C. Install **pattern parallel to walls**
- D. Do not bridge building expansion joints with carpet.
- E. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.
- F. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods recommended in writing by carpet manufacturer **and carpet adhesive manufacturer**

END OF SECTION 096816

SECTION 097200 - WALL COVERINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Digitally printed wall panels
 - 2. Digitally printed vinyl wall covering.
 - 3. Dry Erase wall covering

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show location and extent of each wall-covering type. Indicate pattern placement, seams, and termination points.
- C. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 50 or less.
2. Fire-Growth Contribution: No flashover and heat and smoke release when tested in accordance with NFPA 265

2.2 CUSTOM DIGITALLY PRINTED WALL PANEL – WP1

- A. Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect five (5) days prior to the bid date:
 1. Level Wallcovering, Style: Targa, Pattern: Series 3 Alpha Beta (Customized)
 - a. Representative: Massina Bloemke, National Wallcovering
 - 1) Email: Massina.Bloemke@nationalsolutions.com
 - 2) Phone: 515-444-1104
- B. Description: Clear PETG wall panel with custom printed graphics applied to the back
 1. Thickness: 0.040 inch
 2. Sheet Size: 4 feet by 8 or 10 feet
 3. Pattern WP1A: Alpha Beta Red, Pattern #: L33005CD
 - a. Location: Girls 179 / Boys 180 Alcove
 - b. Customization: Color letters R,V and E, Color: TBD
 4. Pattern WP1B: Alpha Beta, Pattern #: L3300x
 - a. Location: Girls 130 / Boys 131 Alcove
 - b. Customization: Color letters R,V and E, Color: TBD
 - c. Customization: Color background, Color: to match PT2
 5. Pattern WP1C: Alpha Beta Orange, Pattern #: L33004CD
 - a. Location: Boys 163 / Girls 165 Alcove
 - b. Customization: Color letters R,V and E, Color: TBD

2.3 WALL PANEL / PROTECTION – WP2, DESIGNATION UNUSED

2.4 CUSTOM DIGITALLY PRINTED WALL COVERING - WC1

- A. Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect five (5) days prior to the bid date:
 1. Level Wallcovering, Style: Carta Stipple, Custom Digital Print
 - a. Representative: Massina Bloemke, National Wallcovering
 - b. Email: Massina.Bloemke@nationalsolutions.com
 - c. Phone: 515-444-1104
- B. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D for Type II, Medium Duty.
2. ASTM F793/F793M for peelable wall coverings.
 - a. Category: V, Type II, Commercial Serviceability (Vinyl Coated)

C. Total Weight: 20oz, excluding coatings.

D. Width: 54 inches (1372 mm)

E. Backing: Osnaburg fabric.

1. Fiber Content: Olefin Composite, reinforced

F. Repeat: No repeat, custom graphic

G. Mildew Resistance: Rating of zero or 1 when tested in accordance with ASTM G2

H. Estimated quantities, not to exceed 1500sf total in the following breakdown:

1. Multipurpose Room Graphic 1: 165sf
2. Multipurpose Room Graphic 2: 175sf
3. Corridor: 185sf
4. Corridor: 185 sf
5. Gymnasium Graphic 1: 675sf

2.5 DRY ERASE WALL COVERING – WC2

A. Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect five (5) days prior to the bid date:

1. Koroseal Dry Erase Wallcovering, Style: Mag-rite, M2PR-00
 - 1) Keli Coats, Koroseal
k.coats@koroseal.com, 402.203.9648

B. Facing: Manufacturer's standard projection capable matte dry erase wall covering.

C. Width: 50 inches

D. Backing: Non-woven

E. Substrate: ¼ inch primed and sealed MDF

F. Estimated quantities, not to exceed 1500sf total in the following breakdown:

1. Gymnasium Projection Area: 9 feet high by 16 feet wide

G. Trims: by others

2.6 ACCESSORIES

- A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
- B. Primer/Sealer: Mildew resistant and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, and mildew.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Gypsum Board: Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Painted Surfaces:
 - a. Check for pigment bleeding. Apply primer/sealer to areas susceptible to pigment bleeding as recommended in writing by primer/sealer manufacturer.
 - b. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.
- D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.2 INSTALLATION OF WALL COVERING

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.
- C. Install strips in the order as directed by the manufacturer for each graphic.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.

- E. Match pattern 72 inches (1828 mm) above the finish floor.
- F. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- G. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.
- H. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- I. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097200

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SECTION 09 7726 – INTERIOR SURFACING (ARCHITECTURAL FILM)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Architectural film interior surfacing for doors

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show location and extent of each film type. Indicate pattern placement, seams, and termination points.
- C. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product test reports.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 QUALITY ASSURANCE

- A. Installer Qualifications: Reatec Authorized installation partner for Koroseal Interior Products
- B. Mockup: Provide one door fully resurfaced for Owner inspection and approval. Approved mock-up may remain part of the work.
- C. Site conditions: Do not install film surfacing at temperatures below 54-degrees F or above 85-degrees F.

2.2 WARRANTIES

- A. Provide manufacturer's standard five (5) year warranty providing coverage for material and workmanship defects. Coverage includes reduced gloss, developed texture, decomposition, swelling, clouding, tackiness, crazing, bubbling and cracking

2.3 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 50 or less.

2.4 INTERIOR ARCHITECTURAL FILM - FILM

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product:
 - 1. Korogard Reatec Architectural Film
 - a. Keli Coats, Koroseal
k.coats@koroseal.com, 402.203.9648
- B. Description: Architectural overlay film with pressure sensitive backing.
 - 1. Material: plastic film with high-definition printing in selected pattern.
 - a. Facing Thickness: 6mils
 - b. Overall Thickness: 8.5 mils with adhesive backing
- C. Use: Reface existing high pressure laminate doors.
 - 1. Installer to remove hardware, trims, and kickplates prior to application.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of architectural film, including dirt, oil, grease, mold, and mildew.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
- D. Remove trim, hardware and hardware accessories. Ensure any surface fasteners are countersunk.

- E. Acclimatize materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.2 INSTALLATION OF FILM

- A. Comply with architectural film manufacturers' written installation instructions applicable to products and applications indicated.
- B. Remove air bubbles, wrinkles, blisters and other defects.
- C. Heat products to mold to substrates.
- D. Reinstall trim, hardware and hardware accessories.
- E. Clean in accordance with manufacturer's written instructions. Do not use caustic, acidic or abrasive cleaners.

3.3 PROTECTION

- A. Protect completed surfaces from damage using temporary non-staining coverings as recommended by manufacturer.

END OF SECTION 09 7729

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SECTION 098433 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes shop-fabricated, sound-absorbing acoustical panel units tested for acoustical performance.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For unit assembly and installation.
- C. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Product certificates.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

- b. Smoke-Developed Index: 450 or less.
 - 2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.
- 2.2 SOUND-ABSORBING WALL UNITS – AWP1 (UNUSED)
- 2.3 SOUND-ABSORBING WALL UNITS - AWP2
- A. Sound-Absorbing Wall Panel: Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame
 - 1. Basis of Design: G&S Acoustics, Style: Acousti-Panel (AP)
 - B. Mounting: Back mounted with manufacturer's standard impaling clips with secondary adhesive to secured to substrate.
 - C. Edge Construction: Manufacturer's standard chemically hardened core with no frame
 - D. Edge Profile: Square
 - E. Corner Detail in Elevation: Square with continuous edge profile indicated.
 - F. Reveals between Panels: as indicated on Drawing.
 - G. Facing Material: Fabric as selected from Manufacturer's offering
 - 1. Basis of Design: Guliford of Main, Style: Anchorage
 - a. Color 1: 2027 Wolf
 - b. Color 2: 2028 Willow
 - c. Color 3: 2026 Quarry Blue
 - d. Color 4: 2082 Sunshine
 - e. Color 5: 2021 Pumpkin
 - f. Color 6: 2014 Red Delicious
 - 2. See elevations for color mix information.
 - H. Acoustical Performance: Sound absorption NRC of not less than 0.95 according to ASTM C423 for mounting according to ASTM E795.
 - I. Nominal Overall Panel Thickness: 1-1/2 inches (38 mm)

2.4 TACKABLE SOUND-ABSORBING WALL UNITS - AWP3

2.5 Sound-Absorbing Wall Panel: Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame

- A. Basis of Design: G&S Acoustics, Style: Acousti-Tack (ATF)
- B. Mounting: Back mounted with manufacturer's standard impaling clips with secondary adhesive to secure to substrate.
- C. Core: Glass-fiber board
- D. Core-Face Layer: tackable, impact-resistant, high-density board
- E. Edge Construction: Manufacturer's standard chemically hardened core with no frame
- F. Edge Profile: Square
- G. Corner Detail in Elevation: Square with continuous edge profile indicated.
- H. Reveals between Panels: as indicated on Drawing.
- I. Facing Material: Fabric as selected from Manufacturer's offering
 - 1. Basis of Design: Guliford of Main, Style: Anchorage
 - a. Color 1: 2028 Willow
 - b. Color 2: 2026 Quarry Blue
 - c. Color 3: 2082 Sunshine
 - d. Color 4: 2021 Pumpkin
 - e. Color 5: 2014 Red Delicious
 - 2. See elevations for color mix information.
- J. Acoustical Performance: Sound absorption NRC of not less than 1.00 according to ASTM C423 for mounting according to ASTM E795.
- K. Nominal Overall Panel Thickness: 1.625 inches

2.6 MATERIALS

- A. Core Materials:
 - 1. Glass-Fiber Board: ASTM C612; of type standard with manufacturer, unfaced, and dimensionally stable, molded rigid board; and with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
 - 2. Tackable, Impact-Resistant, High-Density Board for Face Layer: 1/8-inch- (3.2-mm-) thick layer of compressed molded glass-fiber board with a nominal density of 16 to 18 lb/cu. ft. (256 to 288 kg/cu. m) laminated to face of core.

3. Wood and Plywood: Manufacturer's standard plywood or clear, vertical grain, straight, kiln-dried hardwood.
 - a. Fire-retardant treated by pressure process with a flame-spread index of 25 or less when tested according to ASTM E84 or UL 723, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
 - 1) Treated material shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity.
 - 2) Kiln-dry material after treatment to 19 percent or less for lumber and 15 percent or less for plywood.

B. Facing Material: Fabric from same dye lot; color and pattern as indicated on Drawings

1. Applied Treatments: Stain resistance

C. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit.

2.7 FABRICATION

A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Core-Face Layer: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.

C. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.

1. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.

D. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch (1.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units in locations indicated. Unless otherwise indicated, install units with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

1. AWP2 random locations may be adjusted in field to accommodate wall mounted equipment.
2. Coordinate with Architect to modify AWP3 locations.

- B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.
- C. Align fabric pattern and grain with adjacent units.

3.2 CLEANING

- A. Clip loose threads; remove pills and extraneous materials.
- B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098433

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Primers.
 - 2. Water-based finish coatings.
 - 3. Solvent-based finish coatings.
 - 4. Floor sealers and paints.
 - 5. Dry fall coatings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of topcoat product.
- C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

PART 2 - PRODUCTS

2.1 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

2.2 PRIMERS

- A. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.
 - 1. Basis of Design: Diamond Vogel Primacy
- B. Interior Alkyd Primer Sealer: Alkyd sealer used on metal surfaces
 - 1. Basis of Design: Diamond Vogel Iron Prime 100

2.3 WATER-BASED FINISH COATS

- A. Interior, Low VOC, Latex, Low Sheen: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed wood and metal.
 - 1. Basis of Design: Diamond Vogel, Zero Plus Eggshell
 - 2. Gloss and Sheen Level: Manufacturer's standard low-sheen finish
- B. Interior, Low VOC, Water-Based Epoxy Coating, Eggshell: Pigmented, water-based epoxy coating for interior primed wood and metal surfaces (e.g., walls, doors, frames, trim, and sash), providing resistance to abrasion and mild chemical exposure and corrosive conditions.
 - 1. Basis of Design: Diamond Vogel Eas-E-Poxy, Pre Catalyzed Waterborne Epoxy
 - 2. Gloss and Sheen Level: Manufacturer's standard eggshell finish
- C. Interior, Low VOC, Water-Based Epoxy Coating, Eggshell: Pigmented, water-based epoxy coating for interior concrete traffic surfaces, providing resistance to abrasion and mild chemical exposure and corrosive conditions.
 - 1. Basis of Design: Sherwin Williams Armorseal 8100 Waterbased Epoxy Flooring Sytem
 - 2. Gloss and Sheen Level: Manufacturer's standard satin finish
- D. Interior, Water-Based Light-Industrial Coating, Semigloss: Pigmented, water-based emulsion coating for interior primed wood and metal surfaces (e.g., walls, doors, frames, trim, and sash), providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions.
 - 1. Basis of Design: Diamond Vogel Artistry Acrylic Latex Enamel
 - 2. Gloss Level: Manufacturer's standard semigloss finish

2.4 SEALERS AND PAINTS

- A. Water-Based Concrete Sealer: Clear, water-based, acrylic-copolymer-emulsion sealer formulated for oil, gasoline, alkali, and water resistance and for use on concrete traffic surfaces.
 - 1. Basis of Design: H&C Clarishield Water Based Natural Look Sealer

2.5 DRY FALL COATINGS

- A. Water Based, Dry Fall for Galvanized Steel, Flat: Pigmented, water-based coating for direct application to cleaned, interior galvanized-metal ceiling surfaces and adjacent primed metals.

1. Basis of Design: Diamond Vogel Luminance Acrylic Dry Fall
2. Gloss and Sheen Level: Manufacturer's standard flat finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- B. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
- C. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- C. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 1. Paint the following work where exposed in equipment rooms:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Metal conduit.
 - e. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 CLEANING AND PROTECTION

- A. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- B. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Nontraffic Surfaces:
 - 1. High-Performance Architectural Epoxy System:
 - a. Prime Coat: Diamond Vogel Primacy.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Diamond Vogel Eas-E-Poxy interior epoxy, high-performance architectural coating, eggshell.
 - d. Use: Walls
 - 2. Concrete Sealer System:
 - a. First Coat: Matching topcoat.
 - b. Topcoat: H&C Clarishield Waterbased Natural Look Sealer
 - c. Use: Sealing interior exposed concrete pre-cast panels
- B. Concrete Substrates, Traffic Surfaces:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Spot prime with Armorseal 8100
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Armorseal 8100 Waterbased Epoxy Floor Coating, Satin
 - d. Use: Pedestrian-only traffic floors
- C. Galvanized-Metal, Steel Substrates:
 - 1. Water-Based Light-Industrial Coating System:
 - a. Prime Coat: Diamond Vogel Iron Prime
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Diamond Vogel Artistry Acrylic Latex Enamel Interior, water-based, light-industrial coating, semigloss.
 - d. Use: Hollow Metal Door Frames and Doors
 - 2. Water-Based Dry-Fall System:
 - a. Prime Coat: Matching topcoat.
 - b. Topcoat: Diamond Vogel Luminance water-based dry fall for galvanized steel, flat.
 - c. Use: Exposed steel structure at open ceilings

D. Gypsum Board Substrates:

1. Institutional Low-Odor/VOC Latex System:
 - a. Prime Coat: Diamond Vogel Primacy
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Interior latex, Diamond Vogel Zero Plus low odor/VOC, low sheen.
 - d. Use: Ceilings and Soffits
2. High-Performance Architectural Epoxy System:
 - a. Prime Coat: Diamond Vogel Primacy.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Diamond Vogel Eas-E-Poxy interior, epoxy, high-performance architectural coating, eggshell.
 - d. Use: Walls

E. Cotton or Canvas and ASJ Insulation-Covering Substrates: Including pipe and duct coverings

1. Institutional Low-Odor/VOC Latex System:
 - a. Prime Coat: Diamond Vogel Primacy
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Interior latex, Diamond Vogel Zero Plus low odor/VOC, low sheen.

END OF SECTION 099123

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SECTION 09 9300 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and application of wood stains and transparent finishes on the following substrates:
 - 1. Interior Substrates:
 - a. Dressed lumber (finish carpentry or woodwork).

1.2 DEFINITIONS

- A. MPI Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- D. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- E. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples: For each type of finish system and in each color and gloss of finish required.

1.4 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).

- b. Other Items: Architect will designate items or areas required.
- 2. Final approval of stain color selections will be based on mockups.
 - a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in wood finish systems schedules for the product category indicated.
 - 1. Basis-of-design manufacturers, Sherwin Williams. Other acceptable manufacturers include:
 - a. Kwal
 - b. Benjamin Moore
 - c. Pittsburg Paints
 - d. Gemini

2.2 MATERIALS, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. Stain Colors: Match Architect's samples.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

- C. Maximum Moisture Content of Interior Wood Substrates: 10 percent, when measured with an electronic moisture meter.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with finish application only after unsatisfactory conditions have been corrected.
 - 1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
 - 1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.
 - 1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
 - 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 INTERIOR WOOD - FINISH-SYSTEM SCHEDULE

- A. Wood Substrates: Wood trim, architectural woodwork and windows that are not factory finished.

1. STN1 – Oil based Stain System MPI INT 6.3W:

- a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.
 - 1) Basis-of-design Sherwin Williams Minwax Performance Tintable Wood Stain
 - a) Color: Matched to existing wood doors
 - b) Use: Touch up and refinishing existing wood doors, and finish new trim
- b. First Intermediate Coat: Water-based varnish matching topcoat.
- c. Second Intermediate Coat: Water-based varnish matching topcoat.
- d. Topcoat: Lacquer, solvent based, clear, satin (MPI Gloss Level 6), MPI #130.
 - 1) Basis-of-Design Sher-wood F3 Hi-Build Precat Lacquer, Medium Rubbed effect

END OF SECTION 09 9300

SECTION 099611 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and application of high-performance coating systems.

1. Exterior Substrate:
 - a. Steel

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of coating system and each color and gloss of topcoat indicated.
- C. Product List: Use same designations indicated on Drawings and in Exterior High-Performance Coating Schedule and Interior High-Performance Coating Schedule. Include color designations and product runs (batch numbers).

1.3 MATERIAL MAINTENANCE SUBMITTAL

- A. Furnish extra materials to the Owner that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish quantity equal to 3 percent of amount installed, but not less than one full gallon, for each type and color, indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

2.2 HIGH-PERFORMANCE COATINGS

- A. Material Compatibility:
1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
 3. Products shall be of same manufacturer for each coat in a coating system.
- B. Colors: As indicated in color schedule

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions applicable to substrates and coating systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted.
 - 1. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 2. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed.
 - 3. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any.
 - 1. Clean using methods recommended in writing by manufacturer
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

3.3 APPLICATION

- A. Apply high-performance coatings in accordance with manufacturer's written instructions.
- B. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 EXTERIOR HIGH PERFORMANCE COATINGS

A. Steel Substrates:

1. Pigmented Polyurethane System:

a. Prime Coat: Alkyd anti-corrosive, quick dry:

- 1) Diamond Vogel Iron Prime 600, at 2.0 to 4.0 mils (0.051 to 0.102 mm) dry, per coat.

b. Intermediate Coat: Polyurethane, two-component, pigmented, matching topcoat.

c. Topcoat: Polyurethane, two-component, pigmented, gloss:

- 1) Diamond Vogel Artistry Acrylic Latex Enamel, at 2.0 to 4.0 mils (0.051 to 0.102 mm) dry, per coat.

END OF SECTION 099611

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SECTION 101100 - VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Markerboards.
2. Tackboards.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints

C. Samples: For each type of visual display unit indicated.

D. Product Schedule: For visual display units.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: **25** or less.
 2. Smoke-Developed Index: **50** or less.

2.2 VISUAL DISPLAY BOARD ASSEMBLY – MB1&2

- A. Basis of Design: Subject to compliance with the requirements below, provide the indicated product or a comparable product as approved by the Architect five (5) days prior to the bid date:
1. Claridge LCS Series 8, Markerboards
- B. Visual Display Board Assembly: **factory** fabricated..
1. Assembly: **markerboard**
 2. Corners: **square**
 3. MB1 Dimensions: 4 feet by 6 feet, Location: Classrooms, Meeting
 4. MB2 Dimensions: 4 feet by 3 ft 6 in Location: Meeting
- C. Markerboard Panel: **porcelain-enamel-faced** markerboard panel on core indicated.
1. Color: **White**
- D. Aluminum Frames **and Trim**: Fabricated from not less than **0.062-inch- (1.57-mm-)** thick, extruded aluminum; Series 8 – 5/16 inch **frame**
1. Aluminum Finish: **Clear anodic** finish.
- E. Tray: Manufacturer's standard; continuous.
1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.
- F. Display Rail: Manufacturer's standard, extruded-aluminum display rail with **plastic-impregnated-cork** insert, end stops, designed to hold accessories.
1. Size: **1 inch (25 mm)**
 2. Tackboard Insert Color: 1136 Graphite
 3. Aluminum Color: Match finish of visual display assembly trim.

2.3 VISUAL DISPLAY BOARD ASSEMBLY – TB1&2

- A. Basis of Design: Subject to compliance with the requirements below, provide the indicated product or a comparable product as approved by the Architect five (5) days prior to the bid date:
1. Claridge Series 8, Tackboards
- B. Visual Display Board Assembly: **factory** fabricated..
1. Assembly: **tackboard**
 2. Corners: **square**
 3. TB1 Dimensions: 3 feet by 4 feet
 4. TB2 Dimensions: 2 feet, 6 inches by 4 feet
- C. Tackboard Panel: **Plastic-impregnated-cork** tackboard panel on core indicated.
1. Color and Pattern: 1136 Graphite
- D. Aluminum Frames **and Trim**: Fabricated from not less than **0.062-inch- (1.57-mm-)** thick, extruded aluminum; Series 8 – 5/16 inch **frame**
1. Aluminum Finish: **Clear anodic** finish.

2.4 MATERIALS

- A. Porcelain-Enamel Face Sheet: PEI-1002, with face sheet manufacturer's standard two- or three-coat process.
- B. Plastic-Impregnated-Cork Sheet: Seamless, homogeneous, self-sealing sheet consisting of granulated cork, linseed oil, resin binders, and dry pigments that are mixed and calendared onto fabric backing; with washable vinyl finish and integral color throughout.
- C. Hardboard: ANSI A135.4, tempered.
- D. Particleboard: ANSI A208.1, Grade M-1.
- E. MDF: ANSI A208.2, Grade 130.
- F. Fiberboard: ASTM C208 cellulosic fiber insulating board.
- G. Extruded Aluminum: **ASTM B221 (ASTM B221M)**, Alloy 6063.
- H. Adhesives for Field Application: Mildew-resistant, nonstaining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by visual display unit manufacturer.

2.5 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.
- B. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than **16 inches (400 mm)** o.c. Secure tops and bottoms of boards to walls.

END OF SECTION 101100

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Dimensional characters.
 - a. Cast dimensional characters.
 - b. Cutout dimensional characters.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
 - 4. Show locations of electrical service connections.
 - 5. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design sign structure and anchorage of dimensional character sign type according to structural performance requirements.
- B. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 DIMENSIONAL CHARACTERS

- A. Fabricated Channel Characters (SGN3): Translucent face with metal side returns, formed free from warp and distortion; with uniform faces, sharp corners, and precisely formed lines and profiles; internally braced for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners; and as follows.
 - 1. Illuminated Characters: Internally lit character construction with LED lighting, including transformers, insulators, and other accessories for operability, with provision for servicing and concealing connections to building electrical system. Use tight or sealed joint construction to prevent unintentional light leakage. Space lamps apart from each other and away from character surfaces as needed to illuminate evenly.
 - a. Power: As indicated on electrical Drawings.
 - b. Provide continuous wire duct with removable cover inside building to distribute wiring to each letter.
 - 2. Character Material: Sheet or plate non-corrosive metal.
 - 3. Translucent Face Sheet: Acrylic sheet with integral color or film as selected by Architect from manufacturer's full range.
 - 4. Character Height: As indicated on Drawings.
 - 5. Character Depth: 4-inches.
 - 6. Font: Arial
 - 7. Finishes:
 - a. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard, in color matching Architect's sample (to match ACM panels).
 - 8. Mounting: Direct mounting of channels to wall.
- B. Cast Characters (SGN4): Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:
 - 1. Character Material: Cast aluminum
 - 2. Character Height: As indicated on Drawings
 - 3. Finishes:
 - a. Integral Aluminum Finish: anodized color as selected by Architect from full range of industry colors and color densities

4. Mounting: Concealed studs
- C. Cutout Characters (SGN5): Characters with uniform faces; square-cut, smooth edges; precisely formed lines and profiles; and as follows:
 1. Character Material: Sheet or plate acrylic
 2. Character Height: 12 inches
 3. Thickness: Manufacturer's standard for size of character
 4. Finishes:
 - a. Integral Acrylic Color: Black
5. Mounting: Adhesive

2.3 DIMENSIONAL CHARACTER MATERIALS

- A. Cast Aluminum: To be selected from Manufacturer's standard if options are available.
- B. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
- C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 1. Use concealed fasteners and anchors unless indicated to be exposed.
 2. For exterior exposure, furnish stainless steel devices unless otherwise indicated.
 3. Exposed Metal-Fastener Components, General:
 - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
 4. Sign Mounting Fasteners:
 - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
- B. Adhesive: As recommended by sign manufacturer.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 4. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
 5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
 6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
- B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
1. Stainless Steel Brackets: Factory finish brackets to match sign background finish unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION OF DIMENSIONAL CHARACTERS

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
 - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
 2. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position, so that signage is correctly located and aligned.

3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
- C. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 101419

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SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

2.2 ROOM-IDENTIFICATION SIGNS – SGN1, INSPIRE EDUCATION SIGNAGE

- A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product by one of the following:
 - a. TakeForm, Inspire
 2. Acrylic panel sign with custom printed backer
 - a. Composite-Sheet Thickness: Manufacturer's standard for size of sign
 - b. Color(s): Custom
 3. Mounting: two-face tape
 4. Sign 1 Types:
 - a. Type A Wayfinding Signage: NS382402-T3422, ceiling mount, dual sided
 - 1) Provide for the following:
 - a) Kindergarten / 1st Grade
 - b) 2nd / 3rd Grade
 - c) Administration / 3rd Grade
 - d) 4th / 5th Grade
 - e) Gymnasium
 - f) Library
 - b. Type B Room ID: NS1613-0202A9, meeting rooms
 - 1) Type C Restroom: SN1619-0212A7, ceiling mount, dual sided, provide one each for 4 multi-user restroom groups
 - a) C.1 Male, Female + ADA Graphics
 - b) C.2 Male / Female Graphics

2.3 ROOM-IDENTIFICATION SIGNS – SGN2, FUSION Recked

- A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product by one of the following:
 - a. Takeform Fusion, Recked
 2. Signage System
 - a. The signage shall incorporate a decorative laminate face with applied graphics including all tactile requirements in adherence to ADA specifications.

- b. All signs, including work station and room ID's, overheads and flag mounts, directionals and directories shall have a matching appearance and constructed utilizing the same manufacturing process to assure a consistent look throughout.
- 3. Materials:
 - a. Sign face shall be 0.035" (nominal) standard grade, high pressure surface laminate. A painted sign face shall not be acceptable.
 - b. The sign shall incorporate balanced construction with the core sandwiched between laminates to prevent warping. Laminate on the sign face only shall not be acceptable.
 - c. Tactile lettering shall be precision machined, raised 1/32", matte PETG and subsurface colored for scratch resistance.
- 4. Standard Colors:
 - a. Face/background color shall be standard grade, high pressure laminate, laminate as scheduled on drawings.
 - b. Standard tactile colors shall match manufacturer's ADA standard color selection, as selected from manufacturer's full range.
- 5. Construction:
 - a. The signage shall, with the exception of directories and directionals, be a uniform 8 1/2 inch width.
 - b. Insert components shall have a .080 thickness non-glare acrylic window and shall be inlaid flush to sign face for a smooth, seamless appearance.
 - c. The signage shall include modules allowing for inserts, notice holders, occupancy sliders, marker, magnetic, and cork boards. All modules shall be flush to sign face for a smooth, seamless appearance.
 - d. The laminates (front and back) shall be pressure laminated and precision machined together to a 90-degree angle. Edges shall be smooth, void of chips, burrs, sharp edges and marks.
 - e. The signage shall utilize an acrylic sphere for Grade II Braille inserted directly into a scratch resistant, high pressure laminate sign face. Braille dots are to be pressure fit in high tolerance drilled holes.
 - f. Braille dots shall be half hemispherical domed and protruding a minimum 0.025".
 - g. The signage shall utilize a pressure activated adhesive. The adhesive shall be nonhazardous and shall allow for flexing and deflection of the adhered components due to changes in temperature and moisture without bond failure.
 - h. All signs shall be provided with appropriate mounting hardware. Hardware shall be finished and architectural in appearance and suitable for the mounting surface.
 - i. Some signs may be installed on glass. A blank backer is required to be placed on the opposite side of the glass to cover tape and adhesive. The backer shall match the sign in size and shape.
- 6. Typeface / Font: ADA Meta
- 7. Printed Inserts:

- a. The signage shall be capable of accepting paper or acetate inserts to allow changing and updating as required. Insert components shall have a 0.080" thickness non-glare acrylic window and shall be inlaid flush to sign face for a smooth, seamless appearance.
 - b. The signage contractor shall provide and install all signage inserts.
 - c. Manufacturer shall provide a template containing layout, font, color, artwork and trim lines to allow Owner to produce inserts on laser or ink jet printer. The template shall be in an Acrobat or Word format (.pdf).
8. Mounting: Manufacturer's standard method for substrates indicated.
9. Sign 2 Types:
- a. Type D Restroom ID
 - 1) D.1 Boys, Male Graphic + ADA Graphic
 - 2) D.2 Girls, Female Graphic + ADA Graphic
 - 3) D.3 Toilet room Male/Female Graphic + ADA Graphic
 - 4) D.4 Toilet room Male/Female Graphic
 - b. Type E Room Medium Room ID, 2 lines
 - c. Type F Room ID with Paper Insert
 - d. Type G Maximum Occupancy text signage

2.4 ROOM-IDENTIFICATION SIGNS – SGN3, Signify Quad

- A. Exterior Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product by one of the following:
 - a. Takeform Signify Quad
 2. Signage System
 - a. The signage shall incorporate an exterior grade face with applied graphics including all tactile requirements in adherence to ADA specifications.
 - b. All signs shall have a matching appearance and constructed utilizing the same manufacturing process to assure a consistent look throughout.
 3. Standard Colors:
 - a. Colors shall match manufacturer's ADA standard color selection, as selected from manufacturer's full range.
 4. Construction:
 - a. The signage shall, with the exception of directories and directionals, be a uniform 9 inch width.
 5. Typeface / Font: ADA Meta
 6. Mounting: Manufacturer's standard method for substrates indicated.

7. Sign 3 Types:
 - a. Type H Informational
 - 1) Application: for use to inform visitors of buzzer location, sign-in requirements.
 - 2) Some signs may be installed on glass. A blank backer is required to be placed on the opposite side of the glass to cover tape and adhesive. The backer shall match the sign in size and shape.

2.5 SIGN MATERIALS

- A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

2.6 ACCESSORIES

- A. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

2.7 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 2. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 3. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Mounting Methods:
 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support

weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

END OF SECTION 101423.16

SECTION 102113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-plastic toilet compartments configured as toilet enclosures and urinal screens.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Solid-plastic toilet compartments:

B. Shop Drawings: For solid-plastic toilet compartments.

1. Include plans, elevations, sections, details, and attachment details.

C. Samples: For each type of toilet compartment material indicated.

1. Include Samples of hardware and accessories involving material and color selection.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates:

1. Product Certificates: For each type of toilet compartment by manufacturer.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.

B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice "2010 ADA Standards for Accessible Design" and ICC A117.1 for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS - PTN

- A. Basis of Design: Subject to compliance with the requirements below provide the product indicated or a comparable product as approved by the Architect five (5) days prior to the bid date:
 - 1. Scranton Hiney Hiders Floor to Ceiling Mounted Partitions
- B. Toilet-Enclosure Style: Floor and ceiling anchored.
- C. Urinal-Screen Style: Post to ceiling
- D. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.
 - 1. Integral Hinges: Configure doors and pilasters to receive integral hinges.
 - 2. Color: As indicated on Finish Schedule
 - 3. Texture: Orange Peel
- E. Pilaster Shoes and Sleeves (Caps): Manufacturer's standard design; polymer
 - 1. Polymer Color and Pattern: Matching pilaster
- F. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters; with shoe and sleeve (cap) matching that on the pilaster.
- G. Brackets (Fittings):
 - 1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.3 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories, Heavy Duty: Manufacturer's heavy-duty operating hardware and accessories.
 - 1. Hinges: Manufacturer's minimum 0.062-inch- (1.59-mm-) thick stainless steel [aired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees, allowing emergency access by lifting door. Mount with through bolts.
 - 2. Latch and Keeper: Manufacturer's heavy-duty, surface-mounted, cast-stainless steel latch unit, designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through bolts.
 - 3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless steel hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories. Mount with through bolts.
 - 4. Door Pull: Manufacturer's heavy-duty, cast-stainless steel pull at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through bolts.

2.4 MATERIALS

- A. Aluminum Castings: ASTM B26/B26M.
- B. Aluminum Extrusions: ASTM B221 (ASTM B221M).
- C. Brass Castings: ASTM B584.
- D. Brass Extrusions: ASTM B455.
- E. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
- F. Stainless Steel Castings: ASTM A743/A743M.
- G. Zamac: ASTM B86, commercial zinc-alloy die castings.

2.5 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Floor-and-Ceiling-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of pilasters. Provide shoes and sleeves (caps) at pilasters to conceal anchorage.
- C. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of posts. Provide shoes and sleeves (caps) at posts to conceal anchorage.
- D. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, inswinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, outswinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 INSTALLATION OF PLASTIC TOILET COMPARTMENTS

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch (13 mm).
 - b. Panels and Walls: 1 inch (25 mm).
 - 2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.

- a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
 - b. Align brackets at pilasters with brackets at walls.
- B. Floor-and-Ceiling-Anchored Units: Secure pilasters to supporting construction and level, plumb, and tighten. Hang doors and adjust, so doors are level and aligned with panels, when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out swinging doors to return doors to fully closed position.

END OF SECTION 102113.19

SECTION 10 2600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Corner guards.
 - 2. Protective Wallcovering
 - 3. Metal Protective Wallcovering
 - 4. Metal Wall Base

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of wall and door protection showing locations and extent.
 - 1. Include plans, elevations, sections, and attachment details. Show handrail design and support spacing required to withstand structural loads.
- C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long.

1.3 INFORMATIONAL SUBMITTALS

- A. Product certificates.
- B. Material certificates.
- C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.

PRODUCTS

1.6 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1

1.6 CORNER GUARDS, CG1

- C. Stainless Steel Corner Guards: Manufacturer's standard assembly consisting of face-mounted stainless steel cornerguard
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product:
 - a. InPro Wall Protection Corner Guard
 - 2. Material: Stainless Steel, Type 430
 - a. Finish: Satin, No.4
 - 3. Gauge: 14ga
 - 4. Profile: 90-degree corner with tapered edges
 - 5. Attachment: Mechanically attached through the face with matching flat-head screws.
 - 6. Height:
 - a. CG1A Single: 2 inch stainless steel corner guard, 6 feet in length
 - b. CG1B Endwall Conditions: U-shaped stainless steel end cap, full height from wall base to ceiling
 - c. CG1C Single, 2 inch stainless steel corner guard, full height from wall base to ceiling.

1.7 CORNER GUARDS, CG2

- A. Surface-Mounted, Plastic-Cover Corner Guards, CG: Manufacturer's standard assembly consisting of snap-on, resilient plastic cover installed over retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product:
 - a. Korogard Wall Protection Corner Guard
 - 1) Keli Coats, Koroseal
k.coats@koroseal.com, 402.203.9648
 - 2. Cover: Extruded rigid plastic, minimum 0.078-inch (2.0-mm) wall thickness; in dimensions and profiles indicated on Drawings.

- a. Color and Texture: As indicated on Finish Schedule.
 - 3. Continuous Retainer: Minimum 0.060-inch- (1.5-mm-) thick, one-piece, extruded aluminum
 - 4. Retainer Clips: Manufacturer's heavy-duty impact-absorbing clips.
 - 5. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.
 - 6. Height:
 - a. CG2A Single: G160 2 inch vinyl corner guard, 6 feet in length
 - b. CG2B Endwall Conditions: G110 two 2 inch corner guards, 6 feet in length with infill of matching wall panel. Align protective panel with tops of corner guards
 - c. CG2C Single: G160 2 inch vinyl corner guard, full height, starting above the wall base
 - d. CG2D Endwall Conditions: G110 two 2 inch corner guards, full height starting above the wall base with infill of matching wall panel. Align protective panel with tops of corner guards.
- 1.8 PROTECTIVE WALLCOVERING, WP1 – SEE 09 7200 WALLCOVERINGS
- 1.9 PROTECTIVE WALLCOVERING, WP2 – UNUSED DESIGNATION
- 1.10 PROTECTIVE WALLCOVERING, WP3
- A. Semi-Rigid sheets: Manufacturer's standard, resilient plastic sheet goods; including end panel, cap and corner trims.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product as approved by the Architect:
 - a. Korogard Wall Protection System
 - 1) Keli Coats, Koroseal
k.coats@koroseal.com, 402.203.9648
 - 2. Sheets: Extruded rigid plastic, minimum 0.060-inch (1.52-mm) thickness
 - a. Fire Rating: Class A
 - b. Sheet Size: 4'-0" x 8'-0" or 10'-0"
 - c. WP3 Color and Texture: As shown on Drawings
 - d. Trims, color matched to wall panel selection
 - 1) Top / Bottom Cap: M082-J Molding
 - 2) Inside Corner: M083 Inside Corner
 - 3) Outside Corner: M085 Outside Corner
 - 4) Divider Bar: M087 .028 inch Divider Bar
 - 3. Adhesives: Caulk provided by the wall panel manufacturer to ensure color match.
- 1.11 METAL PROTECTIVE WALL PANEL - SSTL
- A. Type 304 stainless steel sheets fabricated with a satin finish,

1. Thickness: 18ga, 3/64 inches
2. Sheet Size: 48 inches high by 120 inches long, smaller sheets may be utilized to minimize waste at landings and wall returns
3. Finish: Satin
4. Trims:
 - a. J-Trim for top / bottom edges
 - b. T-trim or interlocking edges for vertical seams
 - c. Inside / Outside corners
5. Use: Wall cladding for kitchen application

1.12 METAL WALL BASE – MWB

- A. Basis of Design: Schluter DESGINBASE SL-E
 1. Height: 4 3/8 inches
 2. Material: Stainless Steel Type 304 with silicone sealing lip at toe.
 3. Finish: Satin
 4. Attachment method: adhesive
 5. Trims
 - a. Endcaps for exposed edges
 - b. Inside / Outside Corners: Factory Formed

1.13 MATERIALS

- A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required, thickness as indicated.
- B. Polycarbonate Plastic Sheet: ASTM D 6098, S-PC01, Class 1 or Class 2, abrasion resistant; with a minimum impact-resistance rating of 15 ft.-lbf/in. (800 J/m) of notch when tested according to ASTM D 256, Test Method A.
- C. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- D. Adhesive: As recommended by protection product manufacturer.

PART 2 - EXECUTION

2.1 INSTALLATION

- A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
- B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.

- C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
 - 1. Provide anchoring devices and suitable locations to withstand imposed loads.
 - 2. Where splices occur in horizontal runs of more than 20 feet (6.1 m), splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches (305 mm) apart.
 - 3. Adjust end and top caps as required to ensure tight seams.

END OF SECTION 10 2600

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SECTION 102800 - TOILET, BATH, AND BUILDING ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Building accessories.

- a. The following items shall be Owner Furnished, Contractor Installed:
 - 1) Toilet Paper Dispensers (surface and partition mounted)
 - 2) Paper Towel Dispensers (surface mounted, battery operated or manual)
 - 3) Soap Dispensers (surface mounted, battery operated or manual)
- b. The following items shall be Owner Furnished, Owner Installed:
 - 1) Free standing waste receptacles.
- c. The following items shall be Contractor Furnished, Contractor Installed:
 - 1) Grab Bars
 - 2) Sanitary Napkin Disposals
 - 3) Mirrors
 - 4) Student Storage Hooks
 - 5) Privacy Curtains, track and accessories
- d. The following items are existing, and may require coordination for removal and/or reinstallation:
 - 1) Secure medical storage
 - a) Requires power connection, See Electrical
 - 2) AED cabinets
 - 3) Anti-bleed kits
 - 4) Emergency Allergy Kit Cabinet
 - 5) Emergency choking equipment

2. Custodial accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each finish specified, full size.

- 1. Approved full-size Samples will be returned and may be used in the Work.

C. Delegated Design Submittal: For grab bars.

- 1. Include structural design calculations indicating compliance with specified structural-performance requirements.

1.3 INFORMATIONAL SUBMITTALS

- A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.5 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Design accessories and fasteners to comply with the following requirements:
 - 1. Grab Bars: Installed units are able to resist 250 lbf (1112 N) concentrated load applied in any direction and at any point.

2.2 BUILDING ACCESSORIES

- A. TPD - Toilet Tissue Dispenser (surface or partition mounted), OFCI
- B. PTD - Paper Towel Dispenser (surface mounted, manual or battery powered), OFCI
- C. SD - Soap Dispenser (surface mounted, manual or battery powered), OFCI
- D. WR - Waste Receptacle (freestanding), OFOI
- E. GB - Grab Bar, CFCI

- 1. Basis of Design: American Specialties, 3700 Series Grab Bars
 - 2. Mounting: Flanges with concealed fasteners.
 - 3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
 - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin)
 - 4. Outside Diameter: 1-1/4 inches (32 mm)
 - 5. Configuration and Length:
 - a. GBA: 42 inches

- b. GBB: 36 inches
 - c. GBA: 18 inches (vertical)
 - 6. Installation Height for Adult applications:
 - a. Locations: 124 ADA RR, 130 Girls, 131 Boys, 204 Toilet, 213 Boys, 214 Girls
 - 7. Installation Height for Children's applications:
 - a. Locations: 109 Toilet, 110 Toilet, 159E Toilet, 233 Toilet, 234 Toilet, 235 Toilet, 236 Toilet
- F. SND - Sanitary-Napkin Disposal Unit, CFCI
 - 1. Basis of Design: American Specialties, Inc. Roval Sanitary Waste Receptacle
 - 2. Mounting: Surface mounted
 - 3. Door or Cover: Self-closing, disposal-opening cover
 - 4. Receptacle: Removable.
 - 5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin)
- G. MR - Mirror Unit, CFCI
 - 1. Basis of Design: American Specialties, Inc. 0600 Series Inter-Lok Frame Mirror
 - 2. Frame: Stainless steel channel
 - 3. Corners: Welded and ground smooth
 - 4. Glazing: Tempered Glass
 - 5. MR1 Size: 24 inches by 36 inches
 - 6. MR2: Size: 18 inches by 36 inches
 - 7. Hangers: Manufacturer's standard rigid, tamper and theft resistant
- H. HOOK – Student Storage Hooks, CFCI
 - 1. Basis of Design: Tough Hook LLC, PerfectFit Coat Rack with Thoughook Max Hook
 - 2. Description: Double-prong hook pre-mounted on backerboard.
 - a. Backer: 11/16 inch MDF faced with high-pressure laminate
 - 1) Color: Oak, length as recommended by the manufacturer.
 - b. Hook: Toughhook Max 5.4 inch Injection Molded Nylon PA6
 - 1) Color: Graphite
 - c. Spacing and Quantities
 - 1) Corridor 112: 12 inches OC, 30 hooks total
 - 2) Corridor 144: 6 inches OC, 244 hooks total
 - 3) Corridor 176: 6 inches OC, 244 hooks total
 - 4) Corridor 224: 7 inches OC, 240 hooks total
 - 5) Corridor 225: 6 inches OC, 90 hooks total
 - 6) Corridor 229: 8 inches OC, 40 hooks total
 - 7) Corridor 230: 10 inches OC, 64 hooks total
 - 3. Mounting: Exposed in counter sunk holes

2.3 NURSING EQUIPMENT

A. EXG MED - Secure Medical Storage

1. Existing wall mounted, secured controlled substance storage cabinet. Power required for access control fob.
2. Relocate from existing 123 Nurse to new 159D Nurse

B. CRTN, Privacy Curtain and Track, CFCI

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product as approved by the Architect:
 - a. In-Pro OptiTrac with Click-eze Privacy Curtain
2. Track: .060 inch extruded aluminum
 - a. Track configuration: 1.375 by .75 inch concealed carriage hook track
 - 1) Provide matched corner and angled components as required by the curtain configuration as shown in the plans
 - b. Finish: Baked enamel, white
3. Mounting: Flanges with concealed fasteners.
4. End Cap Material and Finish: thermoplastic matched to track finish, removable to allow carrier removal without track disassembly
5. Curtain Carrier: Nylon roller with 2.2 carriers per lineal foot plus one additional carrier
 - a. Hook type: solid hook spool
6. Wand: 36 inch drapery wand
7. Privacy Curtain:
 - a. Style: Provide 12 inch mesh top
 - b. Material: 100% polyester
 - c. Treatment: Manufacturer's high-performance stain resistance and antimicrobial properties
8. Location: 159D Nurse

2.4 CUSTODIAL ACCESSORIES

A. Custodial Utility Shelf

1. Basis of Design: American Specialties, Inc. 0692 Series Shelf
2. Description: With exposed edges turned down not less than 1/2 inch (13 mm) and supported by two triangular brackets welded to shelf underside.
3. Size: 18 inches (457 mm) long by 6 inches (152 mm) deep
4. Material and Finish: Not less than nominal 0.05-inch- (1.3-mm-) thick stainless steel, ASTM A480/A480M No. 4 finish (satin).
5. Location: 126, Janitor 164 Janitor, 181 Janitor, 207 Janitor

2.5 FABRICATION

- ### A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories in accordance with manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 - 1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.
- C. Shower Seats: Install to comply with specified structural-performance requirements.

END OF SECTION 102800

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SECTION 10 4400 - FIRE EXTINGUISHERS AND CABINETS

PART 1 GENERAL

1.1 SUMMARY:

A. Section Includes:

1. Fire extinguishers and cabinets as shown on the drawings.
2. Automated External Defibrillators (AED) Cabinets.

1.2 SUBMITTALS:

A. Product Data:

1. Submit manufacturer's technical data and installation instructions for each type of fire extinguisher and cabinet required. Include dimensions and clearances required.

1.3 QUALITY ASSURANCE:

A. Standards:

1. Provide fire extinguishers conforming to NFPA Standard No. 10 and bearing UL label.

PART 2 PRODUCTS

2.1 FIRE EXTINGUISHER CABINET MANUFACTURERS:

A. FEC-1: Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect.

- a. Activar Construction Products, JL Industries Line, Series: Ambassador Semi-recessed
2. Mounting: Semi-recessed, 3 inch rolled edge trim
3. Door style: Type "W" - vertical duo with SAF-T-LOK
4. Lettering: Red, vertical orientation
5. Glass: clear tempered
6. Pull Type: Flush to cabinet face
7. Material and Finish: Stainless Steel, #6 Satin finish
8. Locations: As shown on plans

- B. FEC-2: Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect.

- a. Activar Construction Products, JL Industries Line, Series: Ambassador, Surface Mounted
2. Mounting: Surface-mounted, 3 inch rolled edge trim
3. Door style: Type "W" - vertical duo with SAF-T-LOK
4. Lettering: Red, vertical orientation
5. Glass: clear tempered
6. Pull Type: Flush to cabinet face
7. Material and Finish: Stainless Steel, #6 Satin finish
8. Locations: As shown on plans

- C. FEC-3: Basis of Design: Subject to compliance with the requirements below or a comparable product as approved by the Architect.

1. Activar fire extinguisher bracket compatible with provided extinguisher. Configuration shall include base plate with secure strap and removable pin for access.
2. Location: Southeast, 203 Janitor

2.2 AED CABINET – EXISTING CABINET, COORDINATE WITH OWNER TO SALVAGE AND RELOCATE

2.3 FIRE EXTINGUISHERS:

- A. Provide fire extinguishers for each extinguisher cabinet and other locations as shown on the drawings. Furnish only new fire extinguishers which are approved and labeled by Underwriter's Laboratories.
- B. Provide colors and finishes of materials for portable fire extinguishers as selected by the Architect from manufacturer's standard.
- C. Fill and service extinguishers in accordance with governing authorities.
- D. Provide required type mounting brackets for wall-mounted extinguishers and those located in cabinets requiring brackets.
- E. Multi-Purpose Dry Chemical: 10 pound capacity, enameled steel container with pressure-indicating gauge, for Class 4A:60B:C.

PART 3 EXECUTION

3.1 INSTALLATION:

- A. Install in locations and at mounting height to comply with governing authorities. If authorities have no requirements, mount at 2'-6" to bottom of cabinet. Coordinate recesses with carpentry, masonry or framing trades as appropriate. Prepare recesses in walls as required. Securely fasten items to structure, square and plumb, in accordance with manufacturer's instructions. Maintain fire rating of wall, if any.
- B. Wherever exact location of units is not shown, locate as directed by Architect.
- C. Fill and charge extinguishers just prior to substantial completion.

3.2 PROTECTION AND CLEANING:

- A. Clean fire extinguisher cabinets and repair minor damage to finishes. Replace units damaged beyond satisfactory repair as determined by Architect.
- B. Advise Contractor of protection measures necessary to protect fire extinguishers and cabinets during subsequent construction.

END OF SECTION 10 4400

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SECTION 105129 - PHENOLIC LOCKERS

GENERAL

2.01 SECTION INCLUDES

- A. Standard-duty phenolic lockers.

2.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

2.03 SUBMITTALS

- A. Product Data: Manufacturer's published data on locker construction, sizes, and accessories for each product used.
 - 1. Care and maintenance information.
- B. Shop Drawings: Indicate locker plan layout, including minimum required dimensions for installation, elevations of each locker type
- C. Samples: 3 by 3 inches (76 by 76 mm) in size, indicating and color of locker material.
- D. Manufacturer's Instructions: Indicate installation of each configuration indicated.
- E. Manufacturer's qualification statement.

2.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

2.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect locker finish and adjacent surfaces from damage.
- B. Inspect lockers and benches upon receipt of delivery, and store in secure area until ready for assembly or installation.

3.01 PERFORMANCE REQUIREMENTS

- A. Accessibility: Comply with and ICC A117.1 and ADA Standards, Accessibility Guidelines

3.02 STANDARD-DUTY PHENOLIC LOCKERS - LKR

Basis of Design: Phenolic, Traditional Collection by ASI Storage Solutions.

- 1. Selectable Attributes:
 - a. Locker Configuration: Three tier.
 - b. Accessible Units: Lockers constructed to comply with referenced accessibility standards
 - c. Width: 12 inches
 - d. Depth: 12 inches
 - e. Enclosed Locker Height: 72 inches (182 cm).
 - f. Interior Color: Manufacturer's standard color

- g. Black Core Exterior Color: 9550 Asian Night
- 2.
 - a. Locker Body Components: Formed from phenolic sheet of the following type and minimum thicknesses:
 - 1) Phenolic Sheet: Solid phenolic, formed under high pressure, with black finished edges with selected high-pressure melamine matte finish as an integral part of core material.
 - b. Ventilation Type: 1/8-inch (3 mm) gap between locker door and box, providing ventilation around entire door perimeter.
 - c. Phenolic Thickness:
 - 1) Door: 1/2 inch (13 mm), minimum.
 - 2) Back: 3/8 inch (9.5 mm), minimum.
 - 3) Side: 3/8 inch (9.5 mm), minimum.
 - 4) Top: 1/2 inch (13 mm), minimum.
 - 5) Shelf: 1/2 inch (13 mm), minimum.
 - 6) Bottom: 1/2 inch (13 mm), minimum.
 - d. Door Latching: Single point.
 - e. Hinges: Continuous type, 16 gauge, A-coated steel, black finish, with 120-degree swing limitation.
 - f. Handle: One piece, recessed cup formed from black HDPE and securely mounted to interior of each door for smooth operation with door latching mechanism. Capable of accepting various locking mechanisms.
 - g. Latching Type: Positive, automatic-type locking device allowing locker door to be locked when open, then closed without unlocking.
 - h. Locking Type: Hasps for combination locks provided by Owner
 - i. Accessories:
 - 1) Base: 4-inch (100 mm) high, 1-inch (25 mm) thick, black HDPE base.
 - 2) Top: Integral flat top only.
 - 3) Trim: finished end panels
 - j. Interior Equipment:
 - 1) Wall Hook: Two single-prong hooks.

PART 3 EXECUTION

4.01 EXAMINATION

- A. Verify existing conditions and field dimensions meet manufacturer's requirements before starting work.
- B. Verify prepared bases specified in Section 033000 are in correct position and configuration.

4.02 INSTALLATION

- A. Install in accordance with manufacturer's written instructions.
- B. Place and secure on prepared base.
- C. Install lockers plumb and square.
- D. Secure lockers with anchor devices to suit substrate materials.
 - 1. Minimum Pullout Force: 100 lb (445 N)

- E. Bolt adjoining locker units together to provide rigid installation.
- F. Install end panels

4.03 ADJUSTING

- A. Adjust moving parts for smooth operation.
 - 1. Adjust doors and latches to operate without binding.
 - 2. Verify latches are operating properly.
 - 3. Adjust built-in locks to prevent binding.

4.04 CLEANING

- A. See Section 017000 - Execution and Closeout Requirements for additional requirements.
- B. Clean interior and exterior surfaces of lockers.

4.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch up damaged finishes after Substantial Completion.

END OF SECTION 105129

SECTION 107316.23 – Fabric Canopies

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes freestanding fabric canopy structures as follows:
 - 1. Freestanding fabric canopy structures.

1.2 REFERENCE STANDARDS

- A. ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- B. ASTM A123 – Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- C. ASTM A153 – Zinc Coating on Hardware
- D. ASTM D751 – Tensile Strength of Coated Fabrics
- E. NFPA 701 – Flame Propagation of Textiles

1.3 ACTION SUBMITTALS

- A. Product Data: For each canopy system including physical characteristics, such as materials, dimensions, finish, and color.
- B. Shop Drawings: For fabric canopy system.
 - 1. Include plans, elevations, sections, attachment details, footing requirements, and fabric layout.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installer and manufacturer. Demonstrate experience with similar fabric canopy structures.
- B. Warranty
- C. Product Certificates.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For canopy systems and finishes to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm with not less than ten (10) years' experience in the manufacture of tensioned fabric canopy structures of similar size and type.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved (or certified) by manufacturer to install manufacturer's product(s).
- C. Notify Owner's Representative of any discrepancies of site dimensions, obstructions, etc. that are not shown on the drawing and that might not have been known during preparation of the drawings. If such notification is not made, Contractor assumes all expenses and responsibility for any revisions necessary. Provide work called out on the drawings or notes on details whether specially mentioned in the specification.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of fabric canopy that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of fabric beyond normal weathering.
 - c. Excessive fading, tearing, or loss of fabric strength.
 - d. Failure of protecting coatings or finishes.
- B. Warranty Period:
 - 1. Fabric: 10 years
 - 2. Frame and Hardware: 5 years
- C. Warranty shall remain valid when fabric membrane is removed seasonally in accordance with manufacturer's written instructions.

1.8 DELIVERY, STORAGE & HANDLING

- A. Inspect all components on delivery to ensure that no damage occurred during shipping or handling. Store materials in manufacturer's original, unopened and undamaged packaging in a manner to ensure proper ventilation and drainage to protect against damage, weather, vandalism, and theft until ready for installation. Inspect components prior to installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide fabric canopy system designed to withstand wind loads in accordance with ASCE 7 for project location. Structure shall remain stable and plumb under design loads without excessive deflection.

- B. Design: Canopy system shall be manufacturer's standard pre-engineered structure. Provide engineering by manufacturer's qualified professional engineer for frame, anchorage, and foundations.
- C. Provide UV-resistant, mold-resistant, and flame-resistant fabric suitable for exterior exposure. Fabric shall comply with NFPA 701.
- D. Removable Fabric: Fabric membrane shall be removable and shall be removed seasonally prior to winter conditions or when high winds or snow loads are anticipated. Frame shall remain in place year-round.
- E. Anchorage: Provide anchorage and footings designed by manufacturer to resist applied loads and site soil conditions.
- F. Finish: Metal components shall be galvanized and/or powder coated for exterior exposure and corrosion resistance.

2.2 FABRIC CANOPY

- A. Hip-Style, freestanding fabric shade structure:
 - 1. Provide Fabric Canopy Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 - 2. Frame: Galvanized-steel pipe or tubing with powder coat finish.
 - a. Posts: Manufacturer's standard size for structural requirements.
 - b. Color: As selected by Owner from manufacturer's full color range.
 - 3. Fabric: High-Density polyethylene shade fabric.
 - a. Color: As selected by Owner from manufacturer's full color range.
 - 4. Anchorage: Concrete footings as required by manufacturer.

2.3 FABRICATION

- A. Provide complete, pre-engineered fabric canopy system including structural frame, posts, fabric membrane, connection hardware, and anchorage components. System shall be designed for exterior use and fabricated from corrosion-resistant materials suitable for long-term outdoor exposure. Fabric membrane shall be removable.
- B. Structural Frame:
 - 1. Fabricate main support posts and framing members from steel pipe or tubing of sizes and wall thickness required to meet structural performance requirements.
 - 2. Unless otherwise indicated, fabricate posts from galvanized steel tubing with in-ground embedment as required by manufacturer.
 - 3. Provide factory-drilled components and prefabricated connections for field assembly.
 - 4. Exposed fasteners and hardware shall be corrosion resistant and suitable for exterior use.

- C. Fabric Membrane:
 - 1. Fabricate canopy membrane from high-density polyethylene or coated fabric designed for tensioned shade structures.
 - 2. Fabric Canopy shall be UV stabilized, mold and mildew resistant, flame resistant and suitable for seasonal removal and reinstallation.
 - 3. Provide reinforced edges and corners for tensioning and attachment to frame.
 - 4. Provide attachment system suitable for seasonal removal and reinstallation.
- D. Hardware and Connections:
 - 1. Provide manufacturer's standard connection hardware, tensioning cables, and fittings required for a complete installation.
 - 2. Hardware shall be stainless steel, hot-dip galvanized steel, or otherwise corrosion resistant.
 - 3. Provide tensioning system designed to maintain fabric tautness without overstressing frame or fabric.
- E. Finishes:
 - 1. All metal parts will either have inherent corrosion protection such as stainless steel, aluminum or galvanized steel, or they will be pre-treated prior to powder coating with either an e-coat or zinc clear chromate coating for superior corrosion protection..

2.4 MATERIALS

- A. Steel: Structural frame members and posts shall be fabricated from steel pipe or tubing recommended by manufacturer for type of use and finish indicated. Steel components shall be galvanized or otherwise corrosion resistant.
- B. Fabric: Provide high-density polyethylene or coated fabric suitable for exterior tensioned shade structures. Fabric shall be UV stabilized, mold and mildew resistant, and flame resistant.
- C. Hardware: Provide manufacturer's standard corrosion-resistant hardware and fittings suitable for exterior use, including tensioning cables and attachment hardware.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine site conditions, layout, and elevations affecting installation of fabric canopy.
- B. Verify that locations for canopy posts are properly laid out and that excavation conditions are suitable for installation of embedded posts and concrete footings.
- C. Do not begin installation until unsatisfactory conditions have been corrected.

D. INSTALLATION

- E. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor fabric canopy structure securely, positioned at locations indicated.

- F. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- G. Post Set with Concrete Footing: Install posts in accordance with manufacturer's written instructions and engineered shop drawings. Provide concrete placement, consolidation, and curing procedures suitable for structural support of shade structure.
 - 1. Set equipment posts **in** concrete footing, according to manufacturer's written instructions. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - a. Place concrete around posts and vibrate or tamp for consolidation. Set posts plumb, aligned, and at elevations indicated during placement and finishing operations until concrete is sufficiently cured before applying final tension to fabric membrane.
 - 2. Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment. Embedded posts shall have a minimum footing depth of 54" below finish grade unless greater depth is required by manufacturer's engineered design.
 - 3. Finishing Footings: Smooth top, and shape to shed water.
- H. Frame: Install frame members, fabric membrane, and tensioning components to produce a smooth, taut canopy surface free of wrinkles and sagging.
- I. Fabric: Fabric membrane shall be installed to allow seasonal removal and reinstallation in accordance with manufacturer's written instructions.

3.2 FIELD QUALITY CONTROL

- A. Verify canopy posts are installed plumb and at required embed depth.

3.3 CLEANING

- A. Clean jobsite of excess materials, including post hole excavations.

3.4 DEMONSTRATION

- A. Instruct Owner's personnel on proper operation and maintenance of fabric canopy structures.

END OF SECTION 107316.23

SECTION 107516 - GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes ground-set flagpoles made from aluminum.

1.3 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM B221 – Standard Specification for Aluminum and Aluminum-Alloy

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.
- B. Shop Drawings: For flagpoles.
 - 1. Include plans, elevations, and attachment details. Show general arrangement, jointing, fittings, accessories, grounding, anchoring, and support.
 - 2. Include section, and details of foundation system.
 - 3. Manufacturer's Certificate: Certify that products meet or exceed specified requirements

1.5 QUALITY ASSURANCE

- A. Perform work according to City of Rapid City Standards
- B. American National Standards Institute (ANSI) NAAMM 1001-97 Guide Specifications for Design of Metal Flagpoles Manual.
- C. Design Basis for wind speed based on minimum 115 mph velocity and minimum gust velocity of 130 mph.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five (5) years' documented experience.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Shipping: Spiral wrap flagpoles with protective covering and pack in protective shipping tubes or containers
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer's instructions
- D. Protection: Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on shop drawings if applicable.

1.10 WARRANTY

- A. Furnish five year warranty for flagpole, flagpole accessories and flagpole finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.
 - 1. Manufacturers:
 - a. Acme/Lingo Flagpoles, LLC.
 - b. Concord American Flagpole
 - c. Olympus Flag & Banner
 - d. Eder Flag Manufacturing Company

- B. Description:
 - 1. Type: Ground Set
 - 2. Size: Nominal Height – 30 feet, measured from finish grade elevation.

2.2 ALUMINUM FLAGPOLES

- A. Aluminum Flagpoles: Cone-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 221/B 221M, Alloy 6063, with a minimum wall thickness of 3/16 inch.
- B. Exposed Height: 30 feet.
- C. Construct flagpoles in one piece.
- D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch wall thickness with 3/16-inch steel bottom plate and support plate; 12" diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.
 - 1. Flashing Collar: Same material and finish as flagpole.
- E. Sleeve for Aluminum Flagpole: 16 gauge hot dipped galvanized steel foundation sleeve, made to fit flagpole, for casting into concrete foundation.
 - 1. Flashing Collar: Same material and finish as flagpole.

2.3 FITTINGS

- A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.
 - 1. 6" spun aluminum, with gold anodized finish.
- B. Internal Halyard, Cam Cleat System: 5/16-inch diameter, braided polypropylene halyard; cam cleat; and concealed revolving truck assembly with plastic-coated counterweight and sling. Furnish flush access door secured with cylinder lock. Non-fouling revolving truck assembly to match flagpole finish.
 - 1. Halyard Flag Snaps: Stainless-steel swivel snap hooks with neoprene or vinyl covers. Furnish two per halyard.
 - 2. Plastic Halyard Flag Clips: Made from injection-molded, UV-stabilized, acetal resin (Delrin). Clips attach to flag and have two eyes for inserting both runs of halyards. Furnish two per halyard.

2.4 ACCESSORIES

- A. Flag:
 - 1. Design: USA

- B. Lighting:
 - 1. Coordinate with electrical plans.
- C. Lightning Protection:
 - 1. Ground flagpole in accordance with manufacturer's instructions.

2.5 MISCELLANEOUS MATERIALS

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout.
- B. Drainage Material: Clean crushed stone.
- C. Sand: fine clean aggregate.
- D. Elastomeric Joint Sealant: Provide joint sealant at top of sleeve beneath flash collar.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.6 ALUMINUM FINISHES

- A. Natural Satin Finish: AA-M32, fine, directional, medium satin polish; buff complying with AA-M20; seal aluminum surfaces with clear, hard-coat wax.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.
- B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.
- C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.
- D. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.
- E. Sleeves: Locate and secure sleeves in forms by bracing to reinforcement and forms.
- F. Place concrete, as specified in Section 033000 "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.
- G. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.2 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where indicated and according to Shop Drawings and manufacturer's written instructions.
- B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch layer of elastomeric joint sealant and cover with flashing collar.

3.3 CLEANING

- A. Clean jobsite of excess materials, including post hole excavations.

3.4 DEMONSTRATION

- A. Instruct Owner's personnel on proper operation and maintenance of flagpole.

END OF SECTION 107516

SECTION 116623 - GYMNASIUM EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Basketball equipment.
2. Volleyball equipment.
3. Safety pads.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For gymnasium equipment.

1. Include plans, elevations, sections, and attachment details.
2. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each item and color specified.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Court layout plans, reflected ceiling plans, and other details, drawn to scale, and coordinated with ceiling-suspended gymnasium equipment, floor inserts, game lines, and markers applied to finished flooring, and coordinated with each other, using input from installers of the items involved.

B. Product Certificates: For each type of gymnasium equipment.

C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.

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

PART 2 - PRODUCTS

2.1 BASKETBALL EQUIPMENT - HOOPS

- A. Provide Draper TF-20J electric operated folding backstop, or equal.
- B. Connections: Manufacturer's standard connections or connections recommended in writing by manufacturer and complying with Section 055000 "Metal Fabrications" of size and type required to transfer loads to building structure.
- C. Overhead-Supported Backstops:
 1. Folding Type: Manufacturer's standard assembly for forward-folding, rear-braced backstop, with hardware and fittings to permit folding.
 2. Goal Height Adjuster: Adjustable from 8 to 10 feet (2.40 to 3.05 m) to top of ring with gear-drive mechanism, locking in any position within adjustment range, with visible height scale attached to side of framing.
 - a. Operation:
 - 1) Electrical: Electric operation with integral gear-drive motor, with limit switches preset to goal heights and the following:
- D. Backstop Safety Device: Designed to limit free fall if support cable, chains, pulleys, fittings, winch, or related components fail.
- E. Winch: Hoist consisting of heavy-duty, fully enclosed worm-gear; brake; cable drum; cable; and fittings, for mounting to structure above; designed to move and hold backboard in any raised or lowered position.
- F. Backstop Electric Operator: Provide operating machine of size and capacity recommended in writing by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.
 1. Electrical Components, Devices, and Accessories: Listed and labeled according to NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Motor Electrical Characteristics:
 - a. Horsepower: 3/4 hp.
 - b. Voltage: 115 V ac, single phase, 60 hertz.
 3. Remote-Control Station: NEMA ICS 6, Type 1 enclosure for recessed or flush mounting and momentary-contact, three-position, switch-operated control with up, down, and off functions.
 - a. Keys: Provide two keys per station.
 - b. Location: Install in Office 206

4. Limit Switches: Adjustable switches at each backstop, interlocked with motor controls and set to automatically stop backstop at fully retracted and fully lowered positions.

G. Basketball Backboards:

1. Shape and Size:
 - a. Rectangular, 72 by 42 inches (1830 by 1070 mm) width by height.
2. Backboard Material: Provide with predrilled holes or preset inserts for mounting goals, and as follows:
 - a. Glass: Minimum 1/2-inch- (13-mm-) thick, transparent tempered glass according to ASTM C1048 Kind FT (fully tempered) and with impact-testing requirements in 16 CFR 1201 Category II or ANSI Z97.1 Class A for safety glazing.
3. Target Area and Border Markings: Permanently etched in white color, marked in manufacturer's standard pattern and stripe width.
4. Finish: Manufacturer's standard factory-applied, white background.

H. Goal-Mounting Assembly: Compatible with goal, backboard, and backstop.

I. Basketball Goals: Basket ring complete with flanges, braces, attachment plate, and evenly spaced loops welded around underside of ring.

1. Single-rim basket ring competition goal.
2. Type:
 - a. Movable: pressure-release design with manufacturer's standard breakaway mechanism and rebound characteristics identical to those of fixed, nonmovable ring.
3. Finish: Manufacturer's standard finish.

J. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches (380 to 460 mm) long, sized to fit ring diameter, and as follows:

1. Cord: Made from white cotton.

K. Backboard Safety Pads: Designed for backboard thickness and extending continuously along bottom and up sides of backboard and over backstop according to manufacturer's standard design.

1. Color: As selected by Architect from manufacturer's full range.

2.2 VOLLEYBALL EQUIPMENT

- A. Floor Insert: Solid-brass floor plate and steel pipe sleeve, concealed by floor plate, with capped bottom end, sized with ID to fit post standards, minimum length required to securely anchor pipe sleeve below finished floor in concrete footing; with anchors designed for securing floor insert to floor substrate indicated; one per post standard.

1. Flush Floor Plate: Manufacturer's standard hinged access cover, designed to be flush with adjacent flooring. Provide two tool(s) for unlocking access covers.

B. Post Standards: By Owner.

2.3 SAFETY PADS – PAD1&2

A. Provide safety pads as manufactured by one of the following:

1. ADP Lemco, Inc.
2. Arizona Courtlines, Inc.
3. Draper, Inc.
4. Jaypro Sports, LLC.
5. Performance Sports Systems.
6. Porter Athletic Equipment.
7. Spalding Equipment.

B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

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

C. Pad Coverings: Provide safety pad fabric covering that is fabricated from puncture- and tear-resistant, PVC-coated polyester or nylon-reinforced PVC fabric, minimum 14-oz./sq. yd. (475-g/sq. m) and treated with fungicide for mildew resistance; with surface-burning characteristics indicated.

D. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board, with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.

1. Backer Board: Minimum 3/8-inch- (9.5-mm-) thick plywood, mat formed, or composite panel.
2. Fill: Manufacturer's standard.
3. Fire-Resistive Fill: Manufacturer's standard.
4. Number of Modular Panel Sections: As indicated on Drawings.
5. Installation Method: Manufacturer's standard.
6. Fabric Covering Color(s): As selected by Architect from manufacturer's full range.

E. Cutout Trim: Manufacturer's standard flanged cutout trim kits for fitting pads around switches, receptacles, and other obstructions.

1. Colors: To be selected by Architect.

2.4 MATERIALS

- A. Support Cable: Manufacturer's standard galvanized-stranded-steel wire rope. Provide fittings according to the wire rope manufacturer's written instructions for size, number, and installation method.
- B. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80 heat-treated alloy-steel chains, according to ASTM A391/A391M, with commercial-quality, zinc-plated steel connectors and hangars.
- C. General-Purpose Chain: For chains not used for overhead lifting, provide carbon steel chain, according to ASTM A413/A413M (Grade 30 proof coil chain or higher grade recommended by gymnasium equipment manufacturer). Provide coating type, chain size, number, and installation method according to manufacturer's written instructions.
- D. Castings and Hangers: Malleable iron, according to ASTM A47/A47M; grade as required for structural loading.
- E. Anchors, Fasteners, Fittings, and Hardware: Gymnasium equipment manufacturer's standard corrosion-resistant or noncorrodible units; concealed.
- F. Grout: Nonshrink, nonmetallic, premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, according to ASTM C1107/C1107M, with minimum strength recommended in writing by gymnasium-equipment manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions.
- B. Permanently Placed Gymnasium Equipment and Components: Install rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relationship to adjacent construction; and aligned with court layout.
- C. Connections: Connect electric operators to building electrical system.
- D. Removable Gymnasium-Equipment Components: Assemble in place to verify that equipment and components are complete and in proper working order. Disassemble removable gymnasium equipment after assembled configuration is approved by Architect, and store units in location indicated on Drawings.
- E. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly; free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range; and lubricate as recommended in writing by manufacturer.

3.2 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

END OF SECTION 116623

SECTION 116653 - GYMNASIUM DIVIDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roll-up divider systems.
 - 2. Electric operators.
 - 3. Divider curtains.
 - 4. Divider system accessories.

1.2 PREINSTALLATION MEETINGS

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

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For gymnasium dividers.
 - 1. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each item and color specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans with divider-curtain layouts, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
- B. Product Certificates: For each type of gymnasium divider.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ROLL-UP DIVIDER SYSTEMS

- A. Type: Electrically operated, roll-up gymnasium divider including motor, belts, controls, clamps for attachment to building structure, threaded rod supports, and other components required for complete functional installation; Roll-Up Gym Divider as manufactured by Draper, Inc, or approved equal.
- B. Operation: Curtain rolled up and down by belts wound onto overhead rotating drive pipe operated by electrical motor.
- C. Configuration: Rectangular shape with straight bottom and extending across room as indicated on Drawings.
 - 1. Maximum dimension of stored divider: 2 feet from bottom of structural support to bottom of rolled curtain.
 - 2. Minimum required clearance between vertical curtain edges and adjacent fixed objects: 6 inches.
 - 3. Provide 36 inches space between curtain ends and walls or fixed objects to allow passage space around divider.
- D. Attachment: Attach to structural support with beam clamps, hanger brackets, and 1/2-inch diameter threaded rods. Attachment clamps designed to be capable of supporting a minimum of 5,000 lbs. each and provided in sufficient number to provide a combined minimum 45:1 attachment point safety factor.
- E. Hoist belts: 5-inches wide white polyester webbing attached to drive pipe, passing under bottom batten, and terminating at top batten. Space belts at approximately 15 feet.
- F. Bottom roller: 4-inches diameter steel pipe with aluminum strip for attachment of curtain.

2.2 ELECTRIC OPERATORS

- A. Provide factory-assembled electric operation system of size and capacity recommended in writing and provided by gymnasium divider manufacturer for gymnasium dividers specified, with electric motors and factory-rewired motor controls, control devices, and accessories required for proper operation.
- B. Operating mechanism: Drive pipe winch. Winch assembly shall carry a five-year warranty. Provide with load holding worm gear reduction and integral limit switches to control curtain travel. Drive pipe shall rotate in pipe support assemblies spaced at approximately 9 feet.
- C. Electrical Components, Devices, and Accessories: Listed and labeled according to NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Motor Electrical Characteristics:
 - 1. Horsepower: 3/4 hp.

2. Voltage: 110 V ac, single phase, 60 hertz, reversible capacitor, C-Face motor with thermal overload protection.
 3. Include wiring from control stations to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.
- E. Limit Switches: Adjustable switches at each divider curtain, interlocked with motor controls and set to automatically stop divider curtain at fully extended and fully retracted positions.
- F. Control System:
1. Key-Switch Operation: NEMA ICS 6, Type 1 enclosure, momentary-contact, three-position switch-operated control with up, down, and off functions.
 - a. Keys: Provide two key(s) per station.

2.3 DIVIDER CURTAINS

- A. Upper Curtain, Mesh: Woven mesh of polyester yarn coated with vinyl, weighing not less than 9 oz./sq. yd. (305 g/sq. m).
1. Mesh Color: Gray.
- B. Lower Curtain, Solid: Woven polyester fabric coated with vinyl, 18 oz./sq. yd. (610 g/sq. m), 8-foot (2.4-m) height above floor.
1. Fabric Color(s): as selected by Architect from full range of industry colors and color densities.
- C. Hems: Folded and electronically welded.
- D. Seams: Electronically welded.
- E. Overall Curtain Height: Floor to ceiling, within installation clearances required.
- F. Bottom of Curtain: Approximately 2 inches (50 mm) above finished floor.

2.4 DIVIDER SYSTEM ACCESSORIES

- A. Safety Lock: Locks drive system when speed exceeds manufacturer's recommended speed.
- B. Audible Motion Alarm: Provide alarm with intermittent warning tone when curtain is raised or lowered.

2.5 SUPPORT MATERIALS AND FASTENERS

- A. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80, heat-treated alloy-steel chains, according to ASTM A391/A391M, with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and hangers.

- B. General-Purpose Chain: For chains not used for overhead lifting, provide carbon steel chain, according to ASTM A413/A413M, Grade 30 proof coil chain or higher grade recommended by gymnasium divider manufacturer. Provide coating type, chain size, number, and installation method according to manufacturer's written instructions.
- C. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant or noncorrodible units; concealed.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions.
- B. Install gymnasium dividers level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with sport-court layout.
- C. Connections: Connect electric operators to building electrical system.
- D. Adjust movable components of gymnasium dividers to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, uneven tension, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range; and lubricate as recommended in writing by manufacturer.
- E. Limit Switch Adjustment: Set and adjust upper and lower limit controls.

3.2 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain gymnasium dividers.

END OF SECTION 116653

SECTION 116813 – Playground Equipment

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes playground equipment as follows:
 - 1. Freestanding playground equipment.
 - 2. Composite playground equipment.
- B. Related Requirements:
 - 1. Section 321816.13 Playground Protective Surfacing

1.2 REFERENCE STANDARDS

- A. ASTM F 1487 - Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.
- B. ASTM F 1292 – Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
- C. U.S. Consumer Products Safety Commission (CPSC) Handbook for Public Playground Safety.
- D. Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Play Areas, amended November 20, 2000.
- E. IPEMA: International Play Equipment Manufacturers Association.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including physical characteristics, such as materials, dimensions, finish, and color.
- B. Shop Drawings: For each type of playground equipment.
 - 1. Include plans, elevations, sections, and attachment details, fastening or attachment to adjacent work, fastening and anchoring methods of all systems components, detail and location of joints, and notation or identification of finishes.

2. Include fall heights and use zones for playground equipment, coordinated with the critical-height values of protective surfacing specified in Section 321816.13 "Playground Protective Surfacing."

- C. Project Schedule: For playground equipment, including third-party certification.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installer and manufacturer.
- B. Product Certificates: For each type of playground equipment, including third-party safety certification.
- C. Material Certificates: For the following items:
 1. Shop finishes.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm with not less than ten (10) years' experience in the manufacture of playground equipment for use in public playgrounds of the type proposed for the work. Minimum 5 references.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved (or certified) by manufacturer to install manufacturer's product(s).
- C. Playground Equipment Requirements: Certified by IPEMA's third-party product certification service.
- D. Notify Owner's Representative of any discrepancies of site dimensions, obstructions, etc. that are not shown on the drawing and that might not have been known during preparation of the drawings. If such notification is not made, Contractor assumes all expenses and responsibility for any revisions necessary. Provide work called on the drawings or notes on details whether specially mentioned in the specification.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Five (5) years from date of Substantial Completion.

1.9 DELIVERY, STORAGE & HANDLING

- A. Inspect all components on delivery to ensure that no damage occurred during shipping or handling. Store materials in manufacturer's original, unopened and undamaged packaging in a manner to ensure proper ventilation and drainage to protect against damage, weather, vandalism, and theft until ready for installation. Inspect components prior to installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Safety Standard: Provide playground equipment according to ASTM F 1487.
- B. Playground equipment and components shall have the IPEMA Certification Seal.

2.2 FREESTANDING PLAYGROUND EQUIPMENT

- A. Swing Set: Contemporary style with vertical bipod arches providing upright support.
 1. Provide Swing Set Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 2. Metal Frame: Galvanized-steel pipe or tubing.
 - a. Leg Upright(s): Not less than 5-inch OD.
 - b. Overhead Beam: Match leg upright.
 - c. Color: As selected by Owner from manufacturer's full color range.
 3. Suspension Members: Manufacturer's standard.
 - a. Color: As selected by Owner from manufacturer's full color range.
 4. Swing Connector: Manufacturer's standard.
 5. Swing Hanger: Galvanized manufacturer's standard.
 6. Swing Seats:
 - a. Three (3) u-shaped flexible belt seat made from rubber.
 - b. One (1) inclusive high-back swing seat with safety harness.
 - c. Color: As selected by Owner from manufacturer's full color range.
 7. Capacity: 4 swing(s)
 8. Age Appropriateness: 2-12 years.
- B. Merry-Go-Round or rotating platform around a vertical axis.

1. Provide Merry-Go-Round Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 - a. Model: 8' Carousel
 - b. Age Appropriateness: 2-12 years.
 - c. Color: As selected by Owner from manufacturer's full color range.
- C. Rocking/Springing Equipment: Rocking rider
1. Provide Rocking Rider Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 - a. Model: Bison Rider
 - b. Age Appropriateness: 2-12 years.
- D. Rocking/Springing Equipment: Rocking rider
1. Provide Rocking Rider Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 - a. Model: Police Car Rider
 - b. Age Appropriateness: 2-12 years.
- E. Rocking/Springing Equipment: Rocking rider
1. Provide Rocking Rider Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
 - a. Model: 4 seat see-saw
 - b. Capacity: 4
 - c. Age Appropriateness: 2-12 years.
 - d. Color: As selected by Owner from manufacturer's full color range.

2.3 COMPOSITE PLAYGROUND EQUIPMENT

- A. Composite Play Structure: Integral play assembly that provides more than one play activity; manufactured as a system or assembled from manufacturer's standard modular-sized units.
- B. Provide Playground Structure by BCI Burke Company, LLC, P.O. Box 549, 600 Van Dyne Road, Fond du Lac, Wisconsin 54936-0549; Local Representative: Contact Grondahl Recreation for more information at Tel: (701) 572-7897, Email: grondahl@dia.net, or an approved equivalent.
1. Model: Nucleus NU-3092
 2. Age Appropriateness: 5-12 years.
 3. Color: As selected by Owner from manufacturer's full color range.

4. Metal Frame: Galvanized steel and aluminum pipe or tubing connected with direct-bolt clamps.
 - a. Main Frame Posts: Not less than 5-inch OD.
 - b. Color: As selected by Owner from Manufacturer's full color range.
5. Platforms: Manufacturer's standard.
 - a. Color: As selected by Owner from Manufacturer's full color range.
6. Roofs: Manufacturer's standard
 - a. Color: As selected by Owner from Manufacturer's full color range.
7. Arrangement: Manufacturer's standard.
8. Capacity: 68 users.
9. Age Appropriateness: 5-12 years.
10. Play Events: 24

2.4 FABRICATION

- A. Provide sizes, strengths, thicknesses, wall thickness, and weights of components as required to comply with requirements in ASTM F 1487. Factory drill components for field assembly. Unnecessary holes in components, not required for field assembly, are not permitted. Provide complete play structures, including supporting members and connections, means of access and egress, designated play surfaces, barriers, guardrails, handrails, handholds, and other components indicated or required for equipment indicated.
- B. Metal Frame: Fabricate main-frame upright support posts from metal pipe or tubing with cross-section profile and dimensions as required. Unless otherwise indicated, provide each pipe or tubing main-frame member with manufacturer's standard drainable bottom plate or support flange. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
- C. Composite Frame: Fabricate main-frame upright support posts from metal and plastic. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
- D. Play Surfaces: Manufacturer's standard elevated drainable decks, platforms, landings, walkways, ramps, and similar transitional play surfaces, designed to withstand loads; fabricated from perforated or expanded metal, molded plastic, plastic panel or plank, polyethylene panel or plank made into floor units with slip-resistant finish. Fabricate units in modular sizes and shapes to form assembled play surfaces indicated.
- E. Protective Barriers: Fabricate according to ASTM F 1487. Extend barriers to height above the protected elevated surface according to requirements for use by age group indicated. Fabricate from one or more of the following:
 1. Welded-metal pipe or tubing with vertical bars.
 2. Steel sheet with openings for vision and ventilation.
 3. Metal pipe or tubing frame with wire mesh infill panels.

- F. Guardrails: Provide guardrails configured to completely surround the protected area, except for access openings. Fabricate from welded metal pipe or tubing or metal pipe or tubing. Extend guardrails according to requirements for use by age group indicated.
- G. Handrails: Welded metal pipe or tubing, maximum OD between 0.95 and 1.55 inches
 - 1. Provide handrails at heights to comply with requirements for use by age group indicated according to ASTM F 1487.
- H. Roofs and Canopies: Designed to discourage and minimize climbing by users.
 - 1. Fabricated from metal, metal pipe or tubing framed welded wire, opaque plastic, clear polycarbonate plastic, or polyethylene.
- I. Signs: Manufacturer's standard sign panels, fabricated from plastic with graphics molded in.
 - 1. Text: Minimum informational content according to ASTM F 1487.
 - 2. Colors: Standard as part of Manufacturer's color theme.

2.5 MATERIALS

- A. Aluminum: Material, alloy, and temper recommended by manufacturer for type of use and finish indicated.
- B. Steel: Material types, alloys, and forms recommended by manufacturer for type of use and finish indicated.
- C. Stainless-Steel Sheet: Type 304; finished on exposed faces with No. 2B finish.
- D. Opaque Plastics: Color impregnated, UV stabilized, and mold resistant.
- E. Transparent Plastic: Abrasion-resistant, UV-stabilized polycarbonate sheet; not less than 3/16 inch thick.
- F. Suspension Chain and Fittings: ASTM A 467/A 467M, Class CS, 4/0 or 5/0, welded-straight-link coil chain; hot-dip galvanized, zinc plated, or PVC coated; with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and swing or ring hangers.
- G. Suspension Cable: Manufacturer's standard hot-dip galvanized, zinc-plated, or PVC-coated cable; with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and swing or ring hangers.
- H. Iron Castings and Hangers: Malleable iron, ASTM A 47/A 47M, Grade 32510, hot-dip galvanized.
- I. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene color to match posts.
- J. Platform Clamps and Hangers: Cast aluminum or zinc-plated steel, not less than 0.105-inch nominal thickness.

- K. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a vandal-resistant design.
- L. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or zinc-plated steel and iron, or stainless steel; permanently capped; and theft resistant.
- M. Rotationally Molded Plastic Parts: Manufactured from color compounded, linear, low-density polyethylene with an average of .250" wall thickness and texture non-sliding surfaces. UV stabilized to UV-20 and density of 0.935 per ASTM D-1505.
 - 1. Tensile strength at yield no less than 2500 psi with flexural modulus of 87,200 psi.
- N. HDPE Plastic Panel Parts: Precision cut from a single solid sheet of either .50" or .75" thick UV-stabilized extruded high-density polyethylene with color molded in, with a durable matte finish.
 - 1. Density of 59.6 lbs/cu. Ft. and a tensile strength of 4000 psi.
 - 2. All edges shall be rounded or chamfered for safe play.

2.6 COATINGS

- A. PVC Coating (Poly-Vinyl Chloride): Complying with California Assembly Bill #1108 by having a concentration that does not exceed 0.1% of the following phthalates; DINP, DIDP, DnOP, DEHP, or BBP. This formulation is also free of heavy metals such as Lead and Cadmium.
 - 1. Coating thickness: 0.085 to 0.150 inches.
 - 2. Tensile Strength: No less than 1830 psi, per ASTM 412.
 - 3. Elongation: No less than 350% per ASTM 412.
 - 4. Tear Strength: No less than 250 lb./in. per ASTM 624.
 - 5. Hardness: 75 +/- 3 (Durometer, Shore A) per ASTM 2240.
 - 6. PVC to withstand one year in a QUV panel tester without any significant color drift.
 - 7. Burn Rate: Meet or exceed Federal Safety Standard MVSS 302 (UL 94 HB rating).
- B. Powder Coating: Polyester/TGIC powder coating with superior color, gloss, and UV stabilizers. Two part powder coat system consisting of a primer and a topcoat.
 - 1. Thickness: 3 to 6 mils (.003 - .006).
 - 2. Finish Quality: Adhering to ASTM Specifications and will have the following properties:
 - a. Adhesion: No less than 5B.
 - b. Hardness: No less than 2H (pencil hardness test per ASTM B3363).
 - c. Resistance to Impact: Cracking at the perimeter of the concave area, but no cracking pick off from 80 in/lb direct or reverse impact (ASTM D2794).
 - d. Resistance to Bending: No visible cracking (1/8" bending test per ASTM 522).
 - e. Degree of Gloss: No less than 80% reflected (specular gloss test at 60 degrees per ASTM D523).
 - f. Resistance to Salt Spray (standard colors): No more than 1/8" undercutting and no blistering in 1000 hours (salt spray test per ASTM B117).
 - g. Resistance to Humidity (standard colors): No more than 1/8" undercutting and no blistering in 1000 hours (humidity test per ASTM D2247).
 - h. Weathering (super durable colors): No less than 4 (tested per EN 20105-A02).
 - i. Light Fastness (super durable colors): No less than Grade 7 (tested per EC ISO 105-B02)

- C. Corrosion Protection: All metal parts will either have inherent corrosion protection such as stainless steel, aluminum or galvanized steel, or they will be pre-treated prior to powder coating with either an e-coat or zinc clear chromate coating for superior corrosion protection.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written and provided installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.
 - 1. Maximum Equipment Height: Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Post Set with Concrete Footing: Comply with Section 033000 "Cast-in-Place Concrete" for measuring, batching, mixing, transporting, forming, and placing concrete.
 - 1. Set equipment posts in or on concrete footing, according to manufacturer's written instructions. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - a. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
 - 2. Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.
 - 3. Finishing Footings: Smooth top, and shape to shed water.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a Certified Playground Safety Inspector (CPSI) to perform inspections. Engage a qualified testing agency to perform tests and inspections.
- B. Perform inspection for each type of installed playground equipment according to ASTM F 1487 with the assistance of a factory-authorized service representative.
- C. Playground equipment items will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Notify Owner 48 hours in advance of date(s) and time(s) of testing and inspection.

3.4 CLEANING

- A. Clean jobsite of excess materials, including post hole excavations.

3.5 DEMONSTRATION

- A. Instruct Owner's personnel on proper operation and maintenance of playground components

END OF SECTION 116813

SECTION 116823 – Exterior Court Athletic Equipment

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes athletic equipment as follows:

1. Basketball Hoop.
2. Gaga Pit.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Specification Drawing: Detail drawing of product including overall dimensions and selected options.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Installer must submit evidence of a successful installation history with comparable materials and specified designs.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inspect all components on delivery to ensure that no damage occurred during shipping or handling. Store materials in manufacturer's original, unopened and undamaged packaging in a manner to ensure proper ventilation and drainage to protect against damage, weather, vandalism, and theft until ready for installation. Protect product's finish from damage during handling and installation. Inspect components prior to installation.

1.5 COORDINATION

- A. Coordinate with site work and other appropriate sections of the specifications to maintain proper provisions of the work specified.
- B. All athletic equipment shall be laid out in the field and approved by the Owner's Representative prior to installation.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For maintenance of athletic equipment, include in maintenance manuals

- B. Product Warranty: For each type of athletic equipment, provide the manufacturer's written warranty.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm with not less than five (5) years' documented experience in the manufacture of athletic equipment for use in public playgrounds of the type proposed for the work.
- B. Installer Qualifications: An entity that employs installers and supervisors who have experience installing exterior athletic equipment of similar type and scale.
- C. Notify Owner's Representative of any discrepancies of site dimensions, obstructions, etc. that are not shown on the drawing and that might not have been known during preparation of the drawings. If such notification is not made, Contractor assumes all expenses and responsibility for any revisions necessary. Provide work called on the drawings or notes on details whether specially mentioned in the specification.

PART 2 - PRODUCTS

2.1 BASKETBALL HOOP

- A. Manufacturer: Provide the products from Bison, Inc or approved equivalent.
- B. Model: PR29 Tough-Duty Finished Aluminum Fan Gooseneck Playground System
- C. Materials:
 - 1. Pole
 - a. 3 1/2" outside diameter RS40 flow coated galvanized steel tubing with a 8 ga. wall thickness.
 - b. Bent gooseneck style and allow for 36" bury into 48" deep concrete footing and 36" extension from the front of the pole to the face of the backboard.
 - c. Two 1 5/8" diameter 13 ga. flow coated galvanized tubular braces shall support the top of the backboard and connect directly to the pole.
 - d. Shall be designed so that the rim mounts directly to the horizontal pole section through the backboard to eliminate stress on the backboard during play.
 - e. Pole system without backboard support braces shall not be considered equal.
 - f. Pole shall carry a minimum 10-year warranty.
 - 2. Backboard
 - a. Cast aluminum with a 35 1/2" x 54" fan-shaped playing surface.
 - b. Minimum playing surface thickness shall be 3/16".
 - c. Minimum of 35" support ribs shall be cast in to the rear of the backboard
 - d. Total thickness of the backboard shall be 1 1/2".
 - e. Backboard shall be coated with a white textured polyester powder coated finish and have an official-sized orange shooter's square and border.
 - f. Backboard shall carry a lifetime warranty.
 - 3. Rim

- a. 5/8" diameter AISI 1018 cold drawn carbon steel ring with continuous wire formed netlocks to accept nylon net.
- b. Backplate shall be a minimum 3/16" thick.
- c. Rim shall be supported by a 1/2" diameter steel brace.
- d. Mounting hardware shall be included.
- e. Rim shall carry a 1-year warranty and have an orange powder coat finish.
- f. Entire system shall weigh approximately 175#.

2.2 GAGA PIT

- A. Manufacturer: Provide the products from Action Play Systems, LLC or approved equivalent.
- B. Model: Gaga Pit 20
- C. Materials:
 1. Wall Panels: UV-stabilized HDPE or recycled plastic boards with smooth edges and no exposed sharp corners.
 2. Posts: Powder-coated or galvanized steel structural posts.
 3. Hardware: Stainless steel tamper resistant fasteners
- D. Dimensions:
 1. Diameter: 20'
 2. Wall Height: 24"-30"
 3. Provide one entry opening or gate as standard with manufacturer's system.
- E. Installation:
 1. Install gaga ball pit in accordance with manufacturers instructions.
 2. Coordinate installation with artificial turf surfacing contractor.
 3. Provide anchorage compatible with turf base and subbase conditions.
 4. Verify layout and clearances prior to installation.
 5. Gaga Pit to be installed after artificial turf installation.

2.3 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

- E. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated.
- B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Install athletic equipment level, plumb, true, and positioned at locations indicated on Drawings.

3.3 CLEANING

- A. Clean jobsite of excess materials, including post hole excavations.

3.4 DEMONSTRATION

- A. Instruct Owner's personnel on proper operation and maintenance of playground components

END OF SECTION 116823

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single or double rollers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLER - SHD1

- A. Basis-of-Design product Mecho Commercial Window Shades, Mecho 7 Manual Single Shade or comparable product by one of the following:
 - 1. Draper, Inc.
 - 2. Hunter Douglas Architectural
 - 3. Insolroll
 - 4. Lutron Electronics Co., Inc.
- B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
 - 1. Chain-Retainer Type: Chain tensioner, jamb mounted.
 - 2. Spring Lift-Assist Mechanisms: Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criterion is more stringent.
- C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
 - 1. Roller Drive-End Location: Right side of interior face of shade.
 - 2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
- D. Mounting Hardware: Top or wall mount brackets for use inside the ceiling plenum. Material to be corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- E. Shadebands:
 - 1. Shadeband Material: Type 1 Blackout material
 - 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.
- F. Installation Accessories:
 - 1. Trim: manufacturer's acoustic ceiling trim for in-ceiling pocket for roller and shade

2.3 MANUALLY OPERATED SHADES WITH DOUBLE ROLLERS - SHD2

- A. Basis of Design product: Mecho Commercial Window Shade, Mecho 7 Manual Double Shade or comparable product by one of the following:
 - 1. Draper, Inc.
 - 2. Hunter Douglas Architectural
 - 3. Insolroll
 - 4. Lutron Electronics, Co, Inc.
- B. Dual chain-and-Clutch Operating Mechanisms: With individual continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Manufacturer's standard mounting bracket for two manual shades with independent operation.
 2. Chain-Retainer Type: Chain tensioner, jamb mounted.
 3. Spring Lift-Assist Mechanisms: Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criterion is more stringent.
- C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
- D. Mounting Hardware: Top or wall mount brackets for use with two rollers for installation inside the ceiling plenum. Material to be corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- E. Shadebands:
1. Roller 1 Shadeband Material: Type 1 Blackout
 2. Roller 2 Shadeband Material: Type 2 Light Filtering
 3. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.
- F. Trim: manufacturer's acoustic ceiling trim for in-ceiling pocket for roller and shade

2.4 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Type: Fiberglass/Vinyl blend
 2. Weave: Lineally Woven.
 3. Roll Width: 98" inches.
 4. Orientation on Shadeband: Up the bolt.
 5. Type 1 Openness Factor: 0%, Blackout
 - a. Material: 0250 Series Chelsea, Color: TBD
 6. Type 2 Openness Factor: 3%
 - a. Material: ThermoVeil 1000 Series, Color: TBD

2.5 ROLLER SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
1. In-ceiling pocket mount: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).
 - a. Location: At all roller shade applications.

- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible.

PART 3 - EXECUTION

3.1 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Opaque Shadebands: Located so shadeband is not closer than 2 inches (51 mm) to interior face of glass. Allow clearances for window operation hardware.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- D. Replace damaged roller shades that cannot be repaired, in a manner approved by Contracting Officer, before time of Substantial Completion.

PART 4 – SCHEDULE

ROOM	PLAN LOCATION	SHADE TYPE	MOUNTING TYPE	QTY	NOTES
100 – Small Meeting, East wall	EAST	SHD2	Ceiling	2	NEW OPENING
100 – Small Meeting, West wall	EAST	SHD1	Wall	2	-
101 – Art	EAST	SHD1	Ceiling	1	EXG OPENING
102 – Music	EAST	SHD1	Ceiling	1	EXG OPENING
103C – Office	EAST	SHD2	Ceiling	1	EXG OPENING
108 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
111 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
133 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
134 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
135 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
137 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
140 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
142 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
145 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
146 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
147B – STEAM Lab	WEST	SHD2	Ceiling	1	EXG OPENING
148 – Office	WEST	SHD2	Ceiling	1	EXG OPENING
151 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
152 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
154 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
155 - Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
157B – Office	WEST	SHD2	Ceiling	1	NEW OPENING
158 - Admin	WEST	SHD2	Ceiling	2	EXG OPENINGS
158C – Office	WEST	SHD1	Wall	2	-
159B – Waiting	WEST	SHD2	Ceiling	1	EXG OPENING
160 – Large Mtg	WEST	SHD2	Ceiling	1	EXG OPENING
169 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
170 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
171 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
172 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
174 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
175 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
177 – Classroom	EAST	SHD1	Ceiling	1	EXG OPENING
178 – Classroom	WEST	SHD1	Ceiling	1	EXG OPENING
216 - Classroom	SOUTH	SHD1	Ceiling	1	NEW OPENING
217 - Classroom	SOUTH	SHD1	Ceiling	1	NEW OPENING
218 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
219 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
220 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
221 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
222 - Classroom	SOUTH	SHD1	Ceiling	1	NEW OPENING
223 - Classroom	SOUTH	SHD1	Ceiling	1	NEW OPENING

226 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
227 – Learning Center	SOUTH	SHD1	Ceiling	2	NEW OPENING
228 – Classroom	SOUTH	SHD1	Ceiling	2	NEW OPENING
231 - Classroom	NORTHWEST	SHD1	Ceiling	2	NEW OPENING
232 - Classroom	NORTHWEST	SHD1	Ceiling	2	NEW OPENING
237 - Classroom	NORTHWEST	SHD1	Ceiling	2	NEW OPENING
238 – Classroom	NORTHWEST	SHD1	Ceiling	2	NEW OPENING

END OF SECTION 122413

SECTION 12 3623.13 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-clad countertops.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plastic-laminate-clad countertops.

1. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: Plastic laminates in each type, color, pattern, and surface finish required.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For the following:

1. Composite wood products.
2. High-pressure decorative laminate.
3. Adhesives.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant

B. Installer Qualifications: AWI's Quality Certification Program accredited participant

1.5 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install wood countertops until building is enclosed, wet-work is complete, and HVAC system is operating

and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

- B. Environmental Limitations with Humidity Control: Do not deliver or install wood countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD COUNTERTOPS, PLAM2

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.
 - 1. Provide inspections of fabrication and installation together with labels and certificates from AWI certification program indicating that countertops comply with requirements of grades specified.
- B. Grade: Premium
- C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS
- D. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product as approved by the Architect.
 - 1. PLAM2 Colors, Patterns, and Finishes: Formica High Pressure Laminate, Color: 9037 Flint Sandstone, Texture: 58 Matte
- E. Edge Treatment: Flat Edge
- F. Core Material: Particleboard or MDF
- G. Core Thickness: 3/4 inch (19 mm)
 - 1. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.
- H. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.
- I. Paper Backing: Provide paper backing on underside of countertop substrate.

2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of countertop and quality grade specified unless otherwise indicated.
 1. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130
 2. Particleboard: ANSI A208.1, Grade M-2
 3. Softwood Plywood: DOC PS 1.

2.3 ACCESSORIES

- A. Wire-Management Grommets: Circular, molded-plastic grommets and matching plastic caps with slot for wire passage.
 1. Outside Diameter: 1-1/4 inch (32 mm)
 2. Color: Black
- B. Standard Countertop Support Bracket:
 1. Basis-of-Design Product: Hafele, Hebgo #287.45.468.
 2. Description: 18.9 inches long by 7 inches high welded bracket.
 3. Material and Finish: Steel with grey primer. Paint to match adjacent wall surfaces
- C. Low Profile Support Brackets, Original Granite Knee Wall Concealed Bracket
 1. Model: KW-08
 2. Length: 8 inches
 3. Material: Steel
 4. Color: Black
 5. Location: 159B Waiting / 158 Admin Service counters

2.4 MISCELLANEOUS MATERIALS

- A. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement
 1. Adhesive for Bonding Edges: Hot-melt adhesive

2.5 FABRICATION

- A. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets.
- B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Grade: Install countertops to comply with same grade as item to be installed.
- B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.
 - 1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 2. Seal edges of cutouts by saturating with varnish.
- C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
 - 1. Secure field joints in countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten in accordance with manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- D. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a 1/8-inch-in-96-inches (3-mm-in-2400-mm) variation from a straight, level plane.
 - 2. Secure backsplashes to walls with adhesive
 - 3. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.
- F. Protection: Provide Kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches (1220 mm) o.c. Remove protection at Substantial Completion.

END OF SECTION 12 3623.13

SECTION 123661.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid surface material countertops.
2. Solid surface material backsplashes.
3. Solid surface material end splashes.
4. Solid surface material apron fronts.
5. Solid surface window sills.

1.2 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Sustainable Design Submittals:
- C. Shop Drawings: For countertops. Show materials, finishes, edge, backsplash and sink profiles, methods of joining, and cutouts for plumbing fixtures.
- D. Samples: For each type of material exposed to view.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS, SS1

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated or comparable product as approved by the Designer five (5) days prior to the bid date
 - a. SS1: Wilsonart Solid Surface, Color: As indicated on the Finish Schedule.
- B. Particleboard: ANSI A208.1, Grade M-2
- C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.2 SOLID SURFACE WINDOW SILL MATERIALS, SS2

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated or comparable product as approved by the Designer five (5) days prior to the bid date
 - a. SS2: Formica Everform Solid Surface, Color: As indicated on the Finish Schedule.

2.3 FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Premium
- B. Configuration:
 - 1. Front: Radius edge with apron at height indicated on drawings.
 - 2. Backsplash: Straight, slightly eased at corner
 - 3. End Splash: Matching backsplash
- C. Countertops:
 - 1. 3/4-inch- (19-mm-) thick, solid surface material with front edge built up with same material as indicated on drawings.
- D. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material to height indicated on drawings.
- E. Joints:
 - 1. Fabricate countertops without joints, where feasible.
- F. Cutouts and Holes:
 - 1. Drop in Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
- G. Window Sills: 1/2-inch- (12.7-mm-) thick, eased edge with 1/2-inch overhang and side returns as indicated on drawings

2.4 ACCESSORIES

- A. Standard Countertop Support Bracket:
 - 1. Basis-of-Design Product: Hafele, Hebgo #287.45.468.
 - 2. Description: 18.9 inches long by 7 inches high welded bracket.
 - 3. Material and Finish: Steel with grey primer. Paint to match adjacent wall surfaces

- B. Low Profile Support Brackets, Original Granite Knee Wall Concealed Bracket
 - 1. Model: KW-08
 - 2. Length: 8 inches
 - 3. Material: Steel
 - 4. Color: Black
 - 5. Location: 159B Waiting / 158 Admin Service counters

2.5 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer.
- B. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Provide blocking or support to integral aprons.
- D. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- E. Install backsplashes and end splashes by adhering to wall and countertops with adhesive.
- F. Secure window sills to framed substrate with adhesive according to solid surface material manufacturer's written instructions.
- G. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- H. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16

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SECTION 12 4813 - ENTRANCE FLOOR MATS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roll-up rail mats and recessed frames.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Items penetrating floor mats and frames, including door control devices.
2. Divisions between mat sections.
3. Perimeter floor moldings and frames.

C. Samples: For each exposed product and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 ENTRANCE FLOOR MATS AND FRAMES, GENERAL

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

2.2 ROLL-UP RAIL MATS, WM1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - 1. Construction Specialties, Pedimat G3
- B. Roll-up, Vinyl-Rail Hinged Mats: Rubber tread rails 1-1/2 inches (38 mm) wide by 1/2 inch (9.5 mm) thick, with slotted or perforated hinges.
 - 1. Tread Inserts: 1/4-inch-high rubber
 - 2. Insert Colors: Black
 - 3. Rail Color: Milled Aluminum
 - 4. Hinges: PET-G
 - 5. Mat Size: As indicated on the plans
- C. Recessed Frames: Manufacturer's standard level base (LB) extrusion.
 - 1. Extruded Aluminum: ASTM B221 (ASTM B221M).
 - a. Color: Mill finish

2.3 FABRICATION

- A. Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated. Unless otherwise indicated, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.
- B. Coat concealed surfaces of aluminum frames that contact cementitious material with manufacturer's standard protective coating.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install recessed mat frames and mats to comply with manufacturer's written instructions so that tops of mats will be flush with adjoining finished flooring. Set mats with tops at height recommended by manufacturer for most effective cleaning action; coordinate tops of mat surfaces with bottoms of doors that swing across mats to provide clearance between door and mat.
- B. Install surface-type units to comply with manufacturer's written instructions; coordinate with entrance locations and traffic patterns.

3.2 PROTECTION

- A. After completing frame installation and concrete work, provide temporary filler of plywood or fiberboard in recesses and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

END OF SECTION 12 4813

SECTION 126600 - TELESCOPING STANDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated telescoping stands.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

- 1.

B. Shop Drawings: For telescoping stands in both stacked and extended positions.

1. Include plans, elevations, sections, and attachment details.
2. Include diagrams for power, signal, and control wiring.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product certificates.

C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Telescoping stands to withstand the effects of gravity loads, operational loads, and other loads and stresses according to ICC 300.
- B. Accessibility Standard: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1.

2.2 TELESCOPING STANDS

- A. System Description: Operable system of multiple-tiered seating on interconnected folding platforms that close for storage, without being dismantled, into a nested stack. Telescoping-stand units permit opening and closing of adjacent, individual and multiple rows, and close with vertical faces of platforms in the same vertical plane.
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Telescoping-Stands Standard: ICC 300.
- B. Wall-Attached Telescoping Stands: Forward-folding system, in which the bleachers open in the forward direction by moving the front row away from the stack to the fully extended position and the rear of bleacher understructure permanently attaches to wall construction.
 - 1. Hussey Maxam, 3-tier, telescoping bleacher, or equal.
 - 2. Operation: Manually operated.

2.3 COMPONENTS

- A. Benches: Seats and skirts.
 - 1. Material: Molded plastic with contour surfaces.
 - a. Color: As selected by Architect from manufacturer's standard.
 - 2. Bench Height: Not less than 16 inches (406 mm) or more than 18 inches (457 mm).
 - 3. Bench Depth: 10 inches (254 mm).
- B. Risers: Steel sheet with manufacturer's standard, rust-inhibiting coating or hot-dip galvanized finish.
- C. Understructure: Structural steel.
 - 1. Finish: Manufacturer's standard rust-inhibiting finish.
 - 2. Color: Manufacturer's standard.

- D. Support Column Wheels: Nonmarring, soft, rubber-face wheel assembly under each support column.

1. Include wheels of size, number, and design required to support stands and operate smoothly without damaging the flooring surface, but no fewer than four per column or less than 4 inches (100 mm) in diameter and 1-1/2 inches (38 mm) wide.

2.4 ACCESSORIES

- A. Steps:

1. Slip-resistant, abrasive tread surfaces at aisles.
2. Intermediate aisle steps, fully enclosed, at each aisle.
3. Transitional top step, fully enclosed, at each aisle where last row of telescoping stands is adjacent to a cross aisle.
4. Removable front steps, fully enclosed, at each aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.

- B. Closure Panels and Void Fillers:

1. Aisle closures at foot level that produce flush vertical face at aisles when system is stored.

2.5 FABRICATION

- A. Fabricate telescoping stands to operate easily without special tools or separate fasteners unless otherwise indicated.
- B. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.
- C. Form exposed work with flat, flush surfaces, level and true in line.
- D. Supports: Fabricate supports to withstand, without damage to components, the forces imposed by use of stands without failure or other conditions that might impair their usefulness.
1. Cantilever bench seat supports to produce toe space uninterrupted by vertical bracing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install telescoping stands according to ICC 300 and manufacturer's written instructions.

3.2 ADJUSTING

- A. Adjust backrests so that they are at proper angles and aligned with each other in uniform rows.

3.3 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to inspect, adjust, operate, and maintain telescoping stands.

END OF SECTION 126600

SECTION 129300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Seating.
- 2. Tables.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Specification Drawing: Detail drawing of product including overall dimensions and selected options
- C. Qualifications: Installer must submit evidence of a successful installation history with comparable materials and designs specified.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver products to site in manufacturer's original. Unopened containers and packaging. Upon delivery, examine packages immediately to ensure all products are complete and undamaged.
- B. Storage: Store products in a protected, dry area in manufacturer's unopened containers and packages.
- C. Handling: Protect product's finish from damage during handling and installation.

1.5 COORDINATION

- A. Coordinate with site work and other appropriate sections of the specification to maintain proper provisions of the work specified.
- B. All site furnishings shall be laid out in the field and approved by the Owner's Representative prior to installation.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.
- B. Product Warranty: For each type of site furnishing, provide the manufacturer's written warranty.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Bench, Table, and/or Waste Receptacle Replacement Slats/Planks: No fewer than two full-size units for each size indicated.
 - 2. Trash Receptacle Inner Containers: 2 full-size units for each size indicated.
 - 3. Anchors: Two units for each product type listed.

PART 2 - PRODUCTS

2.1 BENCH

- A. Manufacturer: Provide the products from the following manufacturer, or approved equivalent.
 - 1. Victor Stanley, P. O. Drawer 330, Dunkirk, Maryland 20754. P: 301-855-8300. E: sales@victorstanley.com
- B. Model: FBF-50
 - 1. Material:
 - a. 2" square tubular steel posts, 5/8" solid steel rods, 1-7/8" tubular steel welded cross-members, and 3/8" x 1" solid steel bracing.
- C. Options:
 - 1. Seat Height: 17-3/8"
 - 2. Overall Height: 32-3/8"
 - 3. Overall Width: 6'
 - 4. Overall Depth: 23-3/4"
 - 5. Arms: None.
 - 6. Color: As selected by Owner's representative from manufacturer's full range of colors.
 - 7. Mounting: Surface Mounted.

2.2 TABLE

- A. Manufacturer: Provide the products from the following manufacturer, or approved equivalent.
 - 1. Victor Stanley, P. O. Drawer 330, Dunkirk, Maryland 20754. P: 301-855-8300. E: sales@victorstanley.com
- B. Model:

1. FWF-565

C. Materials:

1. 4" square tubular steel post, 16" square solid steel mounting plate, 1/4" x 1-1/2" scrolled steel slats, 3/8" x 1" solid steel bars, integral welded cross-members 1-5/16" tubular steel.

D. Options:

1. Table Length:
 - a. Standard: 6'
 - b. ADA: 8'
2. Seat Height: 17-7/8"
3. Overall Height: 30-1/8"
4. Overall Depth: 62-1/4"
5. Color: As selected by Owner's representative from manufacturer's full range of colors.
6. Mounting: Freestanding

2.3 TABLE

A. Manufacturer: Provide the products from the following manufacturer, or approved equivalent.

1. Victor Stanley, P. O. Drawer 330, Dunkirk, Maryland 20754. P: 301-855-8300. E: sales@victorstanley.com

B. Model:

1. CRPR-4

C. Materials:

1. 4" square tubular steel post, 16" square solid steel mounting plate, 1/4" x 1-1/2" scrolled steel slats, 3/8" x 1" solid steel bars, integral welded cross-members 1-5/16" tubular steel.

D. Options:

1. Size: 4'
2. Seat Height: 18"
3. Color: As selected by Owner's representative from manufacturer's full range of colors.
4. Mounting: Surface Mount

2.4 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.

C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

- D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- E. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.5 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

- A. Powder-Coat Finish: Manufacturer's standard polyester powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

2.7 STEEL AND GALVANIZED-STEEL FINISHES

- A. Powder-Coat Finish: All fabricated metal components are to be steel shotblasted, etched, phosphatized, preheated, and electrostatically powder-coated with T.G.I.C. polyester powder coatings. Products must be fully cleaned and pretreated, preheated and coated while hot to fill crevices and build coating film. Coated parts are to be fully cured to coating manufacturer's specifications. Powder coat thickness to be 8-10 mils.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored or positioned at locations indicated on drawings.

- D. Done not locate anchors until site furnishing is in place.

3.3 PROTECTION

- A. Protect products prior to installation by having them remain in the manufacturer's packaging and container.

END OF SECTION 129300

