ARRC 1400 WASILLA SHOPS CIRCLE, ELEVATOR CONSTRUCTION & INSTALL

INVITATION TO BID
25-24-213167

MARCH 28, 2025

ALASKA RAILROAD CORPORATION
327 WEST SHIP CREEK AVENUE
ANCHORAGE, ALASKA 99501

ALASKA RAILROAD CORPORATION
327 W. Ship Creek Ave.
Anchorage, AK 99501
ThompsonC@akrr.com
Phone 907.265.2068
Cell 907.854.3141

March 28, 2025

INVITATION TO BID

25-24-213167

ARRC 1400 WASILLA SHOPS CIRCLE, ELEVATOR CONSTRUCTION & INSTALL

Response Required: This page must be completed and returned to ensure receipt of future addenda or additional information. Please e-mail this form to ThompsonC@akrr.com. All addenda will be forwarded to the contact name and number listed below.

Firms that have not returned the cover sheet will not be informed of addendums and will only be alerted to addendums by checking with the ARRC procurement officer or by checking ARRC's internet site: www.alaskarailroad.com , select Procurement and then Solicitations. Bidders must acknowledge the receipt of all issued addendums in their proposal/bid submittal.

Company _____

Address _____

_____

Contact _____

Phone _____ Fax_____

Email _____

Website: www.alaskarailroad.com

ALASKA RAILROAD CORPORATION
327 W. Ship Creek Ave.
Anchorage, AK 99501
ThompsonC@akrr.com
Phone 907-265-2068
Cell 907-854-3141

THIS IS NOT AN ORDER

INVITATION NUMBER: 25-24-2131679
DATE OF INVITATION: March 28, 2025

INVITATION TO BID
ALASKA RAILROAD CORPORATION
327 W SHIP CREEK AVE
ANCHORAGE, ALASKA 99501
ATTENTION: C. LEE THOMPSON 907.854.3141

SEALED BIDS WILL BE RECEIVED AT: Alaska Railroad Corporation
Attn. C. Lee Thompson
327 W. Ship Creek Avenue
Anchorage, Alaska 99501

UNTIL 3:00 P.M. LOCAL TIME ON APRIL 23, 2025
AT WHICH TIME BIDS WILL BE PUBLICLY OPENED.

ARRC 1400 WASILLA SHOPS CIRCLE, ELEVATOR CONSTRUCTION. & INSTALL

Pre-Bid Conference and /Site Visit: A pre-bid conference and site visit will be held on **April 14, 2025 at 1:00 PM** local time. Interested bidders will meet at the 1400 Wasilla Shops Circle, Wasilla, AK 99654. Please dress appropriately for weather. PPE including safety vest; hardhats, and steel toe boots will be required.

Return your bid in a sealed envelope on which the Solicitation number appears. Bids received by email transmission will not be considered for award. Bids shall be submitted on the forms furnished herein. Hand-delivered bids, amendments, or withdrawals must be received by ARRC's Contracts Section prior to the scheduled time of bid opening.

Your bid must be complete. See instructions and conditions enclosed.

An Alaska Business license is not a prerequisite to bid. Bidders who possess an Alaska Business license and also meet the other criteria of an Alaska Bidder shall receive a preference per the "Alaska bidder preference".

ARRC shall not be held responsible for bidder's lack of understanding of what is required by this bid. Should a bidder not understand any aspect of this bid, or require further explanation, or clarification regarding the intent or requirements of this bid, it shall be the responsibility of the bidder to seek guidance from the ARRC.

ARRC reserves the right to reject any and all bids, or any part thereof, negotiate changes in bids, accept any bids or any part thereof, waive minor informalities or defects in any bids, and not to award the proposed contract if it is in the best interest of the ARRC.

ARRC may award a contract resulting from this solicitation to the responsive offeror whose offer conforming to this solicitation will be the most advantageous to the ARRC. ARRC may reject any or all offers if such action is in the best interest of ARRC, and waive informalities and minor irregularities in offers received. Any resulting contract from this solicitation shall incorporate the Standard Instructions, and General Terms and Conditions for Construction incorporated in this solicitation.

This solicitation is not to be construed as a commitment of any kind nor does it commit the ARRC to pay for any costs incurred in the submission of an offer or for any other incurred cost prior to the execution of a formal contract

BIDDER/VENDOR TERMS AND CONDITIONS: PROSPECTIVE BIDDERS ARE CAUTIONED TO PAY PARTICULAR ATTENTION TO THIS CLAUSE. Bidder/contractor imposed terms and conditions which conflict with this Invitation For Bid terms and conditions are considered counter offers and, as such, will cause the Alaska Railroad Corporation to consider the bid non-responsive.

If a bidder attaches additional terms and conditions as part of the bid, such attachments must be accompanied by a disclaimer stating that in the event of conflict between the terms and conditions of this Invitation to Bid and the terms and conditions of the bidder/contractor, the terms and conditions of the Invitation to Bid will prevail.

ALASKA BIDDER PREFERENCE: Award will be made to the lowest responsive and responsible bidder after an Alaska bidder preference of five percent (5%) has been applied. The preference will be given to a person who: (1) holds a current Alaska business license at the time designated in the invitation to bid for bid opening; (2) submits a bid for goods or services under the name on the Alaska business license; (3) has maintained a place of business within the state staffed by the bidder, or an employee of the bidder, for a period of six months immediately preceding the date of the bid; (4) is incorporated or qualified to do business under the laws of the state, is a sole proprietorship and the proprietor is a resident of the state, is a limited liability company organized under AS 10.50 and all members are residents of the state, or is a partnership under AS 32.06 or AS 32.11 and all partners are residents of the state; and, (5) if a joint venture, is composed entirely of ventures that qualify under (1) - (4) of this subsection.

ALASKA VETERAN PREFERENCE: If a bidder qualifies for the Alaska bidder preference and is a qualifying entity as defined herein, they will be awarded an Alaska 6 veteran preference of five percent (5%). The preference will be given to a (1) sole proprietorship owned by an Alaska veteran; (2) partnership under AS 32.06 or AS 32.11 if a majority of the partners are Alaska veterans; (3) limited liability company organized under AS 10.50 if a majority of the members are Alaska veterans; or (4) corporation that is wholly owned by individuals and a majority of the individuals are Alaska veterans, and may not exceed $5,000. The bidder must also add value by actually performing, controlling, managing, and supervising the services provided, or for supplies, the bidder must have sold supplies of the general nature solicited to other state agencies, other governments, or the general public. In order to receive the Alaska Bidder Preference and/or Alaskan Veteran Preference, the bid must also include a statement certifying that the bidder is eligible to receive said preferences. The application of preferences is for bid evaluation purposes only.

The Alaska Railroad is a member of Green Star www.greenstarinc.org ARRC earned an initial Green Star Award in 1994 and a Green Star Air Quality Award in 2007. The Alaska Railroad considers Green Star membership to be a positive business attribute, and regards a Green Star award as a tangible sign of an organization's commitment to environmental stewardship and continual improvement within its operations.

The envelope used in submitting your offer shall be plainly marked with the following information:

1. Offeror's Name -
2. Invitation to Bid Number 25-24-213167
3. Date and Time Scheduled for Receipt of Offers.
4. Sealed Offer: ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install

Please direct all responses and/or questions concerning this invitation to bid to C. Lee Thompson, Alaska Railroad Corporation, Supply Management, 327 W. Ship Creek Avenue, Anchorage, AK 99501, **cell 907.854.3141** or email address ThompsonC@akrr.com.

Sincerely,

C. Lee Thompson

Contract Administrator
Alaska Railroad Corporation

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APPENDIX A

REQUIRED DOCUMENTS

REQUIRED FOR BID Bids will not be considered if the following documents are not completely filled out and submitted at the time of bidding:

1. Construction Bid Form - [Form 395-0121]
2. Bid Bond - [Form 395-0120] (> $100K)
3. Cost Schedule - Appendix G
4. Contractors Responsibility Questionnaire - [Form 395-0136]

REQUIRED AFTER NOTICE OF AWARD The apparent low bidder is required to complete and submit the following documents within **Five (5) Working Days** after receipt of written notification:

1. Subcontractor List - [Form 395-0131]
2. Contractor's QA/QC Plan
3. Contractor's Site Health & Safety Plan

REQUIRED FOR AWARD In order to be awarded the contract, the successful bidder must completely fill out and submit the following documents within the time specified in the intent to award letter:

1. Certificate of Insurance - [from Insurance Carrier]
2. Payment Bond - [Form 395-0126]
3. Performance Bond - [Form 395-0127]
4. Contract - [Form 395-0122] and Notice to Proceed, ARRC Generated
5. State of Alaska Department of Labor - Notice of Work
6. Alaska Contractors License

POST AWARD DOCUMENTATION

1. Weekly Certified Payrolls, SOA & ARRC
2. State of Alaska, DOL Notice of Completion

APPENDIX B

BIDDERS INSTRUCTION & SPECIAL REQUIREMENS
(CONSTRUCTION)

To be considered for award, Bids must be made in accordance with the following requirements:

Duty to Seek Clarification: ARRC shall not be held responsible for a Bidder's lack of understanding of what is required by the Invitation to Bid. Should a Bidder not understand any aspect of the Invitation to Bid, or require further explanation or clarification regarding the intent or requirements of the same, it shall be the responsibility of the Bidder to seek clarification from ARRC prior to submitting his or her Bid.

Terms and Conditions: Any resulting contract from this Invitation to Bid shall incorporate the general terms and conditions contained in this bid package.

Contract Documents: Bidders shall familiarize themselves with the requirements of all of the Contract Documents which include, but are not limited to the "Bidders Instructions & Special Requirements", the Invitation to Bid, Bid and Contract Forms, General Conditions, Special Conditions, Specifications, Drawings, any Addenda issued prior to the receipt of Bids, and any other documents referenced or incorporated therein.

Examination of Site: Bidders should visit the Project Site(s) and take such other steps as may be reasonably necessary to ascertain the nature and location of the Work, and the general and local conditions which may affect the Work and the cost thereof.

Examination and Interpretation of Documents: Each Bidder shall examine the Contract Documents carefully and shall make written requests to ARRC prior to Bid submission for interpretation or correction of any ambiguity, inconsistency, discrepancy, omission, or error therein which the bidder may discover. Any interpretation or correction will be issued in an Addendum by ARRC. Only a written interpretation or correction shall be binding. No Bidder shall rely on any interpretation or correction given by any other method.

Addenda: ARRC may modify the Invitation to Bid prior to the date fixed for opening of Bids by issuance of an Addendum to all parties who have been furnished the Bid Package for bidding purposes. Bidders must acknowledge receipt of all Addenda on the Construction Bid Form [Form 395-0121].

Qualification of Bidders: Pursuant to ARRC Procurement Rule 1600.3, before a Bid is considered for award, ARRC may request a Bidder to submit information regarding the Bidder's capability in all respects to fully perform the contract requirements or the individual integrity and reliability which will assure good faith performance. Such information shall include the Bidder's prior experience in performing comparable Work, the availability of necessary financing, equipment, facilities, expertise and personnel to perform the Work and whether he or she has ever been terminated or defaulted on construction work.

Bid Forms: Bids must be submitted on the forms provided by ARRC, completed in all respects as required by the Bid Forms and other Contract Documents and manually signed by an authorized official of the Bidder. Bidders may make copies of the Bid Forms for submission of Bids.

Submission of Bids: Bids must be sealed, marked, and addressed as directed in the Invitation to Bid and must be delivered to the office designated in the Invitation to Bid prior to the exact time set for opening bids. Late bids will not be considered.

Modification, Correction, Withdrawal of Bids: Modification, correction or withdrawal of Bids will be allowed only as provided in ARRC Procurement Rule 1200.8.

Bid Opening: Bids will be opened in public at the time set forth in the Invitation to Bid in accordance with ARRC Procurement Rule 1200.6. The contents of the Bids will be open for public inspection after the notice of intent to award a contract is given.

Evaluation of Bids: Bids will be evaluated in accordance with the provisions of ARRC Procurement Rule 1200.7. Alternative bids, if called for, are intended to provide ARRC a range of comparative costs which will allow identification of the combinations most responsive to ARRC's need. The order in which the alternatives are listed or set out in the Invitation to Bid should not be taken as any indication as to the order in which ARRC may elect to select the alternatives, if any. Bidders shall submit bid prices for all alternatives stated in the Invitation to Bid and are advised that the order in which the alternatives, if any, are chosen by ARRC, may affect which Bidder is the lowest responsive and responsible Bidder.

Bid Security: In accordance with ARRC Procurement Rule 1200.4, all Bids shall be accompanied by bid security in the form of a cashier's check or an acceptable Bid Bond, a form of which is provided herein, in the amount of five percent (5%) of the Bid price.

Rejection of Bids: ARRC reserves the right to waive minor defects or informalities in a Bid in accordance with the provisions of ARRC Procurement Rule 1200.8, or to reject any or all Bids in accordance with the provisions of ARRC Procurement Rule 1600.2.

AGGRIEVED BIDDER/OFFEROR: An aggrieved bidder/offeror may protest an ARRC procurement action by filing a written protest with the procurement officer in accordance with the procedures and time limits specified in ARRC Procurement Rules 1800.1-1800.11.

Award of Contract: Unless the solicitation is canceled or all bids are rejected, the procurement officer shall award a contract based on the solicited bids with reasonable promptness by written notice to the lowest, responsible and responsive Bidder whose bid conforms in all material respects to the requirements and criteria set out in the Invitation to Bid.

Execution of Contract: A written contract must be signed by the Bidder to whom an award is made and returned to ARRC within ten (10) calendar days, together with all required performance and payment bonds, and certificate(s) of insurance in the amounts required by the Invitation to Bid. The Bidder to whom award is made shall not be permitted to occupy the project site until he has first obtained the required insurance and submitted to ARRC proof of such insurance together with a statement certifying that said insurance conforms to requirements set forth in the Invitation to Bid.

Failure to Execute Contract: If the Bidder to whom the Contract is awarded refuses or neglects to execute it, or fails to furnish the required bonds and insurance within the time specified, the amount of his bid security may be retained by ARRC as liquidated damages.

Government Contract Requirements: If Federal funds will be used to pay for any part of the project described in the Invitation to Bid, any contract awarded hereunder will contain provisions requiring the successful Bidder to comply with all pertinent provisions, agreements, and clauses of the subject federal grant and all pertinent laws, regulations, Presidential directives, and executive orders to the extent they apply to the subject matter of the contract.

Drug and Alcohol-Free Workplace: Safety is paramount at ARRC. For that reason, ARRC maintains an alcohol and drug-free workplace and requires that the Contractor do the same. At all times during the performance of this contract, the Contractor shall have in place a written drug and alcohol program that includes, at a minimum, the following:

a. a requirement that all applicants present a negative pre-employment drug screen prior to being hired by the Contractor;

b. a requirement that employees submit to a "reasonable suspicion" drug and/or alcohol test when showing signs and symptoms of drug and/or alcohol influence on duty;

c. a requirement that employees submit to "reasonable cause/post-accident" drug and alcohol tests following certain accidents or incidents (with the threshold level triggering testing to be determined by the Contractor);

d. a provision defining a positive alcohol test as one that reveals a breath alcohol level of .02 or greater;

e. a provision defining a positive drug test as one that reveals concentrations at the levels set forth in 49 C.F.R. § 40.87(b)(screening test) and 49 C.F.R. § 40.87(c)(confirmatory test) or greater;

f. a provision that outlines the consequences of a positive drug or alcohol test and the consequences of an employee's refusal to submit to drug/alcohol testing; and

g. a provision that establishes the conditions under which an employee may return to work following a positive drug and/or alcohol test, which at a minimum include an evaluation by a substance abuse professional and compliance with a recommended treatment program.

The Contractor agrees that at any time during the performance of this contract, if an ARRC employee reports to the Contractor that an employee of the Contractor or its subcontractor is showing signs and symptoms of drug/alcohol influence on duty, the Contractor shall remove the employee from ARRC property immediately and shall have the employee tested for drug/alcohol influence. If the employee tests positive, the Contractor shall ensure that the employee is not returned to work on the project until he/she has met the return to work requirements contained in the Contractor's written program.

Offer Acceptance Period: For the purpose of award, offers made in accordance with this ITB shall be good and firm for a period of thirty (30) days from the date of bid opening.

Site-Safety Plan Requirement: Before the contractor or any subcontractor begins any construction related work under this contract including but not limited to mobilization, equipment setup, storage, etc., taking place on sites under Alaska Railroad Corporation (ARRC) control, they will submit a site Health and Safety Plan to ARRC for compatibility acceptance.

The plan must be compatible with ARRC Safety Policies, including On-Track Safety, ARRC on-site employee safety including safety for Project Managers, Construction Managers, Flaggers, Visitors, Safety personnel, Quality Assurance staff, vendors, and the public. The plan must outlines procedures for first aid, emergency response, chemical exposures, spills, site sign-in requirements for site-safety briefings, coordination with ARRC dispatch, Section 6.16 (SAFETY AND PROTECTION), Section 6.17 (WORK SAFETY ON RAILROAD PROPERTY), and Section 6.18 (EMERGENCIES), other sections of the contract GENERAL CONDITIONS.

A complete, detailed Site-Safety Plan shall be submitted to the Project Manager at least 5 days prior to commencement of any Work on the Project

Contractor's Instructions for Submitting Certified Payroll:

This contract may include work on an Alaska Railroad Corporation (ARRC) construction project, which is subject to the wage/certified payroll requirements of the DOLWD and/or it may include work on a federally funded construction project and be subject to U. S. Department of Labor Davis-Bacon Act wage/certified payroll requirements. As part of the contract the following will be required:

1. All contractors paid under a construction contract funded in whole or in part with federal funds shall pay laborers and mechanics the higher of the two wages listed in this contract from the U. S. Department of Labor (www.access.gpo.gov/davisbacon/) or from the DOLWD (www.labor.state.ak.us/lss/home.htm). Contractors paid under ARRC only funded construction contracts shall pay laborers and mechanics the appropriate wage established by the DOLWD, which is often called Little Davis-Bacon wages.

2. All contractors employing laborers and mechanics under this contract, including the owner/operator if he or she worked on the job, must submit weekly certified payrolls that contain the information listed on the DOLWD Weekly Certified Payroll Form 07-6058, pages 1 and 2. Owner/operators working on the project as mechanics or laborers, either as prime or subcontractor, must file certified payrolls and record all information including the hourly wage, fringe benefits, hours worked, overtime, et cetera, however they can defer the weekly payment and write over the total deductions and net pay boxes "owner/operator." Page 2 is the "Statement of Compliance" and must bear an original signature. The prime contractor is responsible for gathering the certified payrolls, with original signatures, from each subcontractor and for submitting them, along with its own, to the ARRC Certified Payroll Processor.

3. **Private utility companies** exempt by the state of Alaska from filing certified payrolls because they are working on their own lines must provide a copy of the state approved sworn work affidavit indicating they are paying state DOLWD required wages. Private Utility companies shall file Notices of Work (NOW) and Notices of Completion (NOC) with DOLWD, listing subcontractors, if any. The DOLWD approved finalized affidavit, NOW, and NOC shall be sent to the ARRC. The utility company shall collect original certified payrolls from all subcontractors and submit them weekly to the ARRC as outlined in these submission instructions.

4. These weekly certified payrolls must be uploaded to ARRC's web portal within seven days after the regular "payday" for that certified payroll at the following web address: https://certpayportal.akrr.com/. A website login will be required to be set up prior to the first submission.

The contractor and its subcontractors are also responsible for filing certified payrolls with the DOLWD as required.

1. The certified payroll must be completely filled out by the contractor including, but not limited to:
    i. **Contractor's complete name**, including joint ventures, Inc., LLC, etc.
    ii. **Contractor's license number**, also called the contractor's registration number, is required in addition to a business license to do construction work in the state
    iii. **Employee's**
        a. Name
        b. Address (domicile and mailing)
        c. Social security number

d. Job classification

e. Hours worked

f. Wages/fringe benefits paid

iv. **Contracting agency project number**, which is the ARRC contract/purchase order number and is listed on the DOLWD finalized Notice of Work. This notice also lists the **DOLWD project number, project name, and location.** The prime contractor will supply all of this information to its subcontractors.

v. **Week ending date and payroll numbers.** The first week or part of a week of payroll will be designated as payroll number 1 for the first week, 2 for the second week, etc. until the final week worked on the project. If no work is completed during a given week, the contractor must nonetheless submit a certified payroll for that week, with the appropriate consecutive payroll number for that week, and write "No Work Performed" on payroll.

vi. The **Statement of Compliance** must be completely filled out indicating how fringe benefits are paid and listing the payroll period. The Statement of Compliance must be signed, dated, and filed within seven days of the payment date of the payroll.

vii. **Stamp or write "Confidential"** on the certified payroll to help insure the privacy of contractor employees.

Sample copies of DOLWD certified payroll forms with the "Statement of Compliance is shown in Figures 1 and 2 below.

Failure to timely submit complete and accurately filled out weekly certified payrolls to ARRC may result in the delay of payment on the contract.

Alaska Department of Labor & Workforce Development
Labor Standards & Safety Division
Wage & Hour Administration

CERTIFIED PAYROLL

Contractor Name	__X__Contractor	____SubContractor	Address
Alaska Strong Steel, Inc			782 Northridge Avenue, Anchorage, AK 99503

Phone	Contractor License No.	Week Ending	Payroll No.	Contracting Agency Project #	Dept. Labor Project #	Project Name and Location	Contract Amount	Date Work Started	Est. Completion Date
907-555-1212	28888	18-Dec-04	1	35014	04/12-1500	Gold Creek Bridge Repair	$50,000.00	12-Dec-04	October-05

Name, SSN, Permanent Domicile Address (NO P.O. BOX or RURAL ROUTES ACCEPTED) and Mailing Address (if different) for each employee Social Security numbers (SSN) MUST be included for all employees	Specific Work Class Code Including certificate #'s for Electricians, Plumbers, Painters, Powderman, Asbestos Workers. Truck drivers include truck license number	Apprentice (%) if Applicable	Union Member-ship? If NONE put N/A	OT. ST. FB	Date of the Month / Day of the Week: S	M	T	W	TH	F	S	Total Hours Worked	Hourly Rate Paid	Gross Amount Earned	DEDUCTIONS: FICA	FED W/H TAX	ESD	UNION DUES	OTHER (EXPLAIN) Garnish or Medical Insurance	Total Deductions	Net Amount Paid	Check No. Issued
Joe H. Worker, SSN: 555-55-5555	S0301			OT		0.50	1.00					1.50	42.15	63.23								
316 Timber Lake Road	Classification: Carpenter		N/A	ST		8.00	8.00	8.00	8.00	0.00		32.00	28.10	899.20								#678
Anchorage, AK 99515	Certificate # Truck License #			FB		8.50	9.00	8.00	8.00	0.00		41.5	12.75	427.13	106.29	259.21				365.50	1024.06	11/04/04
	Classification Code:			OT																		
	Classification:			ST																		
	Certificate # Truck License #			FB																		
	Classification Code:			OT																		
	Classification:			ST																		
	Certificate # Truck License #			FB																		
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	Classification:			ST																		
	Certificate # Truck License #			FB																		
	Classification Code:			OT																		
	Classification:			ST																		
	Certificate # Truck License #			FB																		

"Confidential"

STATEMENT OF COMPLIANCE

CERTIFIED PAYROLL FORM 07-6058 **Contractors & Subcontractors Please Note!!!** **SSN MUST be listed for each employee on payroll**

8 AAC 30.020 CERTIFIED PAYROLL. (a) All Contractors (including owner/operators) who perform work on a public construction contract for the state or political subdivision of the state shall file with the Department a certified payroll (Form 07-6058) before Friday of each week that covers the preceding week.

(b) The certified payroll shall be submitted to the Department's regional office in which the work is performed.

Region I, North of N63°	Region II, South of N63°	Region IIA, Southeast Alaska, (From Yakutat south)
Labor Standards & Safety Div, DOLWD 675 7th Ave., Station J-1 Fairbanks, AK 99701-4593 (907) 451-2886 Fax: (907) 451-2885	Labor Standards & Safety Div, DOLWD 3301 Eagle Street, Suite 301 Anchorage, AK 99503-4149 (907) 269-4900 Fax: (907) 269-4915	Labor Standards & Safety, DOLWD P. O. Box 21149 1111 W. 8th Street, Rm 302 Juneau, AK 99801 (907) 465-4842 Fax: (907) 465-3584

In lieu of submitting Form 07-6058, contractors may submit his/her payroll form. THE FORM MUST CONTAIN SOCIAL SECURITY NUMBERS FOR EACH EMPLOYEE. The contractor's payroll record must contain the same information required on this form.

Sec. 35.05.040 requires that all contractors or subcontractors who perform work on a public construction contract for the state or a political subdivision of the state shall, **BEFORE FRIDAY OF EACH WEEK**, file with the Department of Labor and Workforce Development (DOLWD), a sworn affidavit for the previous week, setting out in detail the number of workers employed, wages paid each week, job classification of each employee, hours worked each day and week, and other information which the DOLWD requires.

CONTRACTORS WHO DISREGARD THEIR OBLIGATIONS TO THEIR EMPLOYEES, INCLUDING PAYMENT OF THE APPROPRIATE PREVAILING RATES OF PAY, UNCONDITIONAL PAYMENT, AND PAYMENT NOT LESS THAN ONCE A WEEK MAY BE DEBARRED FROM PUBLIC CONSTRUCTION.

Date: **22-Dec-04**

I **Jane Doe, President** do hereby state
(Name of Signatory Party) (Title)

(1) That I pay or supervise the payment of persons employed by **Alaska Strong Steel, Inc.** on the
(Contractor / Subcontractor)

Gold Creek Bridge Project ; that during the payroll
(Building or Work)

period commencing on **12-Dec-04** , and ending on
(date)

18-Dec-04 , all persons employed on said project have
(date)

been paid full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

Alaska Strong Steel, Inc.
(Contractor / Subcontractor)

from the full weekly wages earned by an person, and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions, on projects covered by Alaska Statute 36 as defined in regulations issued by the Commissioner of Labor; or on Federal Projects as defined in Regulations, Part 3 (29 CFR Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948; 63 Stat. 108; 72 Stat. 967; 76 Stat. 357; 40 USC 276 (c), and described below:

and;

(2) That **Alaska Strong Steel, Inc.**
(Contractor / Subcontractor)

is in full compliance with the provisions set forth in AS 36.10, which requires employment preference for Alaska residents as outlined in AS 36.95.010; and

(3) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rages for laborers, mechanics or field surveyors contained herein are not less than the current applicable wage rates established by the DOLWD; that the classification set forth therein for each laborer, mechanic or field surveyor conforms with the work performed; and

(4) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with the State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such agency exists in the State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor; or

(5) That I am a bona fide owner/operator and that my contract amount meets or exceeds the prevailing wage for each hour I have worked. My last progress payment was received on _____ For _____

(6) That where fringe benefits are paid to approved plans, funds or programs: (check all applicable items)

☐ (a) In addition to the basic hourly wage rates paid to each laborer, mechanic or field surveyor listed on this payroll, payments of fringe benefits as currently published by DOLWD have been or will be made to a union trust.

☐ (b) In addition to the basic hourly wage rates paid to each laborer, mechanic or field surveyor listed on this payroll, payments of fringe benefits as currently published by DOLWD have been or will be made to the appropriate programs for the benefit of such workers, except as noted in Section 6(d) below. Fringe benefit payments will be made at least quarterly to an approved plan. The name of the plan is:

X☐ (c) Each laborer, mechanic or field surveyor listed on this payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as currently published by DOLWD, except as noted in Section 6(d).

☐ (d) Exceptions:

Exception (Craft)	Explanation

Remarks:

The willful falsification of any of the above information may subject the contractor or subcontractor to civil or criminal prosecution. See Section 1001 of Title 18 and Section 231 of the United States Code. Also see AS 36.05.060.

Jane Doe
Signature (original signature required)

Jane Doe, President
Name & Title (print or type)

Weekly Form pg. 2 - Effective 7/1/2003 Rev. Aug. 2005

APPENDIX C

SCOPE OF WORK

Scope of Work ARRC Wasilla elevator construction and install

OVERVIEW

a. The Contractor will provide all labor, tools, materials, equipment, and all incidentals required to construct and install elevator. This is to be performed in accordance with engineering plans provided for 1400 Wasilla shops Cr, Wasilla, AK

DETAILED REQUIREMENTS

a. Work shall be accomplished as shown on “MP 15 WASILLA SHOPS” plans by MBA Consulting Engineers dated 2/28/2025. This project includes mechanical, electrical, roofing, and other trades.

b. Contractor is responsible for all obtaining permits, inspections, and close out of the project with jurisdiction having authority.

c. Contractor is responsible for all electrical, communications, ducting, and commissioning as a result of replacement.

d. Please note, contractor is highly encouraged to visit the job site prior to submitting a proposal.

e. Proposals will be subject to AK DOL Certified Payroll requirements.

f. This procurement is subject to standard ARRC procurement procedures.

All proposals must be submitted NLT 3:00 P.M. ?/??/2025.

All work must be complete NLT 10/15/2025.

APPENDIX D

GENERAL CONDITIONS
(CONSTRUCTION)

ARRC STANDARD SPECIFICATIONS FOR CONSTRUCTION MARCH 2025 EDITION (ORANGE BOOK)

Unless noted otherwise herein, the March 2025 edition of the ARRC Standard Specifications for Construction shall be referenced as the 2025 ARRC SSC (Orange Book). The aforementioned reference manual can be found at:

- ARRC Standard Specifications for Construction March 2025 Edition (Orange Book)

END OF SECTION

APPENDIX E

MP WASILLA SHOPS
CONSTRUCTION SPECIFICATIONS

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

C. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.

D. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

E. ACI PRC-308 - Guide to External Curing of Concrete; 2016.

F. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

G. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

I. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.

J. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

K. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2023.

L. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

M. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

N. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.

O. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

P. 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; 2018a.

PART 2 PRODUCTS

2.01 FORMWORK

A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
   1. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
   2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
   3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).

1. Type: Deformed 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.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal 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. C. Fly

Ash: ASTM C618, Class C or F.

D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

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. Retarding Admixture: ASTM C494/C494M Type B.

E. Water Reducing Admixture: ASTM C494/C494M Type A.

F. Workability-Retaining Admixture: For on-site production of concrete with Type S cement in accordance with ASTM C494/C494M.

2.05 BONDING AND JOINTING PRODUCTS

2.06 CONCRETE MIX DESIGN

A. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.

B. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch or as specified on the drawings.
   2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
   3. Water-Cement Ratio: Maximum as indicated for each type on the drawings.
   4. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M and/or as indicated on the drawings.
   5. Maximum Slump: 3 inches.
   6. Maximum Aggregate Size: 3/4 inch.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete. B. Verify that forms are clean before applying release agent.

C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

D. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

E. 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.

1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

3.04 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

C. 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.

3.05 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. 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.

C. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.06 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.

3.07 DEFECTIVE CONCRETE

A. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

3.08 PROTECTION

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

END OF SECTION

SECTION 061000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Nonstructural dimension lumber framing.

C. Rough opening framing for doors, windows, and roof openings.

D. Sheathing.

E. Miscellaneous framing and sheathing.

F. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

A. PS 2 - Performance Standard for Wood Structural Panels; 2018.

B. PS 20 - American Softwood Lumber Standard; 2025.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 CONSTRUCTION PANELS

A. Floor Sheathing: APA Underlayment; plywood, Exposure 2, 3/4 inch thick.

B. Roof Sheathing: PS 2 type, rated Structural I Sheathing.
   1. Bond Classification: Exterior.
   2. Span Rating: 60.
   3. Performance Category: 3/4 PERF CAT.

C. Wall Sheathing: PS 2 type.
   1. Bond Classification: Exterior.
   2. Grade: Structural I Sheathing.
   3. Span Rating: 24.
   4. Performance Category: 1/2 PERF CAT.
   5. Edge Profile: Square edge.

PART 3 EXECUTION

3.01 PREPARATION

A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring: Glue and nail to framing; staples are not permitted.

B. Underlayment: Secure to subflooring with nails and glue.
   1. Place building paper between floor underlayment and subflooring.

C. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Nail panels to framing; staples are not permitted.

D. Wall Sheathing: Secure perpendicular to wall studs, with ends over firm bearing and staggered, using nails.
   1. Install plywood wall sheathing in accordance with manufacturer's current ICC-ES evaluation report for specified sheathing product.

END OF SECTION

SECTION 061733
WOOD I-JOISTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood I-joists for roof and floor framing.

B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Installation requirements for miscellaneous framing.

B. Section 061000 - Rough Carpentry: Material requirements for blocking, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions; 2012a (Reapproved 2018).

B. ASTM D5055 - Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists; 2019, with Editorial Revision (2020).

C. AWPA U1 - Use Category System: User Specification for Treated Wood; 2024.

D. PS 1 - Structural Plywood; 2023.

E. PS 2 - Performance Standard for Wood Structural Panels; 2018.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's literature describing materials, dimensions, allowable spans and spacings, bearing and anchor details, bridging and bracing requirements, and installation instructions; identify independent inspection agency.

C. Shop Drawings: Indicate sizes and spacing of joists, bracing and bridging, bearing stiffeners, holes to be cut (if any), and framed openings between joists.

D. Certificate: Certification by joist manufacturer that products delivered are of the same design and construction as those evaluated by the independent inspection agency.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in manufacturer's original packaging with manufacturer's name and product identification intact and legible.

B. Protect products from damage due to weather and breakage.

C. Protect joists from warping or other distortion by stacking in upright position, braced to resist movement, with air circulation under coverings and around stacks. D. Handle individual joists in the upright position.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood I-Joists:

1. Boise Cascade Company; ____: www.bc.com/#sle.
2. Substitutions: See Section 016000 - Product Requirements.

2.02 MATERIALS

A. Wood I-Joists: Solid lumber top and bottom flanges and oriented strand board (OSB) webs bonded together with structural adhesive, with published span rating to meet project requirements.
   1. Span Rating: Established and monitored in accordance with ASTM D5055 by independent inspection agency.

   2. Oriented Strand Board: Comply with PS 2.
   3. Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.
   4. Fabrication Tolerances:
      a. Flange Width: Plus/minus 1/32 inch.
      b. Flange Thickness: Minus 1/16 inch.
      c. Joist Depth: Plus 0, minus 1/8 inch.
   5. Marking: Mark each piece with depth, joist spacing, and allowable span for joist spacing.

B. Wood-Based Components:
   1. Wood fabricated from old growth timber is not permitted.

C. Joist Hangers: Simpson Strong-Tie, types and sizes as indicated on the Drawings.

D. Joist Bridging: Type, size and spacing recommended by joist manufacturer.

E. Wood Blocking, Plates, and Miscellaneous Framing: As specified in Section 061000.

F. Fasteners: Electrogalvanized steel, type to suit application.

PART 3 EXECUTION

3.01 ERECTION

A. Install joists in accordance with manufacturer's instructions.

B. Set structural members level and plumb, in correct position.

C. Make provisions for erection loads and for sufficient temporary bracing to maintain structure plumb and in true alignment until completion of erection and installation of permanent bracing.

D. Install permanent bridging and bracing.

E. Coordinate installation of sheathing/decking with work of this section.

END OF SECTION

SECTION 07 11 00
DAMPPROOFING

PART 1 - GENERAL

1.1 RELATED WORK

A. Section 03 30 00 Cast-in-Place Concrete B.

Section 07 17 00 Bentonite Waterproofing

C. Section 07 21 10 - Building Insulation

D. Section 07 63 10 Flashing and Trim

E. Section 09 91 00 - Painting

1.2 SUBMITTALS

A. Manufacturer s Literature: Including recommended use, application procedures, substrate surface preparation, and any special curing requirements.

B. Manufacturer s Certificate: Certify that products supplied meet or exceed specified requirements.

C. Manufacturers experience.

1.3 MANUFACTURER QUALIFICATIONS

A. Minimum of 25 installations similar in scope to this work manufacturing the products specified. Provide a list of 5 applications with name, location and telephone contact.

1.4 PRODUCT DELIVERY AND STORAGE

A. Protect from freezing in accordance with manufacturer s written recommendations.

B. Deliver manufacturer s unopened and factory labeled containers to the job.

1.5 WEATHER REQUIREMENTS

A. Do not apply damp proofing at ambient temperatures or in conditions other than those specified in writing by dampproofing manufacturer and in no case when temperatures are expected to be below 40 degrees F., in rain, snow or with frost on surfaces to be coated unless approved special cold weather tenting and heating measures are taken.

PART 2 - PRODUCTS

2.1 BELOW GRADE DAMPPROOFING

A. Exposed concrete and masonry foundations.
   1. Opaque, thick consistency (high build) liquid coating recommended by its manufacturer for use on exterior concrete and masonry below grade as a water repellant coating. The coating shall be suitable and compatible for use under the rigid plastic foundation insulation specified.
   2. Acceptable Manufacturers and Products: Subject to meeting specified criteria.
      a. Master-Builders Masterseal 581 white : www.masterbuilders.com
      b. Master-Builders Masterseal Cold applied Ashpalt emulsion Damproofing. : www.master-builders-solutions.us
      c. W. R. Meadows Sealmastic fiber asphalt emulsion. : www.wrmeadows.com.

PART 3 - EXECUTION

3.1 INSPECTION OF SURFACES

A. Examine surfaces to receive dampproofing for defects that will adversely affect the completed work and for deviations beyond allowable tolerances.

B. Surfaces should be dry, clean, cured and free of projections or holes over which a continuous coating can easily be applied.

C. Work shall be done only after other trade work in area is sufficiently complete to prevent subsequent disturbance. Apply dampproofing before foundation insulation.

D. Start of work shall mean acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 PREPARATION OF SURFACES

A. Clean and prime surfaces as recommended in writing by dampproofing manufacturer.

B. Mask or protect adjacent surfaces as necessary to keep them clean and free of dampproofing overspray or splash.

3.3 APPLICATION

A. Complete and in accordance with the approved manufacturer s written recommendations for type of application proposed.

B. Apply liquid products in 2 separate coats for complete coverage without runs or sags.
   1. Finish: Uniform stipple or spray textured appearance.

C. Apply sheet ICF membrane over insulating concrete forms with laps to shed water in accord with membrane manufacturer recommendations. D. Extend dampproofing up under top flashing or batten.

3.4 DAMPPROOFING SCHEDULE

A. Foundation Walls: Apply to exterior surfaces of building perimeter from bottom of footing or 24 inch minimum below finished ground level to top of foundation wall or six inches above finished ground level in straight lines.

B. Not required where bentonite sheet waterproofing is applied to elevator pit walls.

END OF SECTION

SECTION 07 17 00
BENTONITE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete

B. Section 07 21 10 - Building Insulation

C. Section 07 63 10 - Flashing and Trim

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The Publications may be referred to in the text by basic designations only. In case of conflict the most stringent shall apply.

1. ASTM C836 Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use With Separate Wearing Course.
2. ASTM D903 Test Method for Peel or Stripping Strength of Adhesive Bonds.
3. ASTM D1970 Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
4. ASTM D4595 Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
5. ASTM D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles.
6. ASTM D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
7. ASTM D5084 Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.
8. ASTM D5261 - Test Method for Measuring Mass per Unit Area of Geotextiles.
9. ASTM D5385 Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
10. ASTM E96B Test Methods for Water Vapor Transmission of Materials.

1.3 DESCRIPTION

A. Factory laminated composite bentonite core between layers of geotextile fabric suitable to provide continuous building protection against water intrusion for below-grade structure concrete floors.

B. Factory laminated composite bentonite core and geomembrane suitable to provide continuous building protection against water intrusion for below-grade walls and compatible with floor waterproofing.

1.4 SUBMITTALS

A. Product Data: Indicate performance data, materials, recommended use, installation instructions, substrate surface preparation, joints, penetrations, terminations and special curing requirements. B. Manufacturer and Installer qualifications.

C. Warranties.

D. Certification that the water proofing installer has read the Geotechnical Data Available.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum experience of manufacturing and supplying specified products for at least 50 successful jobs of similar scope to that proposed. Also provide list of at least 10 project references where specified product was used, including project name, telephone contact, location, date, and product usage.

B. Installer Qualifications: Minimum experience of installing at least 5 similar waterproofing systems, and must be approved, in writing, by waterproofing manufacturer for installation of specified waterproofing or waterproofing manufacturer must be present to train and approve first 100 lineal feet of floor to wall joint of waterproofing.

1.6 PRE-INSTALLATION MEETING

A. Attended by: Installer, manufacturers representative, CONTRACTOR, and ARCHITECT.
   1. Schedule in advance of start of waterproofing and when first substrate is ready for waterproofing.
   2. Approved submittals and samples of waterproofing materials shall be available at meeting.
   3. Schedule of concrete foundation casting and backfilling shall be available at meeting.

1.7 PRODUCT DELIVER, STORAGE AND HANDLING

A. Deliver materials factory packaged, sealed and labeled. Handle and keep dry as necessary to prevent damage and deterioration.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Apply waterproofing at ambient temperatures or in conditions recommended in writing by the manufacturer and in no case when temperatures are expected to be below 40 degrees F, in rain or snow, or with dirt, frost or water on surfaces to be coated.

B. Provide protection with tarp enclosures, draining and heating as necessary.

1.9 WARRANTY

A. Manufacturer shall warrant materials are free from defects for a period of 5 years after substantial completion.

B. CONTRACTOR shall warrant installation, free from water leaks, for a period of 5 years after Substantial Completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS, SUBJECT TO SPECIFIED CRITERIA

A. Colloid Environmental Technologies Co. (CETCO) www.cetco.com . CETCO Volclay products have been specified to describe required features for a complete waterproofing system. Provide all components from same manufacturer or all components approved in writing by waterproofing manufacturer.

B. Carlisle Miraclay System: www.carlisle.com meeting specification required features is also acceptable.

C. The waterproofing system shall be recommended by the manufacturer for below grade building foundation and wall waterproofing in jet fuel and heating oil contaminated soil.

2.2 BENTONITE

A. Type: Specially selected Wyoming granular bentonite.

B. Free swell rating: 2 grams sifted into deionized water swells to a minimum volume of 16 cubic centimeters.

2.3 WATERPROOFING SLABS ON GROUND AND FOUNDATIONS

A. Volclay Ultraseal SP : three component factory laminated composite bentonite sheet roll waterproofing recommended by manufacturer for waterproofing where concrete is poured directly against waterproofing

under floor slabs on ground.

1. 0.3 pounds per square foot; 4 by 25 foot rolls.

B. Geotextile Fabric: non-woven polypropylene geotextile factory laminated to bentonite sandwich, which mechanically bonds to poured concrete preventing water migration between waterproofing and concrete.

C. Peel Adhesion to Cast Concrete per ASTM D903: 10 pounds per inch minimum.

D. Hydrostatic Pressure Resistance per ASTM D5385: 231 feet minimum.

E. Permeability per ASTM D5084: 1 by 10^{-11} centimeter maximum.

F. Tensile Strength per ASTM D4595: 350 pounds per inch minimum.

G. Puncture Resistance per ASTM D4833: 130 pounds minimum.

H. Low Temperature Flexibility per ASTM D1970: Unaffected to minus 25 degrees F.

I. Crack Bridging per ASTM C836: passed 100 cycles minimum.

J. Permeance per ASTM E96B: 0.005 perms maximum.

2.4 WATERPROOFING SLABS OVER BUILDING SPACE AND ON MASONRY WALLS

A. Volclay Ultraseal BT : two component factory laminated composite bentonite sheet roll waterproofing recommended by manufacturer for waterproofing against concrete and masonry walls below ground.

B. Hydrostatic Pressure Resistance per ASTM D5385: 231 feet minimum.

C. Permeability per ASTM D5084: 1 by 10^{-11} centimeter maximum.

D. Tensile Strength per ASTM D4595: 200 pounds per inch minimum.

E. Puncture Resistance per ASTM D4833: 60 pounds minimum.

F. Low Temperature Flexibility per ASTM D1970: Unaffected to minus 25 degrees F.

G. Crack Bridging per ASTM C836: passed 100 cycles minimum.

H. Permeance per ASTM E96B: 0.005 perms maximum.

2.5 ACCESSORIES

A. Fasteners, fillets, mastics, covers and other accessories necessary for a complete, water-tight system application as recommended compatible by waterproofing manufacturer.

B. Volclay Bentoseal: Trowel grade bentonite compound used as detailing mastic around penetrations, corner transitions and grade terminations.

C. Volclay Hydrobar Tubes: 2 inch diameter by 2 feet long, water soluble tube container filled with granular bentonite.

D. Volclay Waterstoppage: bulk bag of specially processed dry granular bentonite used in penetrations, intersects and corners.

E. Volclay Waterstop-RX: Rolls of flexible bentonite and butyl rubber strip waterstop for use in concrete construction joints sized as recommended by manufacturer for concrete thickness. Secured with Volclay WB-Adhesive.

F. Volclay Seamtape: tacky butyl rubber tape 2 inch by 35 mil thick to seal overlapped edges of Ultraseal BT.

G. Top wall termination bar: 1/8 by 1-1/4 inch aluminum or stainless steel with … inch drilled expansion fasteners 12 inch on center.

H. Washer head mechanical drive nails or screws approved by waterproofing manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION OF SURFACES

A. Examine surfaces to receive work for defects that will adversely affect the completed waterproofing and for deviations beyond the waterproofing manufacturer allowable tolerances.

B. Ground substrate shall be level and compacted to 85 percent minimum.

C. If ground water contains strong acids, alkalis or petroleum, submit water sample to waterproofing manufacturer for testing and approval.

D. Insure that surfaces are swept clean, visually dry without standing water, smooth, and free from voids form tie holes or sharp projections that would damage or impair waterproofing.
   1. Fill wall voids with non-shrink grout or Bentoseal.
   2. Remove protrusions over 1/4 inch and smooth.
   3. Fill form tie holes with non-shrink grout and a piece of Waterstop-RX.

E. Concrete to receive waterproofing shall be cured at 50 degrees to 70 degrees Fahrenheit for a minimum of 4 days, per American Concrete Institute (ACI) 301, and be surface dry and clean before installation of waterproofing. Voids and pits in excess of 3/4 inch shall be filled flush with cement grout. Projections over inch shall be smoothed flush.

F. Verify that mechanical and electrical penetrations are complete and ready for cover.

G. Start of work means acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 APPLICATION

A. Complete and in accordance with the approved submittal for manufacturer s written recommendations for type of application proposed.

B. Install to provide continuous, unbroken, waterproof envelope under floor, under footings, under elevator pits and sumps, outside footings and up outside of concrete walls.

C. Seal substrate cracks and joints with membrane manufacturer s recommended materials.

D. All vertical and horizontal construction pour joints shall receive Volclay Waterstop-RX. Install Waterstop-RX around penetrations. Encapsulate waterstop-RX with a minimum of 3 inches of concrete on all sides. Use Volclay WB-Adhesive to adhere Waterstop-RX to concrete, metal or PVC (pipe) surface.

E. Backfill shall be compactable soils and free of construction debris. Compact backfill to 85 percent minimum.

F. If waterproofing or waterstops become damaged or deteriorated from water or physical contact before concrete placement, remove and replace with undamaged waterproofing.

3.3 SLAB ON GROUND INSTALLATION

A. Place Volclay Ultraseal SP waterproofing under floor slabs with adjoining edges overlapped a minimum of 4 inches. 1. Stagger end seams a minimum of 24 inches.
   2. Mechanically fasten with wire staples as necessary to prevent movement during concrete placement.
   3. For subsequent concrete pours, lap 12 inches.

B. Detail all penetrations with 2-inch cant of waterstoppage under the Voltex and trowel Bentoseal 3/4 inch thick around the penetration on top.

C. Install waterproofing under footings, elevator pits and grade beams. Overlap material edges a minimum of 4 inches.

D. Provide a minimum of 12-inch overlap between under foundation, under floor and vertical wall waterproofing by either extending the Voltex beyond the form or turning it up in the form and securing.

3.4 WATERSTOPS WITHIN CONCRETE JOINTS

A. Install flexible bentonite and butyl rubber strip (Volclay Waterstop-RX) at interface inside concrete joints before subsequent pour per waterproofing manufacturers written recommendations.

3.5 WALL INSTALLATION

A. Place Hydrobar Tubes along the wall and footing intersection with ends tight together.

B. Starting at the base of the wall, install Voltex Ultraseal BT on concrete and masonry walls covering the Hydrobar Tubes and extending onto the footing a minimum of 6 inches. Cover the entire footing and overlap under slab waterproofing a minimum of 6 inches. Fasten waterproofing into position using washer headed mechanical fasteners at 12 inches on center.

C. Overlap horizontal seams a minimum of 2 inches shingle fashion. Stagger all vertical end overlap seams a minimum of 24 inches and lap. D. Install Volclay seamtape at overlaps.

E. Place Waterstop- Rx between penetrations and wall. Cut waterproofing to fit around penetrations. Trowel all penetration voids with inch thick layer of Bentoseal.

F. Terminate 2 inches above grade and flush with top of adjacent paving with 16 gage galvanized steel terminal bar fastened 12 inches on center with … inch drilled expansion bolts. Cover top edge of waterproofing with ‰ inch thick, 2inch wide layer of Bentoseal.

3.6 WATERPROOFING LOCATION SCHEDULE

A. Elevator Pit Floor: On subgrade under concrete slab on ground to form continuous waterproofing under elevator pit. Allow for lapping up onto subsequent elevator pit walls.

B. Elevator Pit Walls: Against exterior of vertical concrete building elements below ground around elevator pit.

END OF SECTION

SECTION 07 21 10
BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 03 30 00 Cast-in-Place Concrete

B. Section 07 11 00 - Dampproofing

C. Section 07 26 00 - Vapor Retarders

D. Section 07 53 20 Adhered EPDM Roofing System Roof Insulation

E. Section 07 63 10 Flashing and Trim

F. Section 07 84 00 Firestopping

G. Section 07 92 00 - Joint Sealants

H. Section 09 21 16 Gypsum Board Assemblies

I. Division 22 Plumbing Insulation

J. Division 23 HVAC Insulation

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications may be referenced in the text by basic designation only. In case of conflict, the most stringent shall govern:

1. American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) Handbook of Fundamentals .
2. Underwriter s Laboratories (UL) Building Materials Directory .
3. ASTM C165 Test Method for Measuring Compressive Properties of Thermal Insulations.
4. ASTM C177 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties utilizing the Guarded Hot-Plate Apparatus.
5. ASTM C272 - Test for Water Absorption of Core Material for Structural Sandwich Construction.
6. ASTM C423 Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
7. ASTM C518 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties utilizing the Heat Flow Meter Apparatus.

8. ASTM C553 - Specification for Mineral Fiber Blanket Insulation for Commercial and Industrial Applications.
9. ASTM C578 - Specification for Rigid Cellular Polystyrene Thermal Insulation.
10. ASTM C612 - Specification for Mineral Fiber Block and Board Thermal Insulation.
11. ASTM C665 - Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
12. ASTM C764 Specification for Mineral Fiber Loose-Fill Thermal Insulation.
13. ASTM C1104 Test Method for Determining the Water Vapor Sorbtion of Unfaced Mineral Fiber Insulation.
14. ASTM C1338- Test Method for Deforming Fungi Resistance of Insulation Materials and Facings.
15. ASTM E84 - Tests for Surface Burning Characteristics of Building Materials.
16. ASTM E96 Test Methods for Water Vapor Transmission of Materials.
17. ASTM E119 - Fire Tests of Building Construction and Materials.
18. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
19. ASTM 1621 Test Method for Compressive Properties of Rigid Cellular Plastics.
20. National Fire Protection Association (NFPA) 285 Standard Method of Test for Evaluation of Flammability Characteristics of Exterior Non-load Bearing wall Assemblies Containing Combustible Components.

1.3 SUBMITTALS

A. Manufacturer s literature including material, composition, fire hazard ratings, and application instructions.

1.4 PRODUCT LABELING

A. Insulation, or factory sealed packages of the insulation shall be marked by the insulation manufacturers as having the thermal resistance, fire hazard characteristics, water absorption, and compressive strength specified.

1.5 PROTECTION

A. Store and protect insulation from moisture until permanently enclosed.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not heat the building until vapor retarders are completely installed.

B. Do not apply insulation to surfaces, which are frosty, damp, or dirty.

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

A. Thermal Resistance Values R:
   1. Fill spaces as shown on DRAWINGS and provide the minimum R indicated.
   2. Indicated R shall be for the insulation material by itself per ASHRAE.

B. Fire Hazard Classification: Insulation materials, including integral facing covers and vapor retarders, shall meet the following ratings when tested per ASTM E-84 (tunnel test). Not required for rigid insulation installed under concrete or earth.
   a. Fuel contributed: 50.
   b. Maximum installed flame spread: 25.
   c. Maximum smoke developed: 450 (50 for insulation left exposed).
   d. Self-extinguishing. C. No added asbestos.

D. No added formaldehyde.

E. Blanket fibrous glass insulation: Green Guard Certified.

2.2 FOUNDATION INSULATION

A. Rigid Board: Extruded (XPS) or expanded polystyrene (EPS) per ASTM C578 conforming to the following requirements:
   1. Thermal Resistance R minimum for 1 inch: 4.5 at 25 degrees F. per ASTM C177 or ASTM C518.
   2. Compressive Resistance: 10 percent maximum deformation under 15 psi uniform loading per ASTM D1621.
   3. Water Absorption: 3 percent maximum by volume after 24 hours after immersion per ASTM C272.

B. Minimum thickness and layers per Schedule and DRAWINGS.

2.3 UNDERFLOOR FOUNDATION INSULATION

A. Same as Foundation Insulation, above, except compressive strength to be less than 5 percent deformation under 60 psi uniform loading minimum per ASTM D1621.

B. Styrofoam HI-60 or approved equivalent.

2.4 INSULATING SHEATHING

A. Unfaced Mineral wool fiber sheathing, semi-rigid minimum 8 pounds per cubic foot density per ASTM C612 or 1200 psf with 10% compression per ASTM C165.

1. Thermal resistance R value 4.2 minimum per inch per ASTM C518 at 25 degrees F.
2. 24-inch minimum width or wider to fit installation.
3. Flame Spread: 0; Smoke Developed 0 per ASTM E84.
4. Water Vapor Absorption: 0.2% maximum by volume per ASTM C1104.
5. Vapor Permeance: 35 Perms minimum per ASTM E96.

B. Acceptable manufacturers subject to meeting specified criteria:
1. Thermal Fiber: www.thermafiber.com
2. Rockwool of North American: www.rockwool.com

2.5 BLANKET (BATT) INSULATION

A. Type I: Unfaced fibrous blanket of mineral wool or fibrous glass per ASTM C553 or C665 suitable for friction fit between framing or furring members.

2.6 SPRAY FOAM INSULATION

A. Spray Applied Polyurethane Insulation:

B. 1.5 to 3 pounds minimum density. Low-rising, low-pressure semi-rigid.

C. Apply following the manufacturer's written instructions.

D. Cover any foam exposed to the interior of the building with gypsum board, sheet metal, or IBC-approved thermal barrier coating.

2.7 SILL SEALER

A. 1/4-inch x 3-inch minimum by continuous roll resilient compressible closed cell polyethylene.

B. Dow Ethafoam , or Protecto Wrap.

C. Substitutions per Section 01 60 00 - Product Requirements.

2.8 ACCESSORIES

A. As necessary to permanently secure the insulation in place: Galvanized wire, screws, plastic washers, adhesive adhered stick-impaling pins, with press-on clips, tapes, adhesives, and sealants recommended by insulation manufacturers for specified use.
1. Tape:
   a. 2 3/8-inch-wide acrylic-based pressure-sensitive adhesive tape with polypropylene film, recommended by the manufacturer for construction sealing against air and moisture: 3 mil minimum thick.
   b. Owens Corning Bild-R-Tape or equal.

2. Vapor retarder fluid applied membrane: Prosoco R-Guard or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and verify field conditions to receive insulation for defects that will adversely affect the completed installation, and for deviation beyond allowable tolerances.

B. Installation shall be done only after other trade work in the area is sufficiently complete to prevent subsequent disturbance of insulation.

C. Beginning of installation shall mean acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 PREPARATION

A. Verify substrates are clean and dry. Remove loose or foreign matter.

3.3 INSTALLATION

A. Install in accordance with approved submittals and manufacturer's written instructions using necessary primers and accessories.

B. Install continuously where indicated without voids. Fill spaces completely. Trim and fit closely around structure, door rough openings and frames, conduit, piping, obstructions, and penetrations following the manufacturer s written instructions. Install clearance baffles around heat-producing lights and heat-producing appliances under the appliance manufacturer s instructions.

C. Coordinate to ensure separate vapor retarders are installed immediately after insulation to avoid moisture build-up.

D. Attach with sufficient tape, adhesives, or mechanical fasteners to permanently anchor insulation. Space stick pins were used at 16-inches maximum. Secure batt insulation between unfaced studs or joists with crosswires at 12-inches.

E. Install any integral membrane vapor barrier facing on the warm side. Adhere with adhesive and seal facing continuously with overlapping tape at joints and penetrations and over any stick pins.

F. Where pipe or conduit is in space to be insulated, place a portion of insulation batt between the pipe or conduit and the building exterior. Compress insulation only slightly to keep it in place.

G. Foundation Insulation:
   1. Adhere insulation over waterproofing and damp proofing on the

foundation following the insulation and waterproofingdampproofing manufacturer s written instructions. Verify that specified foundation dampproofing or waterproofing is complete before proceeding.

H. Structural Foundation Insulation:
1. Refer to Drawings for locations.

I. Batt Insulation and Acoustical Batt Insulation:
1. Friction fit unfaced batts between rough openings and doors and windows and voids, using fasteners as necessary for permanent, snug installation without sagging or excess compression.
2. Attach faced insulation with sufficient compatible tape, adhesives, or mechanical fasteners to permanently anchor insulation following the insulation manufacturer s written instructions.
3. Attach faced insulation flanges to studs.

J. Insulating sheathing: install in multilayers with joints lapped 6-inch minimum, attach the screw to studs with No. 12 corrosion resistant screws through one-inch plastic washers 24-inch on center maximum into studs.
1. Adhesive may be used with insulation manufacturer-approved adhesive.
2. Install between furring as indicated on DRAWINGS.
3. Metal and fiberglass furring systems may be used with siding structural load approval.
a. Knight Wall Systems: www.knightwallsystems.com
b. Cascadia Clip System: www.casadiawindows.com

3.4 INSULATION SCHEDULE

A. Install insulation as specified in the following locations and other areas as specifically detailed on DRAWINGS.

B. Type I Unfaced Batt Insulation.
1. Exterior stud walls: fill cavities: R19 Minimum.
2. Roof stud wall curbs and parapets: fill cavities.

C. Sill Sealer:
1. Between the bottom plate or track and floor of stud walls.

D. Unfaced Batt Insulation:
1. Between rough openings and cavities around doors and windows.
2. Fill inside hollow door frames and voids around windows and mechanical/electrical penetrations of exterior walls. E. Spray Foam Insulation:
1. Apply to gaps between exterior doors, windows, and mechanical or electrical rough openings.

2. Fill exterior hollow doorframes before frame installation.
3. Fill gaps over one inch with unfaced batt insulation.
4. Fill gaps between insulated metal wall and roof panels.

F. Foundation Insulation:
1. Foundation Exterior Walls one layer 4-inches from the top of the foundation to the top of the foundation wall.

G. Insulating Sheathing:
1. Exterior stud walls per wall type indicated on Drawings.

END OF SECTION

SECTION 07 26 00
VAPOR RETARDERS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 03 30 00 Cast-in-Place Concrete: floor slab on ground

B. Section 07 27 10 - Air and Water Barriers

C. Section 07 21 10 - Building Insulation

D. Section 07 92 00 - Joint Sealants

E. Section 09 21 16 - Gypsum Board Assemblies

1.2 APPLICABLE PUBLICATIONS

A. The publications listed form a part of this Specification. The publications are referred to in the text by basic designation only. In case of conflict the most stringent shall apply.

1. ASTM C1136 - Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
2. ASTM D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
3. ASTM D751 - Test Methods for Coated Fabrics.
4. ASTM D882 -Test Methods for Tensile Properties of Thin Plastic Sheeting.
5. ASTM D903 Test Method for Peel or Stripping Strength of Adhesive Bonds.
6. ASTM D 1004 - Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
7. ASTM D1709 Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method.
8. ASTM D1790 - Test Method for Brittleness Temperature of Plastic Sheeting by Impact.
9. ASTM D1876 -Test Method for Peel Resistance of Adhesives (T-Peel Test.)
10. ASTM D1970 Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used in Steel Roofing Underlayment for Ice Dam Protection.
11. ASTM D2103 - Specification for Polyethylene Film and Sheeting.
12. ASTM D2582 - Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
13. ASTM D4533 Test Method for Trapezoid Tearing of Geotextiles.

14. ASTM D4397-Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
15. ASTM D7003 -Test Method for Strip Tensile Properties of reinforced Geo membranes.
16. ASTM D7004 - Test Method for Grab Tensile Properties of reinforced Geo membranes
17. ASTM E84 -Test Method for Surface Burning Characteristics of Building Materials.
18. ASTM E96 -Test Methods for Water Vapor Transmission of Materials.
19. ASTM E154-Test Methods for Water Vapor Retarders used in contact with earth under concrete slabs, on walls, or as ground cover.
20. ASTM E 1643 - Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete.
21. ASTM E-1745 - Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
22. ASTM E2357 Test Method for Determining Air Leakage of Air Barrier Assemblies.
23. ASTM F1249 Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.

1.3 SUBMITTALS

A. Manufacturer s literature including material, composition, fire hazard ratings, and application instructions. Provide proposed penetration, lap, and edge sealing methods.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not heat building with permanent insulation installed until vapor retarders are completely installed.

PART 2 - PRODUCTS

2.1 WALL AND CEILING SHEET VAPOR RETARDER:

A. Tear resistant glass fiber or plastic cross thread reinforced sheet polyethylene plastic, or foil laminate per ASTM D2103 and D4397 minimum thickness 6 mils.

B. Permanently Exposed or within building HVAC cavity-plenum: in addition to requirements of A, above: Aluminum foil or plastic faced for maximum installed flame spread of 25, and maximum smoke developed of 50, per ASTM E84 or U.L. Fire Hazard Classification Test (U.L. 723).

C. Water Vapor Transmittance: 0.05 perm maximum per ASTM E96 method.

D. Minimum tensile strength: 30 pound per inch width per ASTM C1136 or ASTM D882.

E. Width: 8-foot minimum by continuous roll length.

2.2 CONCRETE FLOOR SLAB-ON-GROUND SHEET VAPOR RETARDER

A. Multi-layer sheet polyethylene laminated together with reinforcing threads recommended by manufacturer for under concrete slabs on ground applications per ASTM E1745.

B. Minimum Thickness: 10 mil (0.250mm)

C. Minimum width: 12 feet.

D. Maximum Water Vapor Transmittance: 0.3 perms per ASTM E96, or 0.01 grains per square foot per hour per ASTM F1249.

E. Minimum Tensile Strength: 50 pounds per inch width per: ASTM D882, ASTM D751, ASTM D7003, or ASTM E154.

F. Puncture Resistance: 3000 grams per ASTM D1709.

G. Acceptable manufacturers, subject to specified criteria:
   1. W. R Meadows Perminator : www.wrmeadows.com
   2. Fortifiber Moistop : www.henry.com
   3. Stego Stego Wrap : www.stegoindustries.com
   4. Insulation Solutions Vaporcheck : www.isibp.com
   5. Substitutions per Section 01 60 00 - Product Requirements.

2.3 ACCESSORIES

A. Primers, adhesives, sealants, solvents, battens, staples, clips, stick pins, reglets, trim, and other accessories recommended by vapor retarder manufacturer and necessary for a complete installation.

2.4 TAPE

A. Width: 2-inch minimum.

B. Polyethylene or polypropylene tape, with water resistant self adhesive recommended by the vapor retarder membrane manufacturer for cold temperature application to polyethylene sheet and steel; minimum adhesive strength 25 ounces per inch width.

C. For Aluminum Foil Sheet: Fiberglass reinforced self-adhesive water resistant vinyl-aluminum foil recommended for cold temperature application to metal foils.

D. Use tape specifically recommended by vapor retarder manufacturer:
   1. Owens Corning Bild-R-Tape .
   2. Proscoco R-Guard fluid applied membrane or equal.

2.5 ADHESIVE

A. Spray-on 3M Inc. High tack adhesive 76 or equivalent recommended for adhesion to polyethylene.

2.6 SEALANT

A. Single component Polyurethane or non-hardening synthetic rubber acoustical type per Section 07 92 00 - Joint Sealants.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Drawing Details and field conditions to receive work for defects that will adversely affect the completed installation and for deviations beyond allowable tolerances.

B. Substrate surfaces shall be free of sharp projections or holes over which the vapor retarder sheet can easily be applied without tearing or puncturing.
   1. Insulation shall be complete per Section 07 21 10 Building Insulation and be dry, free of frost or ice.

C. Verify that substrate work by other trades is complete and ready for vapor retarder.

D. Beginning of installation shall mean acceptance of the existing conditions as capable of producing an acceptable job.

3.2 INSTALLATION

A. Completed installation shall be continuous, without gaps, holes or tears and in accord with vapor retarder manufacturer s recommendations on warmest side of insulation to minimize vapor flow into insulation from the interior.
   1. Coordinate with framing installer to install separate sheets of vapor retarder through and around framing members for subsequent lap and seal.

B. Joints:
   1. Lap wall vapor retarder 4 inches minimum, staple or tape to supports or roll seams and staple together. Seal over seams continuously with tape.
   2. Lap floor slab-on-grade vapor retarder 6-inches and seal with tape.

C. Edges: Seal edges with tape or adhesive onto firm continuous bearing: as at structure.

D. Layout vapor retarders to provide a single continuous sheet where possible with a minimum number of joints. Allow enough slack or pleats so that finish material installation does not tear vapor retarder.

E. Penetrations: Seal vapor retarder continuously around all structural, mechanical, electrical and other penetrations with tape and sealant in accord with vapor retarder recommendations. Wrap tape two times around penetration. Run separate sheet of wall vapor retarder behind electrical boxes or seal edges around electrical boxes with polyurethane sealant.

F. Attachment: Tape and adhesives or fasteners. Seal holes caused by fasteners with tape.

G. Extend wall vapor into openings and similar, for trimming after finishes are applied. Seal with sealant to opening frames.

H. Lap wall vapor retarders onto roofing areas and apply in sealant bed and tape.

I. Turn concrete floor vapor retarder up 6 inches minimum at intersecting walls and columns. Tape and seal around top of penetrations in accord with vapor retarder manufacturers recommendations. Trim at floor top and seal with polyurethane sealant.

J. Floor Slab Vapor Retarder Repair: All punctures and tears by patching with extra lapping material or shaped boots in accord with vapor retarder recommendations 6 inches minimum and taping, just prior to final concrete installation.

K. Seal any stake penetration in floor vapor retarder by installing self-sealing adhesive mastic all around each stake.

3.3 VAPOR RETARDER SCHEDULE

A. Install vapor retarder on inside of exterior walls and additionally as indicated on DRAWINGS.

B. Install concrete floor vapor retarder under interior of building concrete slabs on ground.

END OF SECTION

SECTION 07 27 10
AIR AND WATER BARRIERS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 07 21 10 - Building Insulation

B. Section 07 26 00 - Vapor Retarders

C. Section 07 92 00 - Joint Sealants

D. Section 09 21 16 - Gypsum Board Assemblies

1.2 APPLICABLE PUBLICATIONS

A. The publications listed form a part of this Specification. The publications are referred to in the text by basic designation only. In case of conflict, the most stringent shall apply.

1. ASTM C920 Specification for Elastomeric Joint Sealants
2. American Society for Testing and Materials (ASTM) ASTM D828 - Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus.
3. ASTMD828 Test Method for Tensile Properties of Paper and Paperboard.
4. ASTM D882 - Test Method for Tensile Properties of Thin Plastic Sheeting.
5. ASTM D1970 Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
6. ASTM D7349 Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal Around Fasteners.
7. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
9. ASTM E283 Test Method for Water Penetration and Air Leakage Through Exterior Windows, Curtain Walls and Doors Underspecified Pressure Differences Across the Specimen.
10. ASTM E331 Test Method for Water Penetration of Exterior Windows, Sky Lights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
11. ASTM E1677 Specification for Air Retarder Material or System for Low-Rise Framed Building Walls.
12. ASTM E2178 Test Method for Air Permeance of Building Materials.

13. International Building Code (IBC) Chapter 14.
14. National Fire Protection Association (NFPA) 285 Standard Method of Test for Evaluating Flammability Characteristics of Exterior Non-loadbearing Wall Assemblies Containing Combustible Components.

1.3 SUBMITTALS

A. Manufacturer s literature, including material, composition, vapor transmission, water resistance, fire hazard ratings, and application instructions, including penetration, lap, and edge details.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not heat the building with an air barrier until insulation and vapor retarders are installed inside.

PART 2 - PRODUCTS

2.1 SHEET AIR AND WATER BARRIER

A. Moisture vapor permeable, five-foot minimum width in continuous sheet recommended by the manufacturer to resist air and liquid water infiltration while allowing moisture vapor to escape.
   1. Air penetration: .04 cubic feet per minute per square foot maximum at 1.57 psf per ASTM E-1677, ASTM E-283 or ASTM E2178.
   2. Water resistance: no water penetration when tested for 15 minutes at 15 miles per hour per ASTM E1677 or ASTM E331.
   3. Water drainage: vertical grooves or wrinkle textured surface to allow water drainage.
   4. Moisture vapor transmission rate: more than 25 perms per ASTM E96.
   5. Tensile Strength: 25 pounds per inch minimum per ASTM D-882 or ASTM D828.
   6. Flame spread: Class A 25 maximum per ASTM E-84.
   7. Smoke development: Class A 450 density maximum per ASTM E-84.
   8. NFPA 285 Flammability test compliant with polyiso or mineral wool insulation. IBC l403 Type II Buildings]
   9. Nail Sealability: Pass per ASTM D1970.

B. Acceptable Manufacturers subject to meeting specified requirements:
   1. VaproShield Wall Shield or Wrapshield www.vaproshield.com
   2. Henry Blueskin VP160 www.henry.com
   3. Dow Corning Silicone Air Barrier : www.dow.com
   4. W.R. Meadows Air Shield SMP www.wrmeadows.com

2.2 ACCESSORIES

A. Attach and seal with primers, adhesives, mastics, tapes, through-wall flashing membrane, opening corners, sealants, and fasteners as recommended by the air barrier manufacturer and as follows:

1. Polyethylene or polypropylene tape with a water-resistant pressuresensitive adhesive is recommended for cold-temperature application to plastic sheets and metal: Owens Corning. Bild-R-Tape ; Proscoc R-Guard Mastic or approved.

B. Adhesive: recommended for cold temperature application to plastic and metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Drawing Details and field conditions to receive work for defects that will adversely affect the completed installation and for deviations beyond allowable tolerances.

B. Substrate surfaces shall be free of sharp projections or holes over which the air barrier sheet can easily be applied without tearing or puncturing.

C. Verify that substrate work by other trades is complete and ready for the air barrier.

D. The beginning of installation shall mean accepting the existing conditions as capable of producing an acceptable job.

3.2 INSTALLATION

A. Install the sheet barrier horizontally. The completed installation shall be continuous without gaps, holes, or tears, following the air barrier manufacturer s instructions for conditions of use and these specifications.

B. Layout the air barrier to provide a single sheet with a minimum number of joints where possible. Allow enough fullness or pleats at corners and offsets so that the finish material installation does not tear the air barrier.

C. Lap sheet air barrier joint seams four inches minimum, adhere, mechanically fasten, or tape to the backing, and seal continuously with tape. Lap the top layer over the bottom to shed water. Lap the air barrier over the flashings to allow water to escape.

D. Penetrations: Seal the air barrier continuously around all structural, mechanical, electrical, and other penetrations with tape and sealant. Tape an extra separate sheet of air barrier over as necessary.

E. Attachment: Tape, primer, adhesives, screws, and staples as recommended by the manufacturer. Seal holes caused by staples with tape.

F. Seal the air barrier to the door and window frames. Lap and tape the air barrier over the window and door header flashing to shed water. Underlay and tape the air barrier under the windowsill, flushing to shed water. G. Lap air barriers onto membrane roofing and apply sealant bed.

H. Repair: All punctures and tears by patching with extra lapping material twelve inches minimum and sheet taping, just before final cover-up.

3.3 AIR BARRIER SCHEDULE

A. Install a barrier on the exterior walls, as indicated on the DRAWINGS.

END OF SECTION

SECTION 07 31 14
ASPHALT FIBERGLASS SHINGLES

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 07 63 10 Flashing and Trim

1.2 APPLICABLE PUBLICATIONS

A. The Publications listed below form a part of this specification. The Publications may be referred to in the text by basic designations only. In case of conflict the most stringent shall apply.

1. ASTM D146 Test Method for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.
2. ASTM D412 - Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers Tension.
3. ASTM D1970 - Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials used as Steep Roofing Underlayment for Ice Dam Protection.
4. ANSI/ASTM D3018 - Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
5. ASTM D3161 - Test Method for Wind-Resistance of Asphalt Shingles (FanInduced Method).
6. ASTM D3462 - Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
7. ASTM D4586 - Specification for Asphalt Roof Cement, Asbestos-Free.
8. ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings.
9. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
10. ASTM D 4869-Standard Specification for Asphalt-Saturated Organic Felt Shingle Underlayment used in Roofing.
11. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
12. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual, 5th Edition, 2001.
13. International Building Code (IBC).

1.3 PERFORMANCE REQUIREMENTS

A. Fire Hazard Classification: IBC 1505 Class A or B assembly tested per UL 790 or ASTM E108.

B. Wind Force Resistance: IBC 1504 basic ground wind speed to 110 [130 for Malarkey Legacy] miles per hour 3 second gust, exposure D and importance factor 1.15 in accord with ASTM D3161 or UL 997.

1.4 SUBMITTALS

A. Product Data: performance data, materials, recommended use, application instructions, substrate surface preparation for all components proposed. B. Color surface texture and style selection.

C. Manufacturer and installer qualifications.

D. Copies of specified warranties.

E. Samples:
1. Asphalt Shingle.
2. Underlayment.

1.5 QUALITY ASSURANCE

A. Shingle Manufacturer Qualifications: Minimum 25 shingle projects of similar size in satisfactory use for over 5 years.

B. Installer Qualifications: Applicator approved in writing by shingle Manufacturer as an approved roofer prior to bidding and shall have minimum approved of 10 similar shingle installations.

1.6 PRE INSTALLATION MEETING

A. Contractor shall meet with OWNER after approval of submittals and 7 days prior to start of system installation.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not apply shingles or underlayment at ambient temperatures or in conditions other than those recommended in writing by the manufacturer and in no case when temperatures are expected to be below 40 degrees F, in rain or snow, or with dirt, frost or water on surfaces to be coated.

1.8 WARRANTY

A. Provide installer s warranty covering shingle, removal, repairs and replacement at No Charge to OWNER that roofing will remain free of damage and weather tight at wind speed specified in Performance Requirements for 2 years after Substantial Completion.

B. Provide shingle manufacturer warranty that roofing will remain damage free and weather tight at wind speed specified in Performance Requirements covering labor and material for 5 years after Substantial Completion.

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLES

A. Fiberglass/Polyester matt reinforced, SBS Modified Asphalt mineral surfaced [notched edge, laminated] Shingles per ASTM D3018 and meeting the following minimum requirements:
   1. Manufactured weight - 275 pounds per 100 square feet.
   2. Fire resistance per Performance Requirements.
   3. Wind resistance per Performance Requirements to 115 mph.
   4. Exposure: 5-5/8 inch maximum.
   5. Hip and ridge shingles shall be factory pre-formed.
   6. Color as selected by OWNER from Manufacturer s full color line, equal to Malarkey Alaskan .
   7. Factory applied self-seal strips per ASTM D3462.

B. Acceptable Manufacturers subject to specified criteria:
   1. Malarkey Roofing Company:, http://www.malarkeyroofing.com/
   2. Certainteed: http://www.certainteed.com/ .
   3. GAF www.gaf.com

C. Substitutions in accordance with Section 01 60 00 - Product Requirements.

2.2 SELF SEALING UNDERLAYMENT

A. Pre-Manufactured, bitumen, self-adhering, self-sealing sheet membrane waterproofing composed of high-strength polyethylene bonded to rubberized asphalt per ASTM D1970 recommended by underlayment manufacturer and shingle manufacturer for application as roof underlayment meeting the following requirements.
   1. Total thickness: 40-mil minimum.
   2. Maximum load at break: 25 pounds per inch per ASTM D1970.
   3. Asphalt elongation at break asphalt: 10 percent minimum per ASTM D1970.
   4. Low Temperature Flexibility: 180-degree bend over 1-inch mandrel at minus 20 degree F without cracking per ASTM D1970.
   5. Overall adhesion to Plywood and to adjacent membrane at 40 degrees F: 3.0 pound per inch width minimum per ASTM D1970.
   6. Sealability around nail: pass per ASTM D1970.
   7. Removable treated release paper, no special cleaning to self adhere entire sheet.
   8. Primer: as required by underlayment manufacturer for conditions of use.

B. Acceptable Manufacturers: subject to specified criteria:
   1. Ice and Water Shield by W.R. Grace: wwww.wrgrace.com
   2. Blueskin RF200 by Henry Company: http://henry.com/select/
   3. Underlayment manufactured by the approved shingle manufacturer.
   4. Substitutions in accordance with Division 01 General Requirements

2.3 ACCESSORIES

A. Shingle Nails:

1. Hot-dip galvanized steel or aluminum 12 gage (2.67mm) barbed or deformed shank with 0.375-inch minimum diameter head. Nail length to penetrate through sheathing.
2. Staples not permitted.

B. Adhesive:
1. Asphalt roofing cement approved by shingle manufacturer and ASTM D-4586 Specification for Asphalt Roof Cement, Asbestos-Free.

C. Mastics, flashings, sealants, adhesives, and other accessories necessary for a complete, water-tight application as recommended by underlayment manufacturer.

2.4 SHEET METAL FLASHING & TRIM

A. Specified in Section 07 63 10 Flashing and Trim.

B. Comply with IBC 1507: Metal Edge Trim.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine Drawings and field conditions prior to beginning work.

B. Verify that roof penetrations and plumbing stacks and openings are metal, in place and flashed 8 inches above deck surface.

C. Verify deck surfaces are broom clean, dry, free of ridges, warps, and voids over one inch, water damage or rot.

D. Beginning of installation means acceptance of interfacing surfaces as capable of producing an acceptable job.

3.2 PREPARATION

A. Replace existing rotted or damaged plywood roof decking with CD exterior grade plywood same thickness as existing sheathing. B. Broom clean deck surfaces.

3.3 UNDERLAYMENT INSTALLATION

A. Prime substrate as recommended by underlayment manufacturer.
B. Apply continuous fully adhered self-sealing underlayment over entire area to receive roofing. Adhere each sheet completely with shingled type overlapping joints 6 inches minimum to shed water in accord with underlayment manufacturer s instructions. Extend up all adjoining walls, 8 inches minimum over eave flashing. C. Extend up 6 inches minimum and seal around projecting items watertight.

D. Do not leave exposed to weather more than 15 days after installation.

3.4 METAL FLASHING INSTALLATION

A. Install in accord with IBC/NRCA and approved shingle manufacturer recommendations.
   1. Install drip edge at eaves and gable rakes per IBC

1507. B. Trim and bend around corners to form closure per

NRCA.

C. Nail or screw 6 inches o.c.

3.5 ASPHALT SHINGLE INSTALLATION

A. Install in accord with IBC 1507, NRCA, shingle manufacturer s written recommendations and approved submittals for high wind areas.

B. Mix shingles from different packages for consistent random color appearance over entire roof.

C. Install starter strip along lower roof edges consisting of shingle with tabs cut off and at least 7 inches wide with self-seal strip face up and nail to eave with edge overhanging rake and eave 3/8 inch. Lay first course directly over starter strip with ends flush with starter strip at eaves.
   1. Install first and remaining courses of shingles stair-stepping diagonal across roof with shingle manufacturers recommended offset pattern and maintaining uniform exposure.

D. Cutouts may break joints either thirds or halves but system shall be consistent over entire roof.

E. Hand seal each tab of each shingle tab with two ‰ -inch diameter dabs of asphalt plastic cement and as required by shingle manufacturer to obtain 100 mph wind warranty per approved manufacturer s instruction.

F. Place 6 nails in each shingle placed on line above cutouts. Place nail 1 inch from each end of strip and balance evenly spaced between. Should any nail fail to penetrate solid decking, drive additional nail nearby.

G. Place no nail head closer than 1 inch from the edge of shingle. Apply nail so that entire head bears tightly against the shingle without cutting into the shingle surface.

H. Install factory performed hip and ridge shingles.

I. Run ridge shingles with prevailing wind.

J. Install shingles and any step flashing at same time.

K. Fit shingles under lower edge and over sides and upper edge of pipe flashing. Set vent pipe flange in asphalt plastic cement. Embed shingles in asphalt plastic cement where they overlap flange.

L. Install closed-shingle covered valleys over self-sealing underlayment.

3.6 PROTECTION OF FINISHED WORK

A. Do not permit traffic over finished roof surface.

3.7 CLEANING

A. Clean shingles and building of soiling caused by this installation.

B. Leave materials clean and free of defects, stains, and damaged finish.

C. Remove debris resulting from work of this Section from roof and site.

END OF SECTION

SECTION 07 46 40
FIBER CEMENT WALL PANELS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry

B. Section 06 20 10 - Finish Carpentry and Architectural Woodwork

C. Section 07 27 10 Air and Water Barriers

D. Section 07 63 10 Flashing and Trim

E. Section 07 92 00 Joint Sealants

F. Section 08 41 10 Aluminum Entrances and Window Walls

G. Section 08 53 13 Vinyl Plastic Windows

H. Section 08 54 13 Fiberglass Windows

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. Publications may be referred in the text by basic designation only. In case of conflict the most stringent shall govern:
   1. ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus.
   2. ASTMC 920 Specifications for Elastomeric Joint Sealants.
   3. ASTM C 1186 Specification for Flat Non-Asbestos fiber-cement sheets.
   4. ASTM E 84 Test Method for Surface Burning Characteristics of Building Materials.
   5. International Building Code (IBC).

1.3 PERFORMANCE REQUIREMENTS

A. Wind loads per IBC chapter 16 for 120 miles per hour, Exposure B, Importance 1.15.

B. Maximum flame spread 25 and maximum smoke developed 400 per ASTM E 84.

1.4 SUBMITTALS

A. Manufacturer s literature including panel edge joint profiles, dimensions, materials, trim installation instructions, fastener, size, spacing, locations and finishes. For each different product used:

B. Samples for each different product used:
   1. Siding: (three) 6 inch long.
   2. Edge trim: (three) 6 inch long.
   3. Attachment Accessories

1.5 QUALITY ASSURANCE

A. Manufacturer history of successful manufacturing specified products for at least 25 similar projects.

1.6 WARRANTY

A. Provide a warranty from the siding manufacturer for 10 years from the date of acceptance for the following:
   1. Siding will remain undamaged at wind performance specified.
   2. Siding finish will not crack or blister. B. Repair or replace at no cost to Owner.

1.7 STORAGE AND PROTECTION

A. Protect materials from exposure to the weather as recommended by manufacturer until permanently installed in construction.

B. Store materials protectively covered from weather and off the ground.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide complete exterior wall panel assembly including any edge trims and attachment accessories.

2.2 MATERIALS

A. Fiber-reinforced cement wall panels recommended by manufacturer for exterior walls per ASTM C 1186, and meeting Performance Requirements.

B. Wall Panels:
   1. 3/4 inch thick by 71/8 inch high by 6-feet long.
   2. Stone or wood textured face: similar to Nichiha Sandstone .
   3. Factory finish surface.

C. Accessories: Complete color matching attachment and trim system for substrate and adjoining materials as indicated, meeting Performance Requirements.

1. Include: screws, starter track, furring corners, and clips.
2. Hot dip galvanized, stainless steel or aluminum corrosion resistant.

D. Acceptable Manufacturers: subject to complying with these specifications:
1. Nichiha Corpation: www.nichiha.com
2. Taktl Corporation 1/2-inch mesh reinforced concrete:www.taktlLic.com
3. Rieder FiberC , 1/2-inch extruded OKO fiberglass concrete: steve@mark.com

2.3 FASTENERS

A. 5/16-inch minimum head screws Number 12 (.164-inch) minimum diameter stainless steel or carbon steel corrosion resistant coated to resist 1000 hours of salt spray per ASTM B117 with no more than 5 percent red rust appearing on head or shank. Screws shall completely penetrate materials to be joined: 3 threads minimum.
1. Nails are not acceptable.

B. Minimum ultimate pullout value 400 pounds when tested through 16 gage steel or 1/2 inch plywood.

C. Staples or nails not permitted.

2.4 SEALANT

A. As recommended by siding manufacturer, and per ASTM C920.

PART 3 - EXECUTION

3.1 INSPECTION OF SURFACES

A. Examine substrate surfaces and the Drawing details for defects that will adversely affect the work, and for deviations beyond allowable tolerances.
1. Windows, doors, penetration and associated flashing shall be installed.
2. Air barrier shall be installed over sheathing.
3. Any furring shall be installed per siding manufacturer recommendations and DRAWINGS.

B. Start of work shall mean acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 GENERAL WORKMANSHIP

A. Work shall be plumb, level and square, or to alignment shown. Secure members with sufficient fasteners to provide wind resistance and in accord with siding manufacturer written instructions and approved submittals.

B. Cut and fit members neatly and together without chipping or splitting with any exposed fasteners evenly spaced.

C. Use one-piece members where possible, to avoid unnecessary splices.

3.3 PANEL INSTALLATION

A. Attach with screws 16 inch spacing maximum and as recommended by siding manufacturer to resist wind load performance.

B. Leave 1/4 to 3/8 inch gap around windows, doors and penetration for sealant installation.

3.4 TRIM BOARD INSTALLATION

A. Screw attach 16-inch spacing maximum: one-inch from board end and 3/4 inch from board side edge.

B. Evenly space screws for consistent appearance.

3.5 SEALANT INSTALLATION

A. Apply sealant in accord with panel manufacturers recommendations.

3.6 CLEAN UP

A. Upon completion of the work leave surfaces that are exposed in completed work clean, unblemished, and free from excess sealant.

3.7 TOLERANCES (NON-CUMULATIVE)

A. Bowing or Warping: 1/4 inch in 8 feet, joint adjacent surfaces: flush to 1/8inch.

B. Joint Width: evenly gapped zero to 1/8 inch.

C. Window and Door Openings: evenly gapped 1/4 to 3/8 inch.

END OF SECTION

SECTION 07 53 20
ADHERED EPDM ROOFING SYSTEM

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 07 62 10 Flashing and Trim

B. Section 07 72 33 - Roof Hatches

C. Section 07 92 00 - Joint Sealants

D. Division 22 Mechanical: roof drains

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. Publications may be referenced in the text by basic reference only. In case of conflict, the most stringent shall govern.

1. American Society for Testing Materials (ASTM) specific references as noted.
2. ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus.
3. ASTM C 165 Test Method for Measuring Compressive Properties of Thermal Insulations.
4. ASTM C209 Test Method for Cellulosic Fiber Insulating Board
5. ASTM C208 Specification for Cellulosic Fiber Insulating Board.
6. ASTM C518 - Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
7. ASTM C578 - Specification for Rigid, Cellular Polystyrene Thermal Insulation.
8. ASTM C1177 Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
9. ASTM C1289 Specifications for Faced Rigid Cellular Polisocyanurate Thermal Insulation Board.
10. ASTM D412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers Tension.
11. ASTM D471 Test Method for Rubber Property Effect of Liquids.
12. ASTM D624 Test Methods for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
13. ASTM D746 Test Method for Brittleness Temperatures of Plastics and Elastomer by Impact.
14. ASTM D816 - Methods of Testing Rubber Cements.

15. ASTM D882 - Test Methods for Tensile Properties of Thin Plastic Sheeting.

16. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
17. ASTM D1970 Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
18. ASTM D2137 Test Methods for Rubber Property Brittleness Point of Flexible Polymers and Coated Fabrics.
19. ASTM D4637 - Specification for Vulcanized Rubber Sheet Used in Single-Ply Roof Membrane.
20. ASTM D6369 Standard Guide for Design of Standard Flashing Details for EPDM Roof Membranes.
21. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials
22. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
23. ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings.
24. ASTM E2178 Test Method for Air Performance of Building Materials.
25. ASTM G87 Standard Practice for Conducting Moist SO_2 tests.
26. Rubber Manufacturer s Association (RMA) Roofing Council, Wind Design Guide for Roofing Systems.
27. RMA - Standard Practice for the Fabrication of Field Seams Using Tape Adhesive for Vulcanized EPDM Sheets Used in Roofing Applications.
28. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.
29. Underwriters Laboratories (U.L) - Fire Hazard Classifications.
30. UL 790 Tests for Fire Resistance of Roof Covering Materials.
31. Sheet Metal and Air Conditioning Contractors, National Association, in (SMACNA) Architectural Sheet Metal Manual.
32. International Building Code (IBC) Chapter 15.
33. U.S. Department of Commerce (DOC) PS-1 Structural Plywood Standard.
34. U.S. Department of Commerce (DOC) PS-20 American Softwood Lumber Standard
35. American Wood Preservers Association (AWPA) use standard.

1.3 SYSTEM DESCRIPTION TYPICAL (FROM TOP TO DECK) A.

Single-ply EPDM membrane: fully adhesive adhered.

B. Cover Board: adhesive adhered.

C. Insulation: screw the plate lower layer into the structural deck. Adhere upper layers of insulation with adhesive.
   1. Slope insulation where indicated for drainage.

D. Vapor retarder: self-sealing around screws.

E. Fire Sheathing Thermal barrier: screw into the structural deck.

F. Roof Structural Deck.

1.4 PERFORMANCE REQUIREMENTS

A. Wind Forces:
   1. Provide for wind speed and wind uplift resistance as indicated on Structural Drawings.
      a. Use a factor of safety of 2 over average screw pullout. B.

Fire Hazard Classification: IBC Class A per IBC 1505.

C. **[** FM Global Compliant systems are required.**]**

1.5 SUBMITTALS

A. Product data including components and installation instructions for each product including membrane, membrane adhesive, membrane sealants, cover board, insulation, fire sheathing, vapor retarders, flashings, batten termination strips, plate washers, fasteners, and adhesives.

B. Shop or manufacturer s Drawings:
   1. Details that vary from the Drawings.
   2. Roof plan showing sloped insulation location and thickness.
   3. Roof edge termination and flashings.
   4. Roof plan showing cover board attachment to resist wind performance requirements.

C. Screw pull-out test results for existing roof decks.

D. Warranties.

E. Membrane Manufacturers' experience qualifications.

F. Membrane Installer experience qualifications with job names, location, and Owner telephone numbers.

G. Certification from the installer that roofing materials installed meet these SPECIFICATIONS.

H. Roofing daily reports.

1.6 QUALIFICATIONS

A. Membrane Manufacturer: Company with manufacturing experience of 25 adhered EPDM membrane-roofing systems of similar size in satisfactory use for over 5 years.

1. Membrane Manufacturer shall provide a recommended system of installation details for flashing, penetrations and edge terminations.
2. Membrane Manufacturer shall provide a recommended system of adhered membrane with screw and adhesive attached insulation and approve other components as compatible.
3. Membrane Manufacturer shall have an approved applicator-training program.

B. Membrane Installer approved in writing by the membrane manufacturer.
1. Documented Experience with at least 5 adhered membrane roof installations of similar size in Alaska.

1.7 PRE-INSTALLATION CONFERENCE

A. When work is ready for roofing arrange a meeting at the job with the roof membrane manufacturer representative, roof membrane installer, Contractor Superintendent, and CONTRACTING OFFICER. B. Give 5 workdays notice before meeting.

C. Review proposed products, roof deck, installation procedures, and coordination of related work.

D. Have approved roofing product installation instructions available.

1.8 PRODUCT DELIVERY STORAGE AND HANDLING

A. Deliver materials to the site in manufacturer s original unopened packaging, dry undamaged with seals and labels intact.

B. Store products following manufacturer s instructions, above ground and protected from rain, snow, and moisture.

C. Store adhesives in a controlled environment at temperatures between 55 degrees and 80 degrees F.

D. Do not store products in concentrations exceeding forty (40) pounds per square foot on the roof.

1.9 WEATHER REQUIREMENTS

A. Do not apply roofing during rain, snow, or wind above 15 miles per hour or at temperatures below 40 degrees F. without special cold weather precautions including protective tarps, heated enclosures, and roofing manufacturer approval for the specific weather involved.

B. Do not apply roofing to damp or frozen substrate or insulation.

C. Maintain roof deck and roof membrane materials at temperatures above 40 degrees F for 12 hours before, and at all times during installation, and 12 hours after installation.

1.10 EXISTING CONDITIONS [EDIT]

A. Existing roofing to remain [Firestone] adhered EPDM was installed [in 1998] and is under warranty. Coordinate and provide intertie, which does not void Firestone warranty.

1.11 ROOFING WARRANTY

1. Provide a warranty from the roof membrane manufacturer for 10 years from the date of acceptance for the following:
   a. The roof membrane and associated flashing shall remain free from water leaks to the inside of the building and will remain undamaged at 100-mile-per-hour wind speed as recorded at the nearest airport.
2. Repair or replacement shall be at no cost (no dollar limit) to the OWNER.
3. Exclusions will be allowed only for natural disasters, building structural defects, and repairs or alterations not approved by the membrane manufacturer. No other manufacturer warranty conditions are allowed.
4. Arrange and pay for inspections necessary to provide the warranty.

1.12 INSTALLERS WARRANTY

A. Provide a warranty signed by the installer, including all components of the roofing system, for two years from the date of substantial completion.
   1. Roofing shall remain watertight and undamaged at the wind speed specified.

PART 2 PRODUCTS

2.1 ROOF MEMBRANE SYSTEM

A. Acceptable Manufacturers/Products subject to meeting specified criteria. Provide a complete roofing system from a single manufacturer or the membrane manufacturer shall approve other components in writing as compatible.

1. Firestone www.firestonebpco.com
2. Carlisle SynTec Systems www.carlislesyntec.com
3. Johns Manville www.jm.com

B. Material: Single sheet non-reinforced EPDM black color roof membrane per ASTM D4637 conforming to the following:
   1. Thickness: 0.090 inch minimum.
   2. Tensile strength: 1450-psi minimum per ASTM D412.
   3. Tear strength: 200-lbf/in minimum per ASTM D624.
   4. Elongation: 280 percent ultimate per ASTM D412.
   5. Brittleness point temperature: Minus 49 degrees F, per ASTM D746.
   6. Factory Seam Strength: membrane failure per ASTM D816.
   7. Resistance to Water Absorption: 2 percent maximum change in mass maximum after 7 days of immersion per ASTM D471.
   8. Fire retardant System to comply with U. L. requirements for class A roof surface.
   9. Ultra Violet weathering: no cracks, no crazing after 3000 hours.

C. **[EDIT]** Roofing assembly shall be equal to FM Global Roof NAV #374034-0-0.

2.2 FLEXIBLE FLASHING

A. Approved by the membrane manufacturer, but not less than EPDM sheeting .060 inch thick.

2.3 VAPOR RETARDER

A. Elastomeric, self-adhering, sheet membrane of high-strength polyethylene bonded to rubberized asphalt approved by roof membrane manufacturer meeting the following requirements.
   1. Vapor permeance: 0.05 perms max per ASTM E96.
   2. Total thickness: 40-mil minimum.
   3. Surface: non-skid suitable for adhesive bonding of subsequent layers.
   4. Maximum load at break: 25 pounds per inch.
   5. Low Temperature Flexibility: 180-degree bend over 1-inch mandrel at minus 15 degrees F without cracking.
   6. Self-sealing around nail or screw: ASTM D1970 pass.
   7. Removable release paper.
   8. Primer: as required by vapor retarder manufacturer for conditions of use.

2.4 ADHESIVES, SEAM SEALERS, TAPES AND SEALANTS

A. Approved by the roof membrane manufacturer for conditions of use.

1. Tapes: minimum 6 inches wide.
2. Adhesives certified in writing for wind uplift specified.

2.5 PIPE AND CONDUIT FLASHINGS

A. Single piece pre-molded or field formed .05 to .07 inch thick EPDM pipe flashing as recommended by membrane manufacturer, split to accommodate existing pipe where necessary.
   1. Stainless steel clamp around pipe.
   2. Minimum lap onto roof membrane 4-inches.

2.6 INSULATION

A. Expanded polystyrene foam insulation (EPS) board per ASTM C578, conforming to the following:
   1. Minimum thermal resistance R for 1 inch: 4.7 at 25 degrees F. per ASTM C518. Use thickness indicated on DRAWINGS.
   2. Nominal density: 1.5 pcf.
   3. Minimum compressive resistance 15 psi, per ASTM D1621.
   4. Maximum moisture absorption: 3 percent per ASTM C578. B.

Maximum size 4x4 feet for adhesive attached.

C. Shaped slope for positive drainage without ponding, and as indicated on the DRAWINGS.

D. Separate layers with joints offset 6-inches minimum on adjacent rows and on adjacent layers.

2.7 FIRE SHEATHING -THERMAL BARRIER

A. Roof Membrane Manufacturer approved.

B. 5/8-inch fire-resistant Type X gypsum sheathing with silicone-treated moisture-resistant core and fiberglass mat water-repellant facing (No paper facing) and edges per ASTM C1177. Acceptable manufacturer: Georgia Pacific Dens Deck Prime , or approved.

2.8 INSULATION COVERBOARD

A. Roof membrane manufacturer approved for use in construction of Class A roof system.

B. 5/8 inch fire-resistant gypsum sheathing with silicone treated moistureresistant core and paperless fiberglass mat water repellant facing (No paper facing) and edges per ASTM C1177. Acceptable manufacturer: Georgia Pacific Exterior Deck Prime , USG Securock , or approved.

2.9 SCREWS

A. Screws recommended by roofing component manufacturer and self-tapping stainless steel screws, or self-drilling carbon steel corrosion-resistant and abrasion resistant coated resistant to 1000 hours salt spray per ASTM B117, or 15 cycles per ASTM G87-Kesternich Cabinet Testing, with maximum 15 percent red rust, and no coating, blistering or cracking on head or shank. Specimen screws shall be driven through 22 gauge galvanized steel coupons.

B. Minimum 1/4 inch diameter screw with threads configured for 10-inch pounds minimum backout resistance: attach insulation through washers. The manufacturer shall certify minimum average actual pullout for 10 screws in 20-gage steel or 3/4 inch plywood: 400 pounds minimum.

C. Three-inch minimum diameter galvalume or galvanized steel washers for fire sheathing, insulation hold down as recommended by screw and roofing membrane manufacturer. Washers are shaped to provide a countersunk depressed area to allow the screw head to be completely below top of the washer.

D. Length required for screws to penetrate deck 1-inch.

2.10 INSULATION AND COVER BOARD ADHESIVE

A. Adhesive approved by membrane manufacturer for attachment of insulation layers to each other, to vapor retarder, and to cover board to resist wind uplift.

B. OlyBond BA , or equivalent urethane adhesive system approved by roofing membrane manufacturer.

2.11 WOOD LUMBER AND SHEATHING

A. Lumber: Minimum 1-1/2 inch thick lumber: Hem-fir No. 2 or better grade.

B. Plywood: 3/4 inch CDX grade per DOC PS-1.

C. **[EDIT]** Treated wood:
   1. Pressure preservative treat per AWPA UC2 Interior Damp use.
   2. Fire retardant treat in accordance with IBC 2303.2.
   3. Kiln dried to 19 percent maximum moisture content after treatment.

2.12 MEMBRANE BATTEN STRIP - TERMINATION BARS (TERM BAR)

A. Approved by membrane manufacturer, but not less than 1 inch wide by 16 gauge galvanized steel or 1/8-inch extruded aluminum with pre-drilled, countersunk holes at 6 inches on center.

B. Attach at 6 inches on center with 1/4-inch minimum diameter membrane manufacturer-approved stainless or corrosion-resistance coated steel screws.

2.13 ROOF WALKWAY PADS

A. Resilient rubber, minimum 3/8 inch by 2 feet by 2 feet: approved by the roof membrane manufacturer. Adhered to EPDM with compatible adhesive recommended by the roofing membrane manufacturer.

2.14 ACCESSORIES

A. Provide corrosion-resistant hot dip galvanized or stainless steel fastener plates and battens, adhesives, sealants, flashing, and other accessories necessary for a complete watertight roof system per membrane manufacturer instructions.

2.15 METAL FLASHING

A. Approved by roof membrane manufacturer for roofing edge wind load securement. IBC 1504.6 edge system is compliant with the wind loads specified.

PART 3 EXECUTION

3.1 DEMOLITION

A. Asbestos may be present in existing roofing consult OWNER and follow regulatory procedures for asbestos removal and disposal.

B. Remove and legally dispose of existing roofing where indicated.

C. Remove existing roofing residue from down to the structural deck, leaving no loose particles or blisters.

D. Obtain CONTRACTING OFFICER approval of the deck before proceeding.

3.2 EXAMINATION

A. Examine DRAWINGS and verify that surfaces and work conditions are ready to receive the work.

B. Verify that the deck surface is sound, smooth, free of voids, depressions, and projections over 1/4 inch, sharp edges, loose material, oil, grease, or other foreign matter per roof membrane manufacturer s instructions.

C. Verify that roof openings and penetrations are solid curbs extending above the proposed roof surface.

D. Beginning of installation shall mean acceptance of the existing conditions as capable of producing acceptable work.

3.3 SCREW FIELD TESTING

A. Verify screws meet wind performance requirements by pull tests into the existing roof deck. Pull tests are not required for new construction.

B. Perform 5 tests at widely spaced locations including three locations within 8 feet of roof corners on roof witnessed by CONTRACT ADMINISTRATOR. Use average pullout test results with a safety factor of 2 for design.

3.4 ROOF INSTALLATION GENERAL

A. Install air barrier, vapor retarder, insulation, and roofing following the roofing manufacturer's written recommendations, these Specifications, and applicable NRCA and ASTM D6369 instructions.

B. Install roofing-to-penetrations and roofing terminations as detailed on DRAWINGS or if not detailed: per NRCA construction membrane manufacturer-approved details.

C. Apply no more insulation than can be sealed with the membrane in the same day.

3.5 ROOFING DAILY REPORTS

A. Submit a report each day roofing is installed.

B. Comment and list:
   1. Weather, precipitation, and temperature.
   2. Roof deck condition.
   3. Membrane progress work accomplished.
   4. Number of workers.
   5. Equipment used.

3.6 WOOD LUMBER INSTALLATION

A. Anchor directly into structure or structural deck with minimum 1/4-inch galvanized screws with washers at 12-inch o.c. or 1/2 inch galvanized through

bolts with washers at 18-inch o.c. through structural deck or parapet. Offset 1 inch from each nailer edge.

B. Screw multi thickness nailers together … X 3 screws,12-inch o.c., or nail together with 16d galvanized nails at 12-inch o.c. staggered 1 inches from the edges. Lap corners.

C. Verify any existing blocking to be reused has screws or bolts equal to the above specification: add additional fasteners if needed to meet specification.

3.7 THERMAL BARRIER INSTALLATION

A. Install on the roof deck with corrosion-resistant screws through 2-inch minimum diameter plate washers to resist wind uplift specified.

B. Lay boards square with tight joints on raised deck flutes to cover steel decking completely. Stagger end joints.

3.8 VAPOR RETARDER INSTALLATION

A. Prime substrate as recommended by vapor retarder manufacturer.

B. Apply continuous fully adhered vapor with joints overlapping 6-inches to the weather slope in accordance with the manufacturer s instructions. Extend up all adjoining walls, beneath flashing, to the top of the cover board and seal to the roof membrane.

C. Extend up to the roof membrane and seal around projecting items watertight with urethane sealant.

D. Do not leave exposed to weather more than 15 days after the beginning of installation.

3.9 ROOF INSULATION AND COVERBOARD INSTALLATION

A. Install following insulation manufacturer recommendations and approved shop DRAWINGS.
   1. Install lower layer insulation with screws and plate washers or with adhesive to resist wind uplift specified.
   2. Install top layer insulation and cover board with adhesive to resist wind uplift specified.

B. Adhesive Installation:
   1. Install with adhesive in accordance with adhesive manufacturers recommendations to resist wind uplift requirements.
   2. Remove any loose debris/blisters from the substrate; clean and prime coat as recommended by the adhesive manufacturer.

3. Walk insulation boards into the adhesive and roll using a 30-inch wide, 100-150 pounds weighted roller to ensure full embedment. Place two 50-pound sandbags or equal weights over each 4 by 4 foot area for one hour minimum after placing without moving.

C. Install sloped insulation to produce smooth surfaces sloping to drains. Cut insulation to slope for a distance of 24 inches around roof drains for positive drainage.

D. Cover and seal with membrane on the same day.

E. Butt all joints tight.

F. Offset joints on adjacent rows of boards and between top and bottom insulation layers at least 6 inches and under the insulation manufacturer s instructions, to avoid alignment of joints.

G. Fit boards closely around penetrations. Maximum space allowed: 1/4 inch.

3.10 ROOF MEMBRANE INSTALLATION

A. Install roof membrane and flashings in accordance with the approved shop DRAWINGS, applicable references, and the roof membrane manufacturer s current written instructions for a completely adhesive adhered roof membrane system to meet performance requirements.

B. Extend membrane up and over the top of parapets and curbs, down exterior under flashing.

C. Lap membrane splices 4 inches minimum. Clean and seal with membrane manufacturer-approved primer, adhesives, or tapes. Lap membrane so water will flow over, or along seams.

D. Use adhesive tape or apply a continuous bead of lap sealant to the exposed edge of the lap. Complete lap seal on joints by the end of each workday.

E. Screw fasten perimeter with termination bars or plates following manufacturer s instructions: 6 inches o.c. maximum.

F. Flexible Flashing and Expansion Joints:
1. Lap six inches minimum over the roof membrane. Clean and seal with approved adhesives.

G. Pipe and Tube Flashing:
1. Use pre-molded EPDM flashing with stainless steel clamp bands.

H. Seal edges and penetrations of the membrane at attachment screws with membrane manufacturer-approved sealant.

3.11 TEMPORARY WATER SEAL

A. Allow no water to flow under sections of the roofing membrane. Temporarily seal all exposed edges of the membrane at the end of each workday and when rain or snow appears imminent.

B. Use products and procedures recommended in writing by the roof membrane manufacturer.

3.12 METAL FLASHING INSTALLATION

A. Install metal flashing approved by the roofing membrane manufacturer and as specified in Section 07 62 10 which contacts roofing in accord with approved shop DRAWINGS and best SMACNA practices.

B. Set metal flashing flanges in approved sealant on top of the completed roof membrane in accordance with the roof membrane manufacturer s written instructions. Do not install metal under the main roofing membrane.

C. Fasten metal flashing hem edges at exterior with continuous galvanized hook holddowns 20 gage minimum, screw at 12 inches maximum with No. 14 screws, penetrating at least 1 inch into solid backing. Set holddown into the continuous sealant. Fasten the interior side of the flashing 12 inches maximum with No. 14 screws and seal washers centered in slotted flashing holes into solid backing.

D. Set metal counterflashing firmly into a reglet joint by use of screws. Fill the reglet continuously after flashing installation with silicone-based sealant.

E. Lap flashing joints 3-inches or provide 1/2 inch expansion space at joints with 4-inch wide splice cover plates in linear flashings at 10 feet on center maximum.
   1. Install screw through splice plates center on cover plates over 8-inch long.

3.13 ROOF DRAINS

A. Install roofing membrane into roof drain clamp with sealant.

B. Test roof drains for proper flow and water tightness.

3.14 ROOF WALKWAY PAD INSTALLATION

A. Install in accordance with pad manufacturer s instructions using membrane compatible adhesive; space 2 to 4 inches for drainage.

B. Install walkway pads around hatches, ladders, and HVAC maintenance access panels and as indicated.

3.15 CLEAN UP

A. Repair or remove and replace damaged finishes caused by work of this Section.

B. Remove excess roofing materials.

C. Remove visible dirt, hand, and footprints.

3.16 INSULATION SCHEDULE

A. Typical roof insulation:
   1. Two separate layers; overall minimum thickness: 8 inches.

B. Sloped insulation to provide a positive drainage of 3/8-inch per foot minimum.

C. Off set joints 6-inch minimum from other layers.

END OF SECTION

SECTION 07 62 10
FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 04 22 00 - Concrete Unit Masonry

B. Section 04 21 13 Thin Brick Veneer

C. Section 04 42 00 Native Stone Veneer

D. Section 06 10 00 - Rough Carpentry

E. Section 07 31 10 Asphalt Fiberglass Shingles

F. Section 07 41 14 Metal Standing Seam Roof Systems

G. Section 07 42 13 Aluminum Composite Wall Panels

H. Section 07 41 16 Insulated Metal Roof Panels

I. Section 07 46 10 Metal Lap Siding

J. Section 07 46 30 Vinyl Siding and Soffit

K. Section 07 51 10 Conventional Asphalt Roofing

L. Section 07 52 00 Modified Bituminous Membrane Roofing

M. Section 07 53 20 Adhered EPDM Roofing System

N. Section 07 55 51 Protected Bitumen Roofing System

O. Section 07 55 53 Protected EPDM Roofing System

P. Section 07 57 00 Coated Foamed Roofing

Q. Section 07 92 00 - Joint Sealants

R. Section 08 16 10 Fiberglass Doors and Frames

S. Section 08 41 13 Aluminum Entrances and Window Walls

T. Section 08 44 00 Glazed Curtain and Window Walls

U. Section 08 54 13 Fiberglass Windows

V. Section 09 91 00 Painting

W. Section 13 34 19 Metal Building Systems

1.2 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this Specification. Publications may be referenced in the text by basic reference only. In case of conflict, the most stringent shall govern.

1. American Society for Testing Materials (ASTM) specific references as noted.
2. ANSI/ASTM A167 - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
3. ASTM A480 - Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
4. ASTM A653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
5. ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus.
6. ASTM B209 - Specification for Aluminum and Aluminum-Alloy, Sheet, and Plate.
7. ASTM B749 Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.
8. ASTM C920 - Specification for Elastomeric Joint Sealant.
9. ASTM D146 - Test Methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.
10. ASTM D779 Standard Test Method for Water Resistance of Paper, Paperboard, and other sheet materials by Dry Indicator Method
11. ASTM D828 Tensile Properties of paper and paperboard using Constant-Rate of Elongation Apparatus.
12. ASTM D1004 - Test Methods for Initial Tear Resistance of Plastic Film and Sheeting.
13. ASTM D1876 - Test Methods for Peel Resistance of Adhesives.
14. Sheet Metal and Air Condition Contractor s National Association (SMACNA) Architectural Sheet Metal Manual .
15. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
16. American Welding Society (AWS) Code for Welding in Building Construction .
17. Society for Protective Coatings (SSPC) Systems and Specifications.
18. International Building Code (IBC).
19. American Architectural Manufacturers Association (AAMA) 621 Voluntary Specifications for High-Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized and Zinc-Aluminum Coated Steel Substrates.

B. ASTM G87 Standard Practice for conducting Moist SO2 test.

1.3 SUBMITTALS

A. Shop Drawings and Manufacturer s Literature: Including dimensions, materials, joints, fasteners, anchorage, installation recommendations, details, and location in complete work if the work proposed differs from Contract DRAWINGS.

1.4 1.5 PERFORMANCE REQUIREMENTS

A. IBC 1504.5 compliant roofing edge flashings are required.

PART 2 - PRODUCTS

2.1 GALVANNEALED STEEL SHEET

A. American Society for Testing and Materials ASTM A653 cold rolled steel sheet, lock-forming quality. Hot-dip Galvannealed zinc coating on both sides of at least 0.90 ounces per square foot total. (G90).

B. Minimum thickness 24-gauge except for unbacked spans over 12-inches 20gauge unless indicated otherwise. Special thickness per DRAWING details. Anchor clips and hook strips 20-gauge.

2.2 FLEXIBLE FABRIC ROOFING FLASHING

A. EPDM sheeting reinforced .060 inches minimum thickness as recommended by the manufacturer for exterior exposed installation.

B. Flashing shall be flexible to minus 30 degrees F. minimum.

C. Use the manufacturer s recommended adhesives and sealants.

D. Johns Manville, Firestone, or Carlisle.

2.3 ALUMINUM SHEET

A. 5005 or 3003 alloy with temper required for forming, per ASTM B209. Minimum thickness: 0.040 inches.

2.4 STAINLESS STEEL SHEET

A. Minimum thickness 22-gauge with No. 3 satin finish unless otherwise indicated per ASTM A167 or ASTM A480.

2.5 LEAD SHEET

A. 2 1/2 pounds per square foot suitable temper for roof drains and plumbing pipe

flashing per ASTM B749.

2.6 PLYWOOD SIDING ZEE FLASHING

A. Minimum: 0.028-inch-thick mill finish aluminum.

B. Horizontal zee-shaped to lap siding ‰ inch.

2.7 FLEXIBLE FLAME-RESISTANT FLASHING [COORDINATE WITH 07 27 10 AIR AND WATER BARRIERS, IBC I403 FLAMMABILITY TESTING]

A. Elastomeric, self-adhering, water-resistant sheet membrane waterproofing with reinforcement core recommended by the manufacturer for application for concealed window flashing, meeting the following requirements:
   1. Preformed Corners and sill dorms.
   2. Total thickness: 20 mil minimum.
   3. Water resistance: 100 hours per ASTM D779.
   4. Tensile Strength: 5 pounds per inch per ASTM D828.
   5. Sealability around nail and screw penetrations: seals watertight.
   6. Sealant and Primer: as recommended by the flashing manufacturer for conditions of use.
   7. Termination bar with fasteners if recommended by flashing manufacturer for conditions of use.

B. Approved manufacturer subject to meeting specified criteria:
   1. Hohmann and Barnard, Mighty Flash www.h-b.com,
   2. Dupont: FlexFlash or Straight Flash www.tyvekconstruction.com,
   3. Vaproshield Wall Shield www.vaproshield.com.
   4. Carlisle EPDMTWF www.carlisleccw.com

C. Substitutions per Section 01 60 00 - Product Requirements

2.8 FLEXIBLE RUBBER-ASPHALT FLASHING

A. Pre-manufactured, elastomeric, self-adhering, self-sealing sheet membrane waterproofing composed of high-strength polyethylene sheet plastic bonded to rubberized asphalt per ASTM D1970 recommended by the manufacturer for application as concealed flashing meeting the following requirements.
   1. Total thickness: 40 mil minimum.
   2. Maximum load at break: 25 pounds per inch per ASTM D1970.
   3. Elongation at break, asphalt: 10 percent minimum per ASTM D1970.
   4. Low-Temperature Flexibility: 180-degree bend over 1-inch mandrel at minus 20 degrees F without cracking per ASTM D1970.
   5. Overall adhesion between Plywood and adjacent membrane at 40 degrees F: 3.0 pound per inch width minimum per ASTM D1970.
   6. Sealability around nail: pass per ASTM D1970.
   7. Removable release paper.

8. Primer: as recommended by the underlayment manufacturer for conditions of use.

B. Approved manufacturer subject to meeting specified criteria:
   1. W.R. Grace Bituthene Ice and Water Shield roof flashing or Perm ABarrier wall flashing by W. R. Grace, www.wrgrace.com,
   2. CCW-705 TWF - www.carlisleccw.com
   3. Hohman & Barnard Flex-Flash by, www-h-b.com,
   4. Fortifiber Building Systems Moistop Next by, https://henry.com/residential-and-light-commercial/

C. Substitutions per Section 01 60 00 - Product Requirements.

2.9 LIQUID APPLIED MASTIC FLASHING

A. Liquid applied mastic recommended by the manufacturer for wall opening penetrations, and self-sealing around fasteners.

B. Approved manufacturers: subject to meeting specified criteria:
   1. Dow Corning Liquid Armor , www.dowcorning.com
   2. Prosoco R-Guard , www.prosoco.com
   3. Dupont TyvekFluid Applied Flashing , www.dupont.com

2.10 FASTENERS

A. Number 14 (1/4-inch) stainless steel or corrosion and abrasion-resistant coated carbon steel resistant to 1000 hours salt spray per ASTM B117 or 15 cycles per ASTM G87 Kesternich Cabinet Testing; testing with 15 percent maximum red rust, and no coating blistering or cracking on head or shank.

B. Exposed fasteners: Number 14 (1/4-inch) diameter screws preassembled with a 3/4-inch diameter 18-gauge tapered lip stainless steel washer bonded to an EPDM sealing gasket washer. Factory-painted heads to match the adjacent metal color.

C. Use round or pan head Phillips screws for concealed work.

D. Nails and pop rivets are not permitted.

E. Screws shall penetrate metal substrate ‰-inch or penetrate wood substrate 11/2-inches.

2.11 ACCESSORIES-ATTACHMENTS

A. Primers, clips, hook strips, angles, cover plates, inserts, and other accessories, as necessary for secure attachment shall be the same material as flashing and under SMACNA and NRCA recommendations. Fabricate anchor clips and hook strips one gauge thicker than the attached flashing.

B. Reglets: Surface mounted type, 5-inches high minimum, for continuous sealant fillet, Fry type SM or equal substitution.

C. PVC Reglet built into masonry joint, 5/8-inch internal depth to fit into 3/8-inch mortar joint, face piece keeps mortar out and tears off before installation. Hohman & Barnard-Sandell: www.h-b.com or equal.

2.12 SEALANTS

A. Single component silicone or urethane per ASTM C920.
   1. Tape sealant may be used for straight lap joints: 50 percent butyl, 1/4-to1/2-inch width, and thickness.

B. Color: Standard color nearest match to flashing finish color for exposed sealants.

2.13 METAL FABRICATION

A. Fabricate per approved submittals and the best commercial practice of SMACNA and NRCA. Form sections square, true, and accurate to size, free from distortion and to fit substrate.

B. Fabricate sheets or panels in the longest lengths practical, true to details, and free of dents, scratches, and tool marks. Make allowances for thermal expansion-contraction at joints.

C. Cross break as necessary to prevent oil canning . Form lines and edges straight and neat. Form bent-metal corners to the smallest radius possible without causing grain separation. Roll exposed edges back on the underside to form a folded, hemmed edge, 1/2-inch minimum (3/4-inch minimum to engage hold down). Slope exposed vertical bottom edges 45 degrees to form a drip.

D. Welding shall be per AWS for the type of weld and material. Grind exposed welds smooth and flush. Coat welds and bare metal abrasions in galvannealed steel with SSPC 20 zinc-rich epoxy primer paint.

E. Joints shall be weathertight and have provisions for expansion and contraction. Lap joints and corners are watertight. Lap in the direction of water flow. Provide slotted holes at exposed gasketed screws.

2.14 PAINTING

A. Clean metal before painting by solvent cleaning SP-1, followed by an acid etch and hand cleaning SP-2 per SSPC.

B. Shop paint 1 primer coat and 2 finish coats per finish paint manufacturer s instructions.

C. Factory Coil paints PVDR coating per AAMA 621 is acceptable in place of shop paint.

2.15 MECHANICAL ROOF PENETRATION CURBS

A. One piece welded watertight 18-gage 18-inch high above roof minimum with 2inch minimum insulation and 12-gage ice deflector cricket as detailed on DRAWINGS.
   1. Acceptable manufacturers: Thycurb : www.thybar.com

PART 3 - EXECUTION

2.16 EXAMINATION

A. Examine the DRAWING details and field conditions to receive the work for defects that will adversely affect the completed work and for deviations beyond allowable tolerances.

B. Beginning of installation shall mean acceptance of existing conditions as capable of producing an acceptable job.

2.17 DISSIMILAR MATERIALS

A. Steel contacting aluminum, concrete, masonry, or treated wood shall have contact surfaces separated by a heavy coat of bituminous paint, 40 mils selfadhering rubber sheet, or by non-absorptive tape.

B. Separation materials shall be trimmed to not be visible in exposed completed work.

2.18 INSTALLATION

A. Install all flashings under the best commercial practice of SMACNA, and NRCA, and following approved submittals, plumb, level, or to alignment shown on the
DRAWINGS.

B. Joints shall be weathertight and have provisions for expansion and contraction.
Lap to shed water flow outside.
   1. Lap flashing over door and window head and sill.
   2. Lap metal flashing 4-inch minimum with sealant tape to shed water.
   3. Extend flashing 8-inch minimum above roofing.

C. Provide roofing edge flashing and parapet flashing joints with a 5-inch wide inside cover plate set in sealant and gasket head screws on one side allowing ‰-inch movement space between flashing: or overlap 4-inch minimum in sealant with gasket head screws along open seams 4-inch on center.

D. Cut components neatly to fit against the adjacent member.

E. Field cut members exposed in the completed work so that the finish is not damaged. Leave no exposed sharp edges.

F. Length of screws shall be sufficient to fully penetrate metal or plywood, or 1 1/2inch minimum into solid backing.

G. Cutting or drilling of building structural components shall not be permitted unless approved by ARCHITECT in writing.

H. Touch-up steel with paint primer and finish coat equal to adjacent panel finish coating at bare metal abrasions.

I. Install EPDM [underlayment] fabric flashing over the entire area under parapet and edge flashing. Prepare seams by cleaning, applying adhesive, lapping to shed water, and applying seam sealant following the EPDM manufacturer s written instructions.

J. Fasten metal flashing at exterior edges with continuous galvanized holdown hook strip, 20-gauge minimum, screwed at 12-inches on center, with No. 14 screws, holding cleat, penetrating at least 1-1/2-inches into solid backing. Set holdowns in continuous sealant. Fasten the interior side of the parapet flashing 12-inches on center with 1/4-inch steel screws and seal washers through flashing holes slotted to allow thermal movement.

K. Secure metal counterflashing into a reglet joint by use of screws. Fill the reglet continuously after flashing installation with silicone-based sealant sloped to shed water.

L. Install liquid-applied mastic flashing in and around wall penetrations including windows and doors.

2.19 ANCHORAGE AND ATTACHMENT

A. Spacing and quantity of anchor fasteners as indicated and required to develop permanent weather-tight joints on exterior work.

B. Maximum spacing of exposed fasteners shall be 12-inches evenly spaced within 1-1/2-inches of panel edges unless closer spacing is indicated.

2.20 SEALANT APPLICATION

A. As recommended by sealant manufacturer-approved submittals, to provide permanent, weathertight joints. Set lapped seams in sealant bed or sealant tape.

B. Joints shall be sealed continuously against the weather and have provisions

for expansion and contraction.

C. Seal moving lap flashing joints with 2 rows of sealant tape.

END OF SECTION

SECTION 07 84 10
FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 07 92 00 - Joint Sealants

B. Section 09 91 00 - Painting

C. Mechanical - Firestopping for mechanical penetrations of fire-rated walls, ceilings, floors.

D. Electrical - Firestopping for electrical penetrations of fire-rated walls, ceilings, floors.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications are referred to in the text by basic designation only. In case of conflict only the most stringent shall govern.

1. ASTM C717 - Terminology of Building Seals and Sealants.
2. ASTM C920 - Specification for Elastomeric Joint Sealants.
3. ASTM C1193 - Guide for Use of Joint Sealants.
4. ASTM E114 Test Method for Fire Tests of Penetration Firestop Systems.
5. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
6. ASTM E1399 Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems.
7. ASTM E1966 (Ansi/UL2079) Test Method for Fire-Resistive Joint Systems.
8. ASTM E2174 Practice for On-Site Inspection of Installed Fire Stops.
9. ASTM E2393 Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.
10. ASTM E814 - Test Method for Fire Tests of Through-Penetration Fire Stops.
11. Underwriters Laboratories (U.L.) Product Directories.
12. U.L. 2079 Tests for Fire Resistance of Building Joint Systems.
13. Inchscape Testing Services - Warnock Hersey (W.H.) Certification Listings.
14. International Code Conference (IBC) Evaluation Reports.
15. International Building Code (IBC), Chapter 7 Fire and Smoke Protection Features: Section 714 Penetrations Section 715 - Opening Protectives.
16. IBC 1705 - Required Special Inspections and Tests.

1.3 SUBMITTALS

A. Identify location in building for each assembly.

B. Firestopping assembly s sealant, backing, bond breaker Manufacturer s Literature: Including recommendations for compatibility with adjoining surfaces and installation.
   1. Verify Sealant adhesion and primer requirement.

C. Product Labeling: Each firestop material or container shall bear manufacturer s label and name, type, color, and applicable standards. D. U.L., or W.H., or ICC approval.

E. Manufacturer experience qualifications.

1.4 QUALITY ASSURANCE

A. U.L., W.H., or ICC performance report for the fire resistance specified.

B. Manufacturer of firestop shall have provided at least 100 successful fire stop assemblies like that proposed.

C. Applicator is responsible for verifying sealants used are compatible with joint substrates.

1.5 PRE-INSTALLATION MEETING

A. At jobsite prior to firestopping.

B. CONTRACTING OFFICER, CONTRACTOR AND INSTALLER shall review approved firestopping products and joints to receive products.

1.6 DELIVERY AND STORAGE

A. Deliver in manufacturer s original unopened container, clearly indentifying each product.

B. Store in accord with manufacturer s recommendations.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not apply sealants at ambient temperatures recommended in writing by the manufacturer, and in no case below 40 degrees F, in rain or snow, or with frost or water on the components.

B. Maintain sealants recommended surrounding temperatures for 48 hours, or until cured.

PART 2 - PRODUCTS

2.1 FIRE-RESISTANT PENETRATION ASSEMBLIES

A. U.L., W.H., or ICC approved in accord with IBC Section 714 and as tested per ASTM E814 or UL 1479.
   1. F (fire-resistance) rating shall be not less than the required fire resistance of the building component penetrated.
   2. T (temperature rise) ratings are not required for floor penetrations inside the cavity of a wall.

B. Exceptions for metal penetrations in accord with IBC 714 are acceptable.

2.2 FIRE RESISTANT JOINT SYSTEMS

A. U.L., W.H., or ICC approved resilient foam or sealant applied in conjunction with mineral wool in accord with IBC Section 715 and as tested per ASTM E1966 or UL 2079.

2.3 PRIMERS

A. Recommended in writing by the firestop manufacturer for the substrate material and condition of use.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and field conditions to receive sealants for defects that will adversely affect the work, and for deviations beyond allowable tolerances.

B. Beginning of installation shall mean installer accepts existing conditions as capable of producing an acceptable job.

3.2 PREPARATION

A. Clean loose dirt, corrosion, curing agents, protective coatings, water proofers, moisture, frost, and other foreign material from surfaces to receive fire resistant sealants and primers using techniques and cleaning agents recommended by firestop manufacturer.

B. Paint: Where scheduled shall be applied after sealant application.

C. Primer: Where recommended by manufacturer shall be neatly applied before back-up materials and sealant application. Mask or otherwise protect adjacent surfaces from excess primer.

3.3 FIRESTOP INSTALLATION

A. Apply in accordance with manufacturer s written recommendations to obtain a

fire resistance equal to or greater than the surrounding wall or ceiling construction in accord with U.L., W.H., or ICC. B. Mask as necessary.

C. Size sealant materials to achieve sealant manufacturer s recommended width to depth ratio: typical depth in joint 1/2 width of joint.

D. Tool joints as necessary to produce a consistent smooth joint without voids and foreign matter.

E. Completed sealed joints shall be uniform, free of voids, sags, and foreign material, flush with adjacent surfaces.

3.4 FIRESTOP SCHEDULE [EDIT]

A. General requirements for building Type 1-A [Type II B] fire-resistance per IBC Table 601:
   1. Floors and bearing walls: No fire resistance required.
   2. Roof: Structure: No fire resistance required.
   3. Around mechanical-boiler room: floor, walls, and ceiling: 1-hour.
   4. Around kiln room floor, walls, and ceiling: 1-hour.
   5. Vertical Shafts: 1-hour.
   6. Around fire and smoke rated rooms: indicated on DRAWING Code Summary.
   7. Exit Stair: enclosure shafts: 1-hour [2 hour over four stories].

B. Around penetrations and holes through fire resistance rated floors, walls, shafts, and ceilings.

C. Building expansion and seismic joints.

D. Voids between fire resistance rated walls and adjacent walls.

E. Voids between top of fire resistance rated walls and ceiling above.

F. Between floor and exterior wall.

G. Other joints: As indicated on DRAWINGS and in SPECIFICATIONS.

3.5 CLEAN UP

A. Remove surplus materials and excess sealant from surrounding surfaces at completion of each day s work.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 03 30 00 Cast-in-Place Concrete

B. Section 07 27 10 Air and Water Barriers

C. Section 07 53 20 Adhered EPDM Roofing System

D. Section 07 54 13 Fiberglass Windows

E. Section 07 55 53 Protected EPDM Roofing System

F. Section 07 62 10 Flashing and Trim

G. Section 07 84 00 Firestopping

H. Section 08 11 10 Hollow Steel Doors and Frames

I. Section 08 16 13 Fiberglass Doors and Frames

J. Section 08 41 10 Aluminum Entrances and Window Walls

K. Section 08 80 00 Glazing

L. Section 08 44 00 Glazed Curtain and Window Walls

M. Section 09 21 16 Gypsum Board Assemblies

N. Section 09 91 00 Painting

O. Division 26, 27, 28 Electrical

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications are referred to in the text by the basic designation only. In case of conflict only the most stringent shall govern.

1. ASTM C510 - Test Method for Staining and Color Change of Single or Multicomponent Joint Sealants.
2. ASTM C717 - Terminology of Building Seals and Sealants.
3. ASTM C719 Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
4. ASTM C834 - Specifications for Latex Sealants.
5. ASTM C919 - Practice for Use of Sealants in Acoustical Applications.
6. ASTM C920 - Specification for Elastomeric Joint Sealants.
7. ASTM C1193 - Guide for Use of Joint Sealants.

8. ASTM C1330 Specification for Cylindrical Sealant Backing for use with Cold Liquid Applied Sealants
9. ASTM D1667 - Specification for Flexible Cellular Materials Poly Vinyl Chloride Polymers and Copolymers Foam (Closed-Cell).

1.3 SUBMITTALS

A. Sealants including colors, backing, and bond breaker: Manufacturer s Literature: Including recommendations for cleaning substrate, application temperatures, and compatibility with adjoining surfaces and application.
   1. Verify Sealant adhesion, primer, and staining requirements.

B. Product Labeling: Each sealant material container shall bear the manufacturer s label and name, type, color, and applicable standards.

1.4 QUALITY ASSURANCE

A. Manufacturer of sealant shall have been in the business of manufacturing construction sealants with at least 500 successful projects of similar size.

B. Applicator shall be responsible for verifying sealants used are compatible with joint substrates.

1.5 DELIVERY AND STORAGE

A. Deliver in the manufacturer s original unopened container, clearly identifying each product.

B. Store under the manufacturer s recommendations.

1.6 TEMPERATURE REQUIREMENTS

A. Do not apply sealants at ambient temperatures below those recommended in writing by the manufacturer, and in no case, in rain or snow, or with, dirt, frost, or water on the components.

B. Install with temperatures between 25- and 55-degrees F. by temporary enclosure and heating as necessary for 12 hours before, during, and 24 hours after installation.

C. Protect sealants until cured.

PART 2 - PRODUCTS

2.1 GENERAL

A. Compatibility: Provide sealants, backing, and primers that are compatible with one another and recommended by the manufacturer for substrates and for conditions of service.

B. Acceptable Sealant Manufacturers: Subject to compliance with specified criteria:

1. Dow Corning www.dow.com
2. General Electric www.gesealants.com
3. Tremco www.tremco.com
4. Sika Corporation www.usasika.com
5. Sonneborn www.sonneborn.com

2.2 TYPICAL JOINT SEALANTS

A. Typical use unless otherwise noted:
   1. Single component non-sag, non-staining, silicone type.
   2. Movement range 50 percent, plus or minus.
   3. Shore A hardness 15-25.
   4. Recommended in writing by the manufacturer for the condition of use.
   5. ASTM C920.
   6. Color: match adjacent surfaces as closely as possible unless indicated otherwise on the DRAWINGS, using one of the manufacturer s standard colors including black, white, brown, grey, and translucent.

B. For metal flashing, tile, and vapor retarder and as indicated or specified in applicable product sections:
   1. Single component non-sag non-staining polyurethane type.
   2. Movement range plus or minus 25 percent.
   3. Shore A hardness 25-40.
   4. ASTM C920.
   5. Color: Same as those specified for silicone.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and field conditions to receive sealants for defects that will adversely affect the work, and for deviations beyond allowable tolerances.

B. Beginning of installation shall mean the installer accepts existing conditions as capable of producing an acceptable job.

3.2 PREPARATION

A. Clean and remove loose dirt, oil, corrosion, curing agents, protective coatings, existing sealants, waterproofers, moisture, frost, and other foreign material from surfaces to receive sealants and primers using approved techniques and cleaning agents recommended by the sealant manufacturer.

B. Paint: Where scheduled shall be applied after sealant application.

C. Primer: Where recommended by the sealant manufacturer shall be neatly applied before backup materials and sealant application. Mask or otherwise protect adjacent surfaces from the excess primer.

3.3 BACKING MATERIALS AND BOND BREAKERS INSTALLATION

A. Install per ASTM C1193, approved sealant manufacturer s written recommendations, and the following. Apply acoustical sealants per ASTM C919. Verify non-staining of adjacent porous materials and compatibility.

B. Use joint backer bond breaker filler rod for joints over 1/4-inch wide.

C. Allow for the manufacturer s recommended width-to-depth ratio. Do not set deeper than the width of the joint.

D. Do not stretch lengthwise to the joint.

3.4 SEALANT INSTALLATION

A. Apply following the manufacturer s written recommendations for conditions of use.

B. Mask as necessary to provide straight neat edges.

C. Size sealant materials to achieve the sealant manufacturer s recommended widthto-depth ratio: typical depth in joint shall be 1/2 width of the joint. Sealant depth shall be 1/4 to 3/8-inch and joint width at least 2 times the expected movement.

D. Install weep tubes to drain exterior cavities to outside at 16-inch maximum spacing.

E. Lapped joints: shall receive continuous bed of sealant or sealant tape before assembly. Whenever practical, joints shall be bedded or coated continuously before assembly. Lap joint sealant shall have a minimum lap width of 3/8-inch by 1/4-inch minimum depth.

F. Apply under continuous pressure ahead of the sealant gun.

G. Tool joints as soon as possible to produce a consistent smooth joint without voids and foreign matter shape sealant to shed water.

H. Completed sealed joints shall have a uniform, straight sealant bead free of voids, sags, and foreign material.

3.5 JOINTS TO RECEIVE SEALANT

A. Exterior: Building joints exposed to the weather and moisture in the completed work as specifically indicated on DRAWINGS and including:

1. Door and window frames.
2. Thresholds.
3. Pipe and duct penetrations in walls and roof
4. Metal roof and wall panels.
5. Between walls and adjacent paving.
6. Flashing joints.
7. Top of reglets.

B. Interior as specifically indicated on DRAWINGS and including:

1. Concrete floor joints.

2. At floor and untaped top of gypsum wallboard at deflection head of walls.
3. Floor joints to wall joints in mechanical rooms.
4. Around door frames.
5. Around window frames.
6. Around pipe and duct penetrations in walls and roof.

C. Other Joints: As indicated on DRAWINGS and SPECIFICATIONS.

D. Pipe, conduit, and duct penetrations in fire-resistance-rated walls, floors, and ceilings: as specified in Section 07 84 00 Fire Stopping.

3.6 CLEAN UP

A. Remove surplus materials and excess sealant from surrounding surfaces at completion of each day s work.

END OF SECTION

SECTION 08 11 10
HOLLOW STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 07 21 10 Building Insulation

B. Section 07 92 00 Joint Sealants

C. Section 08 71 00 Door Hardware

D. Section 08 80 00 Glazing

E. Section 09 21 16 Gypsum Board Assemblies

F. Section 09 91 00 Painting: Field painting of doors and frames

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications may be referred to in the text by basic designation only. In case of conflict the most stringent shall apply.

1. ASTM A568 Standard Specification for Steel, Sheet, Carbon and High Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
2. ASTM A653 Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
3. ASTM A924 Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
4. ASTM C920 Standard Specification for Elastomeric Joint Sealants
5. ASTM C1036 Specification for Flat Glass.
6. ASTM C1048 Specification for Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass.
7. ASTM C1172 Standard Specification for Laminated Architectural Flat Glass.
8. ASTM E2112 Standard Practice for Installation of Exterior Windows, Doors, and Skylights.
9. ASTM E2190 Specification for Sealed Insulating Glass Unit Performance and Evaluation.
10. National Fire Protection Association (NFPA) NFPA 80 Standard for Fire Doors and Windows.
11. NFPA 252 Standard Methods of Fire Tests of Door Assemblies.
12. Steel Door Institute (SDI) /ANSI A 250.8-Recommended Specifications for Standard Steel Doors and Frames.

13. Steel Door Institute (SDI)/ SDI-105 (ANSI A250.11) Recommended Erection Instructions for Steel Frames.
14. Underwriters Laboratories (UL) 10C Positive Pressure Fire Tests of Door Assemblies.
15. National Association of Architectural Metal Manufacturers (NAAMM) Hollow Metal Manufacturers Association Division (HMMA) Standard NAAMM: HMMA 810 Hollow Metal Doors 820 - Hollow Metal Frames.
16. NAAMM: HMMA Standard 840 - Installation and Storage of Hollow Metal Doors and Frames.
17. Society for Protective Coatings (SPC) Systems and Specifications.
18. (NAAMM): HMMA 861 Guide Specifications for Commercial Hollow Metal Doors and Frames.
19. International Building Code (IBC).
20. ANSI Z 97.1 Safety Glazing Material Used in Buildings Safety Performance Specifications and Methods of Test.

1.3 SUBMITTALS

A. Indicate elevations, frame profile, fire rating, construction, thickness, finish, anchor types and locations, location of cutouts for hardware, reinforcement, glass, and installation-adjustment instructions.

B. Provide a schedule of doors and frames using same reference numbers for details and openings as those on the DRAWINGS.

C. Certificate from Installer that installation meets these SPECIFICATIONS.

1.4 QUALITY ASSURANCE

A. Conform to requirements of HMMA and these SPECIFICATIONS.

B. Fire-rated door and frame construction conforms to IBC.

C. Insulating glass fabricator: 25 similar successful jobs.

1.5 STORAGE AND PROTECTION

A. Store above ground, vertical in dry area, spaced and vented, protected from weather.

PART 2 - PRODUCTS

2.1 DOORS

A. HMMA 861 or SDI/ANSI A250 full flush face hollow steel construction and meeting this specification.
   1. Interior Doors: Face sheets 0.042 inch (18 gage).

2. Exterior Doors: 0.053 inch (16 gage).

B. Hardware reinforcements: 0.093 inch (12 gage) at hinges, locks, exit devices, and closers.

C. Door Core
   1. Typical Non-Fire Rated:
      a. Manufacturer s standard stiffeners and filled with sound deadener.
   2. Exterior Non-Fire Rated:
      a. Polyurethane or polystyrene foam insulation filled cavity.
   3. Fire-Rated:
      a. Fire door assemblies shall also meet requirements for smoke and draft control per IBC 716: air leakage 3cfm at 0.10 inch of water.
      b. U.L., Warnock Hersey or IBC approved label for use indicated.
      c. Mineral fiber filler as required for rating.
      d. 450 degree Fahrenheit maximum temperature per IBC 716 opening protection and NFPA 252 or U.L. 10C.
      e. 20 minute labeled doors: IBC 716 and NFPA 252 or U.L. 10C without the hose stream test.
      f. Provide or build in astragal for fire rated pairs of doors.

2.2 FRAMES

A. HMMA 861 or SDI/ANSI A250 hollow steel construction meeting this specification.
   1. Interior Frames: 0.053 inch (16 gage) thick with 5/8 inch stop.
   2. Exterior Frames: 0.067 inch (14 gage) thick with 3/16 inch plastic interlocking thermal break.
   3. Continuously welded corners finished smooth at exterior and for openings over 3 feet wide. Reinforce knocked down frame corners with joint backer to align joint and mechanical lock in assembled position.
   4. Minimum 0.093 (12-gage) reinforcing plates around hardware. Continuous reinforcing along continuous hinges.
   5. Fire rated frames to fit glass used labeled per IBC 716, NFPA 252 or U.L. 10C.

B. Jamb Anchors: 0.042 inch (18 gage) minimum hot-dip galvanized evenly spaced not over 24-inches apart and 6-inches maximum from top and bottom of door.
   1. Existing openings: provide 1/4-inch minimum diameter countersunk head anchors through each jamb in rough opening framing, spaced as indicated above.
   2. Pairs of doors: anchor header 8 inches from side jambs and not over 24 inch spacing.
   3. Floor Sill Anchors: 16 gage galvanized.

C. U.L.Warnock Hersey, or IBC approved label for fire rating. Window frames: 45 minute rating with 3/4-inch stops unless smaller stops have labeled rating.

2.3 MINIMUM EQUIVALENT GAGE THICKNESS

A. Minimum uncoated steel thickness:
   1. 10 gage 0.123 inches.
   2. 12 gage 0.093 inches.
   3. 14 gage 0.067 inches.
   4. 16 gage 0.053 inches.
   5. 18 gage 0.042 inches.

2.4 ACCESSORIES

A. Frame Silencers: shop drill holes and provide 3 resilient rubber bumpers, each jamb 3/8 inch diameter for force fit into drilled hole per ANSI A156.16 type L03011.
   1. Not required on doors with gaskets or weather strip.

B. Concealed wireways: sheet metal block out around frame mounted electrical devices with wire-way to single location at frame head.

2.5 HARDWARE

A. Coordinate Hardware with Section 08 71 00 Door Hardware.

2.6 FABRICATION

A. Fabricate in accordance with HMMA 861, SDI/ANSI A250, these specifications, and approved submittals. Doors and frames shall be rigid, exposed welds and fabrication marks ground flush, smooth, neat in appearance, and free from defects, warp, or buckle. Accurately form metal to required sizes and profiles. Close joints tight, even space and flush.

B. Fabricate typical doorframes with 5/8-inch high integral stops and 2-inch faces except frames in concrete masonry shall have 4-inch header.
   1. Provide window stops with Torx security head screws.
   2. Provide 2-1/2 inch faces with sheet steel enclosure box and wireway or 1/2 inch conduit to allow electrical device installations and wiring connect after frame is installed. Provide wireway from each electrical hardware location to a single electrical connect at frame head on openings scheduled for electric devices. For future electrical installations, provide wireway to strike and middle hinge locations.

C. Prepare doors and frames to receive finish hardware, and glazing specified: Including cutouts, hardware, reinforcing plates welded in place around hardware attachment areas, drilling and tapping for mortised hardware in accordance with approved finish hardware schedule.

D. Reinforce frames wider than 48 inches with formed steel channels, or angles fitted tightly into frame head, flush with top.

E. Prepare frames for silencers specified in Section 08 71 10 Door Hardware.

F. Attach fire-rating label to each rated frame and door.

G. Close top edge of exterior doors flush with inverted steel channel closure. Seal joints watertight. Provide weep holes in bottom edge. H. Factory install door louvers.

2.7 DOOR AND FRAME FINISH

A. At building exterior and where indicated: hot dip galvanealed doors and frames with 0.40 ounce zinc coating total both sides, conforming to ASTM A653 or A924 prior to factory cleaning and factory prime painting.

B. Typical: factory chemically clean and phosphate treat for paint adhesion of door surfaces and each side of frames and factory prime paint with rust inhibiting prime paint in accordance with SPC or HMMA recommendations and for compatibility with field finish in accordance with Section 09 91 00 - Painting. Exposed surfaces to be smooth and free of scratches and paint runs.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and verify field conditions to receive frames for defects that will adversely affect the work and for deviations beyond allowable tolerances.

B. Beginning of Work shall mean acceptance of existing conditions as capable of producing an acceptable job.

3.2 INSTALLATION

A. Install frames in accordance with SDI-105, or HMMA 861, ASTM E2112 and approved submittal rigidly attached to walls. Install any knocked down frames with tight flush joints.
   1. Install frames with electrical hardware to provide continuous wireway from frame mount electrical device to frame head for concealed inside wall wiring.

B. Frame Insulation:
   1. Fill accessible voids in interior frames with unfaced batts of fiberglass insulation before installation.
   2. Fill accessible voids in exterior frames with foamed in place urethane insulation before installation.

C. Seal both sides of frame to adjoining wall surfaces with a continuous bead of silicone sealant in accordance with Section 07 92 00 - Joint Sealants.

D. Do not remove or deface factory applied fire labels during construction. Fire doors and frames without fire labels in place at the time of contract closeout will be rejected.

3.3 TOLERANCES

A. Smooth, visually flat surfaces with maximum Diagonal Distortion (Warp) 1/16 inch gap under a straight edge, corner to corner. B. Plumb and square within 1/16 inch.

C. Doors centered in frames with the following clearances:
1. Jambs and Head: 1/16 to 1/8 inches.
2. Bottom: 1/8 to 1/2 inch from threshold or floor finish.

D. Knocked down frame corners, even hairline crack joint, 1mm maximum, faces flush.

E. Allow for and accommodate interfacing indicated substrate tolerances.

3.4 HARDWARE

A. Install after finish painting.

B. Install in accordance with hardware manufacturer s written recommendations, using proper templates for approved hardware in accordance with Section 08 71 10 Door Hardware.

3.5 ADJUSTING

A. Adjust completed door assemblies to swing freely, close smoothly and latch easily with the latched door in uniform, continuous contact with stops. B. Closed door shall not rattle.

C. Doors with closers shall self-latch.

END OF SECTION

SECTION 08 41 10
ALUMINUM ENTRANCES AND WINDOW WALLS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 05 12 10 Structural and Miscellaneous Steel: Building Frame

B. Section 05 41 00 Load-Bearing Metal Studs

C. Section 07 21 10 Building Insulation

D. Section 07 63 10 Metal Flashing and Trim: Metal Flashing at Perimeter of System

E. Section 07 92 00 Joint Sealants

F. Section 08 11 10 Hollow Steel Doors and Frames

G. Section 08 71 00 Door Hardware

1.2 APPLICABLE PUBLICATIONS

A. The publications listed form a part of this Specification. The publications may be referred to in the text by basic designation only. In case of conflict the most stringent shall govern.

1. ANSI/ASTM A36 - Specification for Carbon Structural Steel.
2. ANSI/ASTM A123 - Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ANSI/ASTM A153 - Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A325 - Specification for High-Strength Bolts for Structural Steel Joints.
5. ASTM B117 Practice for Operating Salt Spray (Fog) Apparatus.
6. ASTM B209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
7. ANSI/ASTM B221 - Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
8. ASTM C553 - Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
9. ASTM C665 Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufacturers Housing.
10. ASTM C920 Specification for Elastomeric Joint Selants.
11. ASTM C1036 - Specification for Flat Glass.
12. ASTM C1048 - Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.

13. ASTM C1172 Specification for Laminated Architectural Flat Glass
14. ASTM D968 - Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive.
15. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
16. ASTM D3359 - Test Methods for Measuring Adhesion by Tape Test.
17. ASTM D3363 - Test Method for Film Hardness by Pencil Test.
18. ASTM E283 Test Method for Deferring the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.
19. ANSI/ASTM E330 - Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
20. ASTM E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
21. ASTM E2190 Specification for Insulating Glass Unit Performance and Evaluation.
22. ASTM F593 - Specification for Stainless Steel Bolt, Hex Head Cap Screws and Studs.
23. American Welding Society - AWS D1.1 - Structural Welding Code.
24. American Architectural Manufacturer s Association (AAMA) - Aluminum Storefront and Entrance Manual Specifications.
25. AAMA Metal Curtain Wall Manual Guide Specifications.
26. Glass Association of North America (GANA) - Glazing Manual.
27. Society for Protective Coatings (SPC) Painting Manual.

1.3 PERFORMANCE REQUIREMENTS

A. General: Meet performance requirements without failure of joint seals, glass breakage, or permanent deformation of the wall system or its perimeter seal to adjacent surfaces. Not permitted: vibration harmonics, wind whistles or thermal movement noise.

B. Provide for expansion and contraction within system components caused by a cycling metal surface temperature range of 180 degrees F with a low of minus 20 degrees F.

C. Size components to withstand seismic and wind loads without causing detrimental effects to the system or components, including glass, to withstand 50 pounds per square foot positive and negative pressure when tested in accordance with ANSI/ASTM E330. Size fasteners for 4 times the force applied.
   1. Interior walls shall resist a force of 10 pounds per square foot acting in any direction.

D. Limit air infiltration to 0.06 cubic feet per minute per square foot of fixed wall measured at 1.57-psi differential pressure per ASTM E283.

E. No water penetration at fixed wall assembly when tested per ASTM E331 at 8 psf of inward acting wind load.
   1. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior at each light. No uncontrolled water shall penetrate to interior face of system from exterior.

F. Limit mullion deflection to L/175 or 3/4 inch or flexure limit of glass with full recovery of glazing materials, whichever is less. Limit vertical deflection so that glass bite is at least 75 percent of design dimension and the glass has 1/8-inch minimum top clearance.

G. Provide thermal U value not exceeding 0.35 BTUH per square foot in exterior fixed glass areas.

H. Condensation Resistance Factor (CRF) not less than 62 per AAMA 1502.7 for metal framing in fixed glass areas.

1.4 SUBMITTALS

A. Manufacturer and installer experience.

B. System and component finishes, dimensions, elevations and sections; components within assembly; hardware, framed opening requirements and tolerances; anchorage brackets and fasteners; anticipated deflection under load; affected related work; expansion and contraction joint locations and details; drainage details and flow diagrams; field welding; and installation instructions.

C. Submit certification and data indicating thermal and condensation compliance with Performance Requirements.

1.5 QUALITY ASSURANCE

A. System Manufacturer: Company with at least 25 successful installations similar to one proposed.

B. One Installer for complete System: Company approved by system manufacturer, with a minimum of five successful installations similar to that proposed.
   1. Submit list of previous installations with location, owner, contractor and architect phone numbers.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle system components clean, dry and vented in

accordance with manufacturer recommendations.

1.7 WEATHER REQUIREMENTS

A. Install sealant at aluminum and glass with temperatures between 35 and 55 degrees F. and no moisture present. Maintain temperature by temporary enclosures and heating as necessary for 12 hours prior, during and 24 hours after sealant installation.

1.8 WARRANTY

A. Provide 5-year manufacturer and installer s warranty.

B. Warranty:
   1. Cover complete system for failure to meet specified requirements.
   2. Conformance with approved submittals.

PART 2 - PRODUCTS

2.1 **ACCEPTABLE MANUFACTURERS**, subject to specified criteria:

A. United States Aluminum Corporation: www.usalum.com.

B. Kawneer Company, Inc.: www.kawneer.com

C. CMI-Cronstroms, Inc.: www.cmiarch.com

D. Vistawall Architectural Products: www.vistawall.com.

E. Tubelite: www.tubelite.com

2.2 MATERIALS

A. Extruded Aluminum: ANSI/ASTM B221.

B. Sheet Aluminum: ASTM B209.

C. Steel Sections: ANSI/ASTM A36 hot dip galvanized per ASTM A153 or shop prime painted.

D. Steel Primer: SPC Paint II red iron oxide, zinc chromate alkyd type.

E. Fasteners:
   1. Stainless steel, ASTM F-593 300 series up to 1/2 inch diameter.
   2. ASTM A325 bolts hot-dip zinc coated per ASTM A153 for 1/2 inch diameter and larger.

2.3 COMPONENTS

A. Typical Aluminum Glazing Member Profile; thermally insulation broken with interior tubular section insulated from exterior pressure plate; matching stops and pressure plate of sufficient size and strength to provide bite on glass and infill panels. Provide concealed internal steel reinforcing if necessary. B. Perimeter Void Insulation: unfaced fibrous blankets per ASTM C665.

C. Drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system.

D. Contract DRAWINGS are partly diagrammatic to show design intent and do not show all joiners or anchorage necessary.

E. Doors and interior single glazed systems do not require thermal break.

2.4 INFILL COVERS, CLOSURES, FLASHINGS AND TRIM:

A. 0.064 inch thick aluminum minimum; same finish as for aluminum wall sections where exposed; secured with concealed fastening method or glazed into system.

B. Stiffeners at panel back to maintain flatness as necessary.

C. Door infill panels: .064-inch aluminum each side of 1/4 inch tempered hardboard.

2.5 DOOR AND DOOR FRAME ASSEMBLIES

A. Doors: Two inch through wall, heavy-duty 3/16 (.1875) inch aluminum extrusion wall thickness non-thermal breaks with reinforced and internally welded corners.
   1. Side Rails (Stile): wide enough to accommodate hardware specified, but not less than four inches.
   2. Top Rail: 5 inches minimum.
   3. Bottom Rail: 10 inches high.
   4. Opening per door schedule.
   5. Frames each side of doors: Minimum 1/8 (.125) inch thick full tube.

2.6 DOOR WEATHERSTRIP

A. Jambs and head.

B. Resilient EPDM elastomeric or nylon brush installed into extruded pockets.

2.7 DOOR HARDWARE

A. As specified in Section 08 71 00 - Door Hardware. Coordinate and provide fit as necessary to meet tolerances.

2.8 GLASS AND GLAZING MATERIALS

A. Sealed insulated double unit, 1/4 inch tempered safety glass outboard light, 1/2 inch airspace, 1/4 inch laminated safety glass inboard light, total thickness one-inch nominal per ASTM C1048 made into sealed insulating units per ASTM E 2190 with class CBA requirements.
   1. Outboard light: clear Low-E surface No.2: PPG Solarban 60 or approved.
   2. Inboard light: clear.

B. Glass Unit requirements:
   1. Clear appearance.
   2. Winter night U value 0.29.
   3. Summer day U value 0.27.
   4. Shading coefficient 0.44.
   5. Visible light transmittance 70 percent.

C. Doors shall be glazed with single 1/4 inch clear safety glass.

2.9 ANCHORS, BRACKETS AND ATTACHMENTS

A. Attach to structure as necessary to meet performance requirements with safety factor of four, minimum 1/4 inch anchor screws at eighteen inches. B. Field adjustable in 3 directions to construction tolerances.

C. Provide corrosion resistant finish and dissimilar material protection specified.

2.10 SEALANTS

A. Sealants and Sealant Accessories: Silicone type per ASTM C920 and as recommended by glazing and Aluminum system manufacturers.

2.11 FABRICATION

A. Fabricate window wall components in accordance with approved submittals allowing minimum clearances and shim spacing around perimeter of assembly.

B. Fit and assemble work in shop where practical.

C. Any welds per AWS.

D. Rigidly fit and secure joints and corners. Make joints and connections flush, hairline, and weatherproof.

E. Develop interior drainage path with moisture path to exterior weep holes.

F. Prepare components to receive anchor devices. Fabricate anchorage items to suit substrate.

G. Arrange fasteners, attachments, and jointing to ensure concealment from view.

2.12 FINISHES

A. Exposed Aluminum Surfaces:
   1. Anodized
      a. Integral anodized medium bronze color Architectural finish coating for exterior surfaces: AAMA Specification AA M12C22A42.
      b. 0.7 mil (0.018mm) minimum thickness.

B. Concealed Steel Items: Galvanized in accordance with ASTM A123 or A153 or stainless per ASTM F593.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and field conditions indicated to receive work for defects that will affect the work and for deviations beyond allowable tolerances.

B. Beginning of installation means acceptance of existing conditions as capable of producing an acceptable job.

3.2 PREPARATION

A. Coordinate dimensions, tolerances, and method of attachment with interfacing work.

3.3 DISSIMILAR MATERIALS

A. Aluminum contacting steel, concrete, masonry or unpainted wood shall have the surfaces separated by a heavy coat of bituminous paint, or with nonabsorptive tape.

B. Trim or mask so separating materials is not visible in completed work.

3.4 INSTALLATION

A. Install components in accordance with AAMA, GANA manual, entry and window wall manufacturer instructions, and approved submittals to meet performance requirements.

B. Provide method of attachment to structure permitting sufficient adjustment to accommodate construction tolerances, spacers through fire spray and irregularities and meet performance requirements. Weld per AWS. Clean, prime any burned paint or bare steel. Repair any damage to fire spray.

C. Provide alignment attachments and shims required to permanently fasten system to building structure.

D. Align assembly plumb and level, or to alignment indicated, free of warp any twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation and seal where components penetrate thermal insulation.

F. Install fire stop assembly at each floor slab edge.

G. Coordinate attachment and seal of air and vapor barrier materials. Install flashings.

H. Pack mineral wool insulation in shim spaces at perimeter and into voids inside closures and flashings of assembly.

I. Install glass and infill covers per Glass Association of North America and IBC.

J. Install hardware in accordance with hardware manufacturer instructions and in accordance with Section 08 71 00 - Door Hardware.

K. Seal perimeter with silicone type sealant, backing materials, and installation requirements in accordance with Section 07 92 00 - Joint Sealants.

3.5 TOLERANCES

A. Completed Tolerances:
   1. Variation from Plane or Location: 1/8 inch each 12 feet or 1/2 inch maximum.
   2. Misalignment of Two Adjoining Members Abutting in Plane: 1/16 inch.
   3. Panel slope (flatness): 3/32 inch in or out from panel face plane determined by panel edges, non cumulative evenly sloped over entire panel with no local buckles or dents.
   4. Door and window edge clearance: evenly 1/8 to 3/16 inch.

B. Erection Tolerances:
1. Variation from plumb, faces of exterior frame anchor points: plus or minus 3/4 inch.
2. Variation from levels indicated on DRAWINGS: plus or minus- 3/4 inch.

3.6 CLEANING

A. Remove any protective material from aluminum surfaces.

B. Wash down exposed surfaces using a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean and dry.

C. Remove excess sealant by moderate use of mineral spirts or other solvent acceptable to sealant manufacturer.

D. Remove excess materials and debris caused by installation as work progresses.

END OF SECTION

SECTION 08 71 10
DOOR HARDWARE

PART 1 GENERAL

1.1 PRODUCTS FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

A. Templates and other installation data are required prior to hardware delivery, or at fabricators located off the job site. Furnish in a timely manner the per construction schedule.

1.2 RELATED SECTIONS

A. Section 06 20 10 Finish Carpentry and Architectural Woodwork

B. Section 06 41 16 Laminate Faced Cabinets

C. Section 08 11 10 Steel Doors and Frames

D. Section 08 14 00 Wood Doors

E. Section 08 16 13 Fiberglass Doors and Frames

F. Section 08 33 10 Overhead Coiling Counter Doors

G. Secti9on 08 33 26 Overhead Coiling Grilles

H. Section 08 34 53 Security Doors and Frames

I. Section 08 34 71 Sound Retardant Doors and Frames

J. Section 08 36 10 Overhead Sectional Doors

K. Section 08 41 00 Aluminum Entrances and Window Walls

L. Section 08 42 31 Power Open Swing Door Operators

M. Section 08 63 10 Metal-Framed Skylights

N. Section 08 78 53 Security Door Hardware

O. Section 08 44 00 Glazed Curtain and Window Walls

P. Section 10 28 00 Toilet Accessories

Q. Section 13 34 19 Metal Building Systems

R. Division 26 Access Control Systems

1.3 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this Specification. Publications may be referred to in the text by the basic designation only. In case of conflict, the most stringent shall govern:

a. Underwriters Laboratories, Inc. (UL) - Fire Resistance Index, and Building Materials Directory.

b. National Fire Protection Association (NFPA) - Standard for Fire Doors and Windows, No. 80.

c. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA) A156 series as specified.

d. American Society of Testing and Materials (ASTM) ASTM D1056 - Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

e. ASTM D2497 - Tolerances for Man-Made Organic Base Filament Single Yarns.

f. Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG).

g. International Building Code (IBC).

1.4 PERFORMANCE REQUIREMENTS

A. When manufacturer and model number are given, it shall be used to establish minimum equivalent technical data and performance requirements for other manufacturers unless "no substitute" is specified.

B. Substitutions per Specification Section 01 60 00 Product Requirements.

1.5 FIRE RESISTIVE OPENINGS

A. When a fire-resistive classification is scheduled, provide hardware compatible with the Underwriters Laboratories (U.L.), Warnock Hersey, or other testing agency approved by the building authority listed for the condition of use required by the opening assembly.

B. Entire opening assembly components shall be compatible and function in compliance with the International Building Code (IBC) as amended by the local building authority.

1.6 SUBMITTALS

A. Samples may be required for any proposed alternatives to the hardware listed to establish equivalency. Samples will be returned after inspection.

B. List Manufacturers, model numbers, key schedule, and location and mounting heights of hardware in completed work. Use Contract Document door designations.

C. Provide abbreviation legend for abbreviations

D. List each door opening separately.

E. Manufacturer s certificate that fire-rated hardware meets specified requirements.

F. Manufacturer s descriptive literature for each different item.
   a. Detail interface between electrical door hardware and fire alarm and security access systems.
   b. Provide point-to-point wiring diagrams for power, signal, and control.

G. Maintenance - Adjustment Manuals and parts lists with name and telephone number of stock location.

H. Indicate the location of closers on doors and frames.

I. Supply templates to door and frame manufacturers to enable proper sizing and locations of cutouts and reinforcements for hardware. J. Manufacturer s experience qualifications.

1.7 QUALITY ASSURANCE

A. Manufacturers: Companies specializing in commercial building hardware in the U.S. for the past 10 years minimum.

1.8 MANUFACTURER ASSISTANCE

A. Provide assistance of the finish hardware supplier representative knowledgeable in the system specified for the following:
   a. Pre-Construction Conference: minimum 1 hour.
   b. Final Installation and adjustment and maintenance training of Door Hardware.

1.9 PACKAGING AND MARKING

A. Single group of hardware packaged separately for each opening complete with all necessary accessories, fasteners, key instruction and templates.

B. Mark each package with a group number corresponding to the approved hardware schedule identifying its contents and location in the completed work.

1.10 DELIVERY AND STORAGE

A. Hardware shall be checked upon arrival to job site and acceptance verified by the CONTRACTOR'S Representative in writing.

B. Hardware shall be adequately protected from corrosion and pilferage until acceptance of building.

C. Deliver keys to OWNER by security shipment direct from Manufacturer.

1.11 MAINTENANCE ACCESSORIES

A. Provide special field adjustments and maintenance tools, such as special screwdrivers and wrenches, and dogging keys for each different item supplied.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers are named to provide a standard of quality and are subject to specified criteria.

2.2 FINISHES

A. ANSI 156.18 No. 612/US 10 Satin Bronze, typical except as noted below.

B. Matte bronze paint for door closers.

C. Anodic Medium Bronze for weatherstrip and gasket seal mounts.

D. Mill finish aluminum for weatherstrip and gasket seal mounts.

2.3 MOUNTING ACCESSORIES

A. Screws, bolts, escutcheons, brackets, and similar supplemental items as necessary and recommended by the manufacturer for complete functional use conditions. Provide stainless steel fasteners that are compatible with both hardware and substrate, and which will not cause dissimilar metal corrosion. Mount surface hardware on doors with shouldered thru bolts.

2.4 BUTT HINGES (TYPICAL)

A. Full mortise, 5-knuckle, plated steel with steel pins at the interior, stainless steel with stainless steel pins at the exterior:
   a. U. L. listed where used on fire doors: Stanley, Hager, McKinney, or Lawrence.

B. Heavyweight hinges not less than 0.180 inches thick on exterior doors, doors over 3 feet wide, and doors over 100 pounds.

C. Standard weight hinges not less than 0.134 inches thick on interior doors three feet and less in width.

D. Doors up to 7 feet high shall have 3 hinges.

E. Doors over 7 feet high shall have a hinge for each 30-inch of door height.

F. Provide ball-bearing hinges on doors with closers.

G. Hinges on lockable doors shall have non-removable pins secured with a set screw in a barrel or another method tamperproof when the door is closed.

H. Width of hinges shall be sufficient to clear trim detail conditions and provide up to a 180-degree door swing or until the door returns to the adjacent wall.

I. 4-1/2-inch minimum height of hinges. For doors over 3 feet wide use continuous hinges.

2.5 MORTISE LOCKSETS

A. Heavy duty commercial mortise type of one manufacturer and design ANSI/BHMA A156.13 Grade 1: Schlage L series with full escutcheon threaded cylinder enclosure with a key removable interchangeable key core 7-pin tumbler.

B. Backset 2-3/4 inch.

C. 3/4-inch latch throw typical, except one-inch deadbolt throw.

D. Operating Handles: approximately 4-1/2-inch cast lever handle curved to within ‰ inch of door face with wrought 7-1/2 by 2-1/4-inch escutcheon trim plate. Knurled or abrasive coating at the janitor, mechanical and electrical rooms.

E. U.L. listed for use on fire resistive doors.

F. Boxed strike with extended curved lip to fit jamb.

2.6 LOCK CYLINDERS

A. Standard full-face seven-pin interchangeable core slander same manufacturer as locksets.

2.7 KEYING

A. Provide a keying system as directed by the CONTRACTING OFFICER. The

CONTRACTOR shall have a qualified representative of the hardware supplier available for the purpose of establishing Keyed Products. B. Provide a master key system.

C. Provide 4 cut keys for each keyed different lock and cylinder.

D. Provide 6 cut keys for each keyed-alike group.

E. Provide 6 cut keys for each master.

F. Provide interchangeable core construction keying. Only construction keys are allowed during construction.

G. Stamp keys DND .

2.8 CLOSERS

A. UL IOC or NFPA 252 positive pressure fire listed cast iron shell with a steel rack and pinion-piston type surface mount rectangular enclosure.
   a. Rated for heavy-duty high use for door sizes indicated by manufacturer: LCN 4000, or Stanley QDC 100 series.

B. Adjustable closing speed, 3 seconds minimum from 70 degrees to 3 inches from the latch for accessible use. Separate adjustable latching speed and separate adjustable back check.

C. 5-pound adjustable maximum opening pressure on interior non-fire rated doors.

D. Through mounting bolts with spacers or sex bolts and mounting bracket adaptors as necessary for door and frame conditions. Security screws into threaded backing.
   a. Special extra clearances mount arms so that weather seals and smoke seals are not cut and provide clearance for overhead stops and coordinators.

E. Fire-resistant and low-temperature fluid for a satisfactory operation to 30 degrees F and no permanent damage if subjected to minus 30 degrees F.

F. Forged steel arm with spring stop, parallel arm [as scheduled] [hold open arm as scheduled], and with accessories as required for mounting on the room side of corridor doors and inside of the exterior door. G. Extra heavy duty holds open [as scheduled].

H. Full metal cover [school and detention].

2.9 CONCEALED ROD EXIT DEVICE

A. Horizontal Mortise Surface Touch Bar, ANSI A 153.3 Grade 1: Von Duprin 98 Series, Corbin Russwin ED 9000 series, or Precision Apex Series.
    a. Mortise Type, including concealed vertical top and bottom latching rods less bottom rod where scheduled.
    b. Outside lock Trim on Pull Side where scheduled: Round bar lever handle operation with vandal-resistant breakaway or freewheeling feature 10 gauge plate trim: and key cylinder lock: lock and unlock. The lever handle curved to within ‰ inch of the door face.
    c. U.L. listed as accident panic and fire hardware.
    d. Cylinder: 7-pin interchangeable core cylinder compatible with a keying system where scheduled.
    e. Provide cylinder-dogging device at non-fire rated doors.
    f. Shims as necessary over vision light moldings.
    g. Top and Floor strikes.
    h. Self-contained signal switch monitoring touch bar and latch bolt, where scheduled.
    i. Self-contained electric latch retraction locked when power is off.
    j. Electric Power Transfer: from door to doorframe ten, 24-gauge wires for 24 Volt DC, completely concealed when the door closed allows 135-degree door swing: Von Duprin EPT 10 or approved equal.
    k. Provide 110-to-24-volt power supply control module above the ceiling with wiring & 2-hour battery backup accessories for operation: Von Duprin PS 873 BK or approved equal.

2.10 SURFACE EXIT DEVICE

A. Horizontal Surface Touch Bar: Von Duprin 98 Series.
    a. Rim Type.
    b. Electric Mortise Lock: remote lock and unlock with retracting latch bolt: Von Duprin E75000 where scheduled.
    c. Outside Trim on Pull Side: Round bar lever handle operation with vandal-resistant breakaway or freewheeling feature 10-gauge plate trim Von Duprin 990, and key cylinder lock as scheduled. Lever handle curved to within ‰ inch of door face: Von Duprin No. 03.
    d. U.L. listed as accident panic and fire hardware.
    e. Cylinder: 7-pin interchangeable core cylinder compatible with the keying system.
    f. Provide cylinder-dogging device at non-fire rated doors.
    g. Roller strike plate.
    h. Shims as necessary over vision light moldings.
    i. Self-contained request to exit signal switch where scheduled.
    j. Self-contained signal switch monitoring touch bar and latch bolt, where scheduled.
    k. Self-contained electric latch retraction: locked when power is off, where scheduled.

l. Electric Power Transfer: from door to doorframe 10, 24-gauge wires for 24 Volt DC, completely concealed when the door closed allows 135-degree door swing: Von Duprin EPT 10 or approved equal.
m. Provide 110-to-24-volt power supply control module above ceiling with wiring & 2-hour battery backup accessories for operation: Von Duprin PS 873 BK or approved equal.

2.11 DOOR PROTECTION PLATES

A. Stainless steel, at least 0.05 inch thick and 2 inches less than door width, or as required to fit door seals per ANSI A156.6. Bevel edges and countersunk head screw mount.

B. Kick plates: 10 inches high.

C. Mop plates: 4 inches high.

D. Armor plates: 40 inches high.

2.12 DOOR PULL

A. 1-inch round solid stainless-steel or aluminum bar with 3-inch offset backset. 90-degree end return 2-1/4-inch projection by the 12-inch center to center long through bolt per ANSI A156.6 type J401. B. Anodized bronze finish to match doors.

2.13 WALL DOOR STOPS (TYPICAL INTERIOR DOOR)

A. Provide for all interior doors, preventing knobs, lever handles, and pulls from striking wall surfaces or other doors. Provide floor stops where wall stops are not possible. Not required when overhead door stop scheduled.
a. Wall stops: 2-3/8 inch round resilient rubber: with metal mount screw attach: ANSI A156.16 grade 1, type L0210.

B. Floor stops: Metal rubber: dome type screw and peg attach: ANSI A156.16 Grade 1, Type L0214 as necessary for door and floor construction.

2.14 DOOR SILENCERS (TYPICAL INTERIOR DOOR)

A. Rubber door bumpers silencers 3/8-inch diameter resilient rubber-for force fit into drilled hole per ANSI A156.16, Grade 1, Type L03011.
a. Provide 3 evenly spaced at each swing door frame jamb. Not required on doors with seals or weather-strip.

2.15 THRESHOLDS

A. Exterior: Extruded aluminum full-width single piece at exterior openings. 6 inches by a …-inch saddle with beveled edges and a fluted top with an

integral plastic thermal barrier in accord with ANSI/BHMA A156.21, PEMKO 250 Series, Zero, Reese, or equivalent

B. Interior: Extruded beveled edge fluted aluminum full-width single piece at firerated doors. 4-inch by 1/4-inch PEMKO 270, Zero, Reese, or equivalent. Not required at 20-minute doors. Use carpet separator threshold specified below where carpet occurs on both sides of door fire rated over 20-minutes, and at exterior vestibules.

   a. Carpet Separator Threshold: Extruded aluminum full-width single piece 4-inches wide by 7/16-inch-high saddle with a fluted top in accord with ANSI/BHMA A156.21 J32140: PEMKO 230 Series or equivalent Zero or Reese.
   b. Carpet-to-sheet flooring, carpet-to-concrete, and sheet flooring-toconcrete separator threshold: Extruded aluminum full-width single piece 2 1/2 inch wide by 3/8-inch-high saddle with fluted top and offset in accord with ANSI/BHMA A156.21 J32180: PEMKO 170 Series or equivalent Zero or Reese.

C. Fasten thresholds with countersunk-head screws with 12-inch spacing maximum: provide two screw rows for thresholds over 6-inches wide.

2.16 WEATHERSEALS (TYPICAL AT EXTERIOR DOORS)

A. Dense layered plastic bristle brush weather seal. Brush fibers fused into place, flexible at minus -30 degrees F. held in extruded aluminum holdermount with pre-punched pre-slotted holes for mounting with screws. Mount on the inside warm face. ANSI and PEMKO Corporation numbers listed, equivalent Sealeze, or Zero acceptable. B. Full-length single piece.

C. U.L. listed when used on fire doors.

D. Door head and Side Jambs: 45-degree angle mount, 3/8-inch brush ANSI R3A36 PEMKO 45041.

E. Door Bottom: 1-inch brush; ANSI R3A415 PEMKO 181

F. Paired Doors Meeting Rails with a snap cover over screws: (two) 3/8-inch brush; ANSI R3A635: PEMKO 29324.

G. Door Top and Sides: Extruded aluminum surface screw attach attached with 1/4 inch by ‰-inch seal: PEMKO 312DR or equivalent Zero, Reese.

H. Door Bottom: Extruded aluminum surface screw attach with 1/8 inch by 1 3/8inch seal: PEMKO 315DN.

I. Paired Doors Meeting Rails: Extruded aluminum surface screw attached with 3/8 inch by 1 1/4-inch neoprene: PEMKO 375DR or equivalent Zero, Reese.

J. Manufacturer s standard pile or nylon brush weather-stripping is acceptable for aluminum doors. Coordinate with door manufacturer.

2.17 SMOKE SEALS (TYPICAL AT FIRE DOORS)

A. 1/4-inch compressible silicone rubber bulb seal ANSI ROE154, self-adhesive mount to doorframe head and side jambs, and intumescent strip into wood door kerf. Install at 20-minute smoke rated and at fire door assemblies.
   a. Listed IBC and NFPA 252 or U.L. 10C positive tested for fire-rated assemblies.
   b. Door head and jambs PEMKO S88 [with HSS 2000 Surface applied intumescent silicone seal at wood doors or approved.
   c. Paired doors meeting rails PEMKO S77 [or 351 over DSS 2000 surface applied intumescent strips at wood doors.]

PART 3 EXECUTION

3.1 EXAMINATION

A Examine the DRAWING details and field conditions for defects that will adversely affect the work, and for deviations beyond allowable tolerances.

B. Beginning of installation shall mean acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 SOLID BACKING

A. Provide within structure and doors for hardware mounting, including wall doorstops and closers. Coordinate as required during construction. Provide special mounting accessories, built-in if required.

3.3 MOUNTING LOCATIONS

A. Per ANSI A117.1 Accessible Buildings approved submittals, manufacturer s standard practice and coordinated with door and frame manufacturer.

B. Mount closers on the interior side of exterior doors and on the room side of corridor doors.

C. Mount resilient weatherstrip on the inside of door assembly to form a vapor retarder.

D. Other Mounting Shall Be as Follows:
   a. Wall Doorstop: lockset handles to strike the center of the stop.

b. Exit Device Operating Bar: 37-inches from the finished floor to the center.

c. Push and Pull Bars: 42-inches from the finished floor to the center and 4-inch backset to the center of push and pulls from the door edge.

3.4 INSTALLATION

A. In accordance with applicable ANSI standards, approved submittals, the manufacturer's written instructions, and ADAG for the conditions of use. Install closers and closer arms with bolts through doors.

B. Do not install surface-mounted items until finishes are completed on the substrate. Coordinate as necessary. Remove hardware after fitting if necessary for painting and reinstall.

C. Apply exterior hardware and thresholds with gaskets or in a continuous silicone sealant bed. Do not cut the weather seal at closers.

D. Electrical device installation:
   a. Perform work in accordance with the National Electrical Code as amended locally using applicable portions of Division 16- Electrical.
   b. Coordinate the exact location for electrical power and control wiring connections.
   c. Verify electrical power and control are operative.

3.5 FINAL ADJUSTMENT

A. Per manufacturer's written instructions, including, cleaning and lubrication to meet ADAG.

A. Adjust doors, compensating for completed, operating heating and vent system. Latches and bolts shall engage keepers in the latched position and not rattle.

B. Doors with closers shall close and latch without assistance.

C. Doors shall open and close smoothly and easily with 1 hand. Weather seals smoke seals, and sound seals shall be in continuous contact in the latched position.

3.6 CLEANING

A. Remove shipping labels and leave hardware surfaces clean.

3.7 TYPICAL HARDWARE SETS

A. Provide 1 set for each opening.

B. Provide items noted TYPICAL such as hinges, doorstops, seals, and weatherstrips as specified under "PRODUCTS" for each set.

1. Provide unique items such as locksets and closers according to Door Hardware Schedule. ANSI A156.13 mortise locks lock functions are listed.

a. F01 "Passage" function: Latch bolt always operated by lever from either side.

b. F04 (F40) Office Entry function: Latch bolt operated by lever on either side except when outside lever is made inoperative by key outside or inside turn piece. When the outside lever is locked, the latch bolt is retracted by the Key outside or by the operating lever inside. Auxiliary dead latch.

c. F06 Holdback Lock function: Latch bolt operated by lever from either side except when outside lever is locked from outside by key. The latch bolt can be locked in a retracted position by a key. When the outside lever is locked, the latch bolt is retracted by key from outside or by operating the inside lever unless the latch bolt has been locked in a retracted position. Auxiliary dead latch.

d. F07 [F86 bored] Storeroom function: Latch bolt-operated key outside or by lever inside. The outside lever is always inoperative. Auxiliary dead latch

e. F13 Dorm Function (Schlage L9456) Latch bolt operated by lever on either side. Deadbolt is thrown or retracted by the key outside or inside turn piece. The inside lever simultaneously retracts the deadbolt, and latch bolt and unlocks the outside lever.

f. F22 Similar Privacy function (Schlage L9496): Latch bolt operated by lever from either side except when locked by inside turn or button and by emergency key release from outside. Latched position displays the Occupied sign plate outside.

g. Classroom Intruder Security Function (Schlage 9458): Latch bolt operated by lever on either side. Except when the deadbolt is thrown or retracted by a key from the outside or with an inside turn or button. The locked position displays a locked indicator on the inside.

C. Include any special maintenance adjustment tools necessary.

D. Refer to DRAWINGS for locations and details.

3.8 DOOR HARDWARE SCHEDULE

Hardware Set 1: Pair, Opening 001A Vestibule to Exterior

6 Hinges

2 Concealed Rod Exit Devices, door pulls; cylinder dogging
2 Closers
1 Set Weatherstripping

Hardware Set 2: Pair, Openings 001B Lobby to Vestibule
6 Hinges
2 Push bars
2 Closers
2 Door pulls

Hardware Set 3: Opening, 002, Elevator Shaft to Elevator Equipment Room (Fire Rated)
3 Hinges
1 Lockset Storeroom function
1 Closer
1 Kickplate
1 Set Smoke Seals

Hardware Set 4: Openings, 003 Elevator Equipment Room to Exterior
3 Hinges
1 Lockset - Storeroom Function
1 Closer
1 Kickplate
1 Set Weatherstripping

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry

B. Section 06 83 16 - Fiber Reinforced Plastic Paneling

C. Section 07 21 10 - Building Insulation

D. Section 07 26 00 - Vapor Retarders

E. Section 07 27 10 - Air and Water Barriers

F. Section 07 53 20 - Adhered EPDM Roofing Assemblies

G. Section 07 55 00 - Protected EPDM Roofing System

H. Section 07 81 00 - Applied Fireproofing

I. Section 07 84 00 - Firestopping

J. Section 07 95 00 - Expansion Joint Cover Assemblies

K. Section 07 92 00 - Joint Sealants

L. Section 08 11 13 Hollow Steel Doors and Frames

M. Section 08 16 10 - Fiberglass Doors and Frames

N. Section 08 31 00 - Access Doors

O. Section 08 71 10 - Door Hardware

P. Section 09 26 00 - Gypsum Veneer Plaster Assemblies

Q. Section 09 91 00 - Painting

R. Division 22 - Access Doors

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications may be referred to in the text by basic designation only. In case of conflict only the most stringent shall apply.

1. ASTM A568 - Specifications for General Requirements for Steel, Sheet, Carbon and High Strength Low-Alloy, Hot-Rolled Sheet and Cold-Rolled Sheet.
2. ASTM A653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
3. ASTM A1003 Specification for Steel Sheet, Carbon, Metallic and Nonmetallic - Coated for Cold-Formed Framing Members.
4. ANSI/ASTM C475 - Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
5. ANSI/ASTM C754 - Specification for Installation of Framing Members to Receive Screw Attached Gypsum Board.
6. ASTM C834 - Specification for Latex Sealants.
7. ASTM C840 - Specification for Application and Finishing of Gypsum Board.
8. ASTM C841 Standard Specification for Installation of Interior Lathing and Furring.
9. ASTM C919 Practice for Use of Sealants in Acoustical Applications.
10. ASTM C955 Specification for Load-Bearing Steel Studs, Runners and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.
11. ASTM C1002 - Specification for Steel Self-Piercing Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
12. ASTM C 1047 Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
13. ASTM C1177 - Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
14. ASTM C1178 Specification for Glass Mat Water-Resistant Gypsum Backing Board.
15. ASTM C1325 Specification for Non-Asbestos Fiber-Mat Reinforced Cement Interior Substrate Sheets.
16. ASTM C1396 Standard Specification for Gypsum Board.
17. ASTM C 1629 Classification for Abuse Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
18. ASTM C 1658 Specifications for Glass Mat Gypsum Panels
19. ASTM D 3273 Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
20. ASTM D5420 Test Methods for Impact Resistance of Flat, Rigid Plastic Specimen.
21. ASTM D5034 Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
22. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
23. ANSI/ASTM E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

24. ANSI/ASTM E119 Test Method for Fire Tests of Building Construction and Materials.
25. ASTM E695 Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading.
26. ANSI A108.11 Interior Installation of Cementitious Backer Units.
27. ANSI A118.9 - Standard for Test Methods and Specifications for Cementitious Backer Units.
28. Gypsum Association (GA) 201 - Using Gypsum Board for Walls and Ceilings.
29. GA 203 - Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.
30. GA 214 Recommended Levels of Gypsum Board Finish.
31. GA 216 - Specifications for the Application and Finishing of Gypsum Panel Products.
32. GA 219 - Instructions for Installation of Steel Door Frames in Steel Stud Gypsum Board Fire-Rated Partitions.
33. GA 600 - Fire Resistance Design Manual.
34. Underwriters Laboratories (UL) Listing and Fire Resistance Directory.

1.3 SUBMITTALS

A. Special details associated with fire rated assemblies, acoustic seal, control joints, deflection heads and trim.

B. Provide product data and installation instructions for metal framing, top track deflection framing, edge trim, and expansion and control joints and shaft wall.

C. Samples of proposed control joints, slot reveals, corner beads and wall top deflection heads.

D. Applicator experience: job descriptions, telephone number of owner or architect.

1.4 QUALITY ASSURANCE

A. Applicator: Company specializing in gypsum board systems with at least 25 jobs similar to this within the last 5 years.

1.5 REGULATORY REQUIREMENTS

A. Conform to IBC for fire rated assemblies: UL, Gypsum Association or ICC listed assemblies.

B. Conform to IBC for Steel Studs.

1.6 STORAGE AND HANDLING

A. Maintain gypsum wallboard above ground protected from weather and moisture.

B. Do not overload structure by storing concentrated stacks of gypsum wallboard.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Maintain work area, substrate and materials 55 to 85 degrees F, 70 percent maximum relative humidity for 48 hours prior to, during and 72 hours minimum after installation or until completely dry. B. Provide adequate ventilation.

C. Provide lighting of 80 foot candles at work with explosion proof electrical fixtures. Building lights may be used.

PART 2 - PRODUCTS

2.1 GWB NONSTRUCTURAL STUDS AND TRACK - RUNNERS

A. Sheet steel channel or cee shaped at least 1-1/4 inch knurled return flange suitable for nested or interlocked lapped splicing and screw attachment of gypsum wallboard per ASTM C645 or C955.

B. Deflection Heads:
1. Provide U.L. or W.H. fire rate listed 2-piece or slotted screw top track head of wall assemblies with any necessary bridging, for 1 inch minimum deflection relief at top of walls: [EDIT exposed top track: mineral wool with no spray or sealant: Clark Dietrich Blaze Frame: www.clarkdietrich.com] a. Metal-Lite: www.metal-lite.net
   b. Fire Trak: www.firetrak.com
   c. Steel Network Inc.: www.steelnetwork.com,
   d. CEMCO FireStik Fastrack : www.cemcosteel.com
   e. Safti-seal FRG-SSG : www.saftiseal.com

C. 3 1/2 inches minimum through the wall dimension up to 14 feet maximum length typical unless noted otherwise in the DRAWINGS.

D. Shaft Wall Studs and Tracks per Performance Requirements and stud manufacturer s approved instructions.

E. Metal thickness: metal before galvanizing:
1. 20 gage/30 mils (0.0296 inch) typical studs.

F. Provide punched openings at 1-1/2 inches diameter, not more than 24-inches on center. Studs full single piece for height required.

G. Provide 1/2 inch minimum weep holes 18 inch on center in bottom track used in exterior walls.

H. Finish: Hot dip galvanized G40 per ASTM A654 and ASTM A1003; G90 in exterior walls.

2.2 SHAFT WALL

A. Shaft Wall: Conform to the following:
   1. Air Pressure within Shaft or horizontal span load capacity: five pounds per square foot with maximum mid-span deflection of ‰ inches.
   2. Fire Rating Requirements: 2-hour minimum unless otherwise noted in accordance with UL or Gypsum Association listed assembly.
   3. Acoustic Attenuation: 47 STC minimum in accordance with ANSI/ASTM E90, using batt insulation specified in Section 07 21 00 Building Insulation.
   4. Moisture resistant glass mat faced per ASTM C1178.

2.3 FRAMING AND FURRING ACCESSORIES

A. ASTM C645 and GA 216: Bridging-bracing straps, angles, anchors, plates, brackets and the like shall be at least 20 gage galvanized sheet steel, matching studs and as recommended by the stud manufacturer.

B. Furring: ASTM C645, 20 gage galvanized sheet steel hat-shaped channel, or zee shaped 7/8-inch deep for screw attachment of wallboard. Clips, adjustable brackets, and other anchorage as necessary.

C. Resilient Sound Isolation 7/8-inch Furring Channels: 20 gage rolled, knurled face galvanized sheet steel designed for resilient acoustic attachment to GWB; U.S.G. RC-1 or approved substitutions.

D. Carrying Channels: ASTM C645, 1-1/2 inch cold rolled steel, 16 gage (0.05 inch) thick minimum. Galvanized in accordance with ASTM A653.

E. Hanger Wire: Minimum 12 gage galvanized soft annealed steel.

F. Tie Wire: Minimum 16 gage galvanized soft annealed steel.

2.4 FASTENERS

A. Self-drilling, self tapping drywall and metal screws to penetrate framing and in accordance with ASTM C954 and GA 216. Only GWB screws in GWB, no nails allowed. Use hot-dip galvanized zinc coated or stainless screws in exterior walls, showers, tub enclosures, exterior entries, exterior sheathing and similar wet use areas.
   1. Length to penetrate GWB and backing.

B. Metal Studs to Runners, Furring Channels, and Other Metal Accessories: Selfdrilling, self-tapping pan head type S screws in accord with ASTM C 954, size per metal stud manufacturer s written instructions for specified fire resistance but not less than No.6: 3/8 inch long.

2.5 FRAMING ANCHORS

A. Standard commercial threaded expansion anchors: IBC approved and recommended for intended use by manufacturer may be used if approved by

the CONTRACTING OFFICER. Submit manufacturer s literature indicating lateral (shear) and pullout (tension) data for approval.

B. Anchor diameter 1/4 inch minimum and 400-pound minimum average pullout. Length for 1 1/2 inch minimum embedment.

C. Each anchor shall be capable of developing at least 4 times design load in lateral (shear) and pullout (tension) loads into substrate, for condition of use.

D. Explosive driven anchors not permitted into masonry.

E. Powder driven anchors not permitted for tension without IBC approval for condition of use.

2.6 GYPSUM BOARD (GWB)

A. Typical Interior Gypsum Board: ASTM C1396; fire resistive Type X 5/8 inch thick, edges tapered; ends square cut. Mold resistance 10 per ASTM 3273.

[Option: - Fiberglass Facing: requires skim coat per GA level 5.**]** Typical Interior Gypsum Board: ASTM C 1658 with ASTM C1177 properties, moisture resistant core, fire resistive Type X, 5/8 inch thick, edges tapered, ends square cut, paper free glass mat faces recommended by manufacturer for paint finishing. Mold resistance 10 per ASTM 3273. Georgia-Pacific Dens Armor Plus , or approved**.**

B. Gypsum Sheathing Board: for use on outside of exterior walls: ASTM C1178; fire resistant type X; paper free glass mat faced and moisture resistant core, 5/8-inch thick, edges square cut. Mold resistance 10 per ASTM D3273. Georgia-Pacific Corp. Dens-Glass or approved.

C. Gypsum Sheathing Board: for use on roof side of roof parapets and on roof decks: ASTM C1177 paperless fiberglass faced, and moisture resistant core, fire resistant type X 5/8-inch thick, edges square. Mold resistance 10 per ASTM D3273. Georgia-Pacific Corp Dens Deck Prime or approved.

D. Gypsum Shaftliner Board for use in shaft wall assemblies: ASTM C1658; fire rated and moisture resistant, paperless fiberglass faced and moisture resistant core, one inch thick, type X; beveled edges, ends square cut: Mold resistance 10 per ASTM D3273. Georgia-Pacific Dens Glass Ultra or approved.

E. Abuse Resistant Gypsum Board: ASTM C1629 or ASTM C1658 with ASTM C1177 properties, moisture resistant core, fire resistive Type X 5/8 inch

thick, edges tapered, ends square cut. Indentation resistance per ASTM D5420: average indent from a 2 pound weight from 36 inches, 0.1 inch, Level 1. Soft body contact: 90 foot pounds per ASTM E695, Level1. Mold resistance 10 per ASTM D3273. Georgia-Pacific DenArmor Plus, fiber glass paper free faces recommended by manufacturer for paint finish.

2.7 SEALANT

A. Single component silicone for fire rated joints and penetrations in accordance with Section 07 84 00 Firestopping.

2.8 ACOUSTICAL AND THERMAL INSULATION

A. As specified in Section 07 21 10 - Building Insulation.

2.9 ACOUSTICAL SEALANT

A. Single component non-hardening, latex base non-skinning per ASTM C834, for use in conjunction with gypsum board; manufactured by U.S.G. Company, W.W. Henry Co., Pecora, or approved.

2.10CORNER BEADS

A. L -Shaped paper faced galvanized steel or zinc tape-on-type per ASTM C1047 or GA 216. [L -shaped vinyl with 2-inch perforated flanges].

B. Extruded mat finish aluminum or stainless steel, round bullnose shaped matt finish concealed screw attach equal to Fry Reglet DRMC in public areas as indicated and at exposed cement board.

C. Round Bullnose 3/4 inch paper faced galvanized steel or zinc tape-on-type.

2.11EDGE TRIM

A. Paper faced galvanized steel or zinc LC shaped 3/4 inch minimum leg tape-on type, without screws, per GA 216, or ASTM C1047.

2.12CONTROL JOINTS

A. Galvanized steel or zinc 1/2 inch gap tape-on-type with masking strip removable after finishing per GA 216, or ASTM C1047.

2.13WALL SLOT REVEALS

A. Extruded aluminum with tapered perforated fins for taping to gypsum, 5/8 by 5/8 inch reveal [with prefabricated shop miter welded intersections] Gordon Inc., www.gordon-inc.com, www.fryreglet.com, Tamlyn: www.tamlyn.com .

B. Provide continuous backer studs or 16 gage galvanized sheet metal backup

under GWB to next adjacent stud each side.

2.14JOINT COMPOUND AND JOINT TAPE

A. ASTM C475 and GA 216 compatible joint compound and adhesive, from a single manufacturer. Joint compound recommended in writing for additional mold resistance by manufacturer.

1. Use glass fiber tape with setting type compound in high moisture areas and with any glass fiber surfaced gypsum board.
2. Glass Fiber Tape: Alkali resistant open weave glass-mesh fabric: 4 ounce per square yard minimum weight.

B. Use latex thin-set adhesive and fiberglass tape for cement board joints. Seal cement board exposed surfaces and finish as recommended by board manufacturer.

2.15ANCHORAGE BACKING FOR WALL MOUNTED ACCESSORIES

A. Minimum 16 gage sheet steel by 6 inches wide by length required and across 3 studs minimum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the DRAWING details and verify field conditions for defects that will adversely affect the work, and for deviations beyond allowable tolerances.

B. Other work shall be substantially complete behind wall studs and above ceilings prior to start of GWB work particularly mechanical, electrical, structural, fire spray and insulation.

C. Start of installation shall mean acceptance of the existing conditions as capable of producing an acceptable job.

3.2 GENERAL SYSTEMS INSTALLATION

A. Per manufacturer s written instructions, referenced publications and IBC.

B. Do not install interior products until installation area is enclosed and heated.

3.3 METAL STUD INSTALLATION

A. Install studding in accordance with ANSI/ASTM C754, ASTM C645, and GA 201, manufacturer s instructions and the DRAWINGS.
1. Set floor tracks in sill sealer insulation specified in Section 07 21 00 - Building Insulation. Trim excess and fire seal in type I and II buildings.
2. Anchor tracks to structure at 18 inches maximum and 2 inches from each track end.
3. Install deflection top track assembly at full height partitions in accord with deflection head manufacturer.
4. Splice tracks with 16-inch piece at stud with two screws per flange to each piece of track.
5. Install studs so open sides face same direction.

B. Metal Stud Spacing: 16 inches on center.

1. Install framing around structural and other penetrations. C. Stud Heights: Full height from floor to structure above.

D. Door Opening Framing: Install two full height studs at each side of door jamb. In accord with GA219 install stud tracks at frame head height, and between adjacent studs. Screw double studs together - with additional flat plate as necessary.

E. Backing and Blocking: Screw across three studs minimum. Install backing for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware handrails and other GWB mounted fixtures indicated.

F. Bridging required where GWB not installed each side full height: Install bridging straps at midpoints of studs or 4 feet maximum for studs over 12 feet high. Use stud track-runner screw attached to each stud or continuous flat sheet metal strap across faces at studs.

G. Coordinate installation of backing, anchors, blocking, electrical and mechanical work placed in or behind partition framing.

3.4 WALL AND COLUMN FURRING INSTALLATION

A. Install wall furring by direct attachment to steel, masonry and concrete structure backing.

B. Install furring evenly spaced 16 inches maximum. Locate joints over solid backing framing. Use steel shims for alignment.

C. Space furring channels not more than 4 inches from floor and ceiling.

D. Coordinate acoustical and thermal insulation Specification Section 07 21 00 Thermal Insulation.

E. Erect metal stud framing with insulating air space, one inch minimum at concrete and concrete masonry exterior walls, attached by adjustable furring brackets in accordance with manufacturer s instructions.

3.5 FURRING FOR FIRE RATINGS

A. Install furring as required for fire resistance ratings indicated: 16 inches on center maximum. Minor amounts of preservative fire treated wood may be used in accord with IBC.

3.6 SHAFT WALL INSTALLATION

A. Shaft wall Framing: In accordance with approved manufacturer s installation instructions to meet structural performance and fire resistance Performance Requirements.

B. Provide for elevator shaft offsets with 75-degree angle gypsum cants.

C. Seal continuously along edges and joints with silicone firestopping sealant as specified in Section 07 84 00 Firestopping.

3.7 CEILING AND SOFFIT FRAMING INSTALLATION

A. Install in accordance with ANSI/ASTM C754, ASTM C645, GA 201 and IBC Chapter 25.

B. Either studs or wire hangers are acceptable for ceiling support.

C. Attach each hanger wire, stud track, and brace to structure with IBC approved anchors. Coordinate and supply embedded hangers or inserts into structure as needed.

D. Ceiling studs (studs not touching floor) and joists shall be 24 inches on center maximum.
   1. Install ceiling stud with 45 degrees brace studs to structure deck above 6 feet maximum on center on opposite sides of ceiling assemblies.

E. Position hanger wires for the load supported and in accord with ASTM C754 and GA 201 and four feet maximum spacing. Coordinate location to avoid other work with 6-inch minimum space.

F. Space carrying channels 4 feet maximum and within 6 inches of walls. Lap channels splices 2 feet and secure each end with double strand tie wire.

G. Provide hangers at ends of each runner and carrying channel 6-inch maximum from ends.

H. Do not slope hangers over one inch in 6 inches horizontal unless equal countersloping hangers are provided.

I. Provide a trapeze or equivalent device where obstructions prevent direct suspension. Minimum trapeze bar: two carrying channels wire tied together.

J. Wrap end of hanger wires 3 full turns in 3 inches at connections and loop tightly to prevent vertical movement or rotation of member.

K. Adjust hanger wires taught: do not kink or bend hanger wire to level ceiling.

L. Provide two extra hanger wires above opposite edges of gypsum ceiling mounted air duct outlets and light fixtures for attachment by duct and light installers.

3.8 SEALANT INSTALLATION

A. Apply sealants in accord with Section 07 92 00 - Joint Sealants.

B. Install acoustical sealant continuously at gypsum board perimeter in accord with ASTM C919 at:
   1. Metal Framing: track, header, and jamb intersect.
   2. Base Layer of double layer systems.

C. Seal penetrations of gypsum fire rated assemblies by conduit, pipe, ductwork, rough-in boxes, and hardware with silicone sealant firestopping systems in accord with Section 07 84 00 - Firestopping. Seal acoustic-sound rated assemblies with acoustical sealant.

3.9 GYPSUM BOARD INSTALLATION

A. Install GWB in accordance with ASTM C840, and GA 216 and manufacturer s instructions to meet fire resistance indicated. Extend gypsum board continuously into and behind recessed wall mounted accessories such as fire extinguishers and toilet accessories in fire resistance rated walls.
   1. Verify insulation and vapor retarder is installed and approved before installing GWB.

B. Cut GWB neatly to fit in moderate contact and neatly against adjacent GWB. Cut around penetrations for 1/4 to 1/2-inch space between gypsum and penetration. Bevel untapered panel edges approximately 1/8 inch at a 45 degrees angle using a sharp utility knife. Peel back and remove any loose facing from the edges.

C. Install lead edge of GWB to open end of stud flanges first. Stagger joints on opposite side of wall studs by one stud minimum.

D. Use screws for fastening gypsum board: 8 inches maximum spacing over backing. Drive screws flush. Use appropriate short screws on resilient furring channels to avoid penetrating support.

E. Use corrosion resistant screws in showers, exterior entries and any similar wet use areas.

F. Install exterior gypsum sheathing horizontally, with edges separated slightly and ends occurring over framing or furring.

G. Multi Layer Applications: Gypsum backing board allowed for first layer, placed perpendicular to framing or furring members. Place second layer perpendicular to first layer. Offset joints of second layer from joints of first layer by one stud space.

H. Use the longest practical GWB panel lengths. Keep butt end joints to a minimum.

I. over joints in board manufacturer approved latex-portland cement mortar.

3.10CONTROL JOINT INSTALLATION

A. Install control joints parallel with lines of building spaces where substrate joints such as seismic joints or material changes occur and in uninterrupted gypsum board or cement board spaces: 30 feet maximum for walls and 900 square feet total area between control joints.

B. Install control joints in line with jamb edge of door openings over 10 feet wide.

3.11GYPSUM EDGE TREATMENT

A. Treat cut edges and holes in water resistant gypsum board with manufacturer recommended sealer.

B. Place corner beads at external corners. Use longest practical length.

C. Place edge trim where gypsum board abuts dissimilar materials and where gypsum ends are exposed to view.

3.12JOINT AND SURFACE TREATMENT

A. Embed tape at GWB joints and interior angles with joint finishing compound in accord with ASTM C840, and GA 216. Fill and smooth exposed joints, edges, and depressions to produce a smooth flush surface ready to receive finishes specified in accordance with manufacturer s instructions.

1. Use setting type joint compound with fiberglass tape for fiberglass faced gypsum board.
2. Allow sufficient drying time between coats to obtain a moisture content of 12 percent or less on GWB and joints.
3. No heavy texture permitted.

B. Smoothly feather joint compound coats onto adjoining surfaces.

C. Finish joints to a width at least 6 inches each side..

D. Levels of Surface Treatment in accord with ASTM C840 and GA214:

1. Non-exposed areas, as above suspended ceilings: Level 2: Embed tape at joints and apply joint compound over fasteners and trim.
2. Boiler, Janitor, and Mechanical-Electrical Rooms: Level 3: Embed tape and apply two separate coats of joint compound over joints, fasteners. Joint compound shall be smooth and free of tool marks and ridges.
3. Walls and Ceilings with Flat Gloss Paint Finish: Level 4: Apply two separate coats of joint compound over the taped joints. Cover fasteners, metal corner bead and trim with three separate coats and as smooth as possible to minimize sanding. Sand any excess joint compound free from lap marks, tool marks, crowned joints, and ridges. Fill scratches, craters and nicks with joint compound.
4. Walls and Ceilings with semi-gloss Paint Finish: Level 5: All joints and interior angles shall have tape embedded in joint compound. Two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Cover

fastener heads and accessories with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer s recommendations, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges.

5. Fiberglass faced gypsum board and cement walls and ceilings and horizontal surfaces: Level 5: three separate coats of joint compound; apply a thin smooth skim coat of joint compound or material manufactured especially for this purpose, and applied in accord with board manufacturer s recommendations to entire exposed GWB surfaces.
6. Joints and fasteners behind any tile and fiber reinforced plastic panels: Level 2: Tape and fill and sand lightly to even surface.

E. Use sandpaper or abrasive-mesh cloth with grit as fine as practical.

F. Remove sanding dust with a damp rag before recoating.

3.13GWB AND GWB STUD FRAMING TOLERANCES (NON-CUMULATIVE)

A. To Subfloor: 1/4 to 1/2 inch space. Smooth without abrupt changes. Space around Mechanical, Electrical, and Other Penetrations: 1/4 to 1/2 inch before sealing. B. Bowing or Warping From Proper Plane: plus minus 1/8 inch in 10 feet.

C. Joint Surface Alignment Before Taping: flush surfaces plus or minus 1/16 inch.

D. Joint Spacing Before Taping: 1/16 to 1/8 inch.

E. Gaps Between Perimeter Edge Trim Molding and Abutting Surfaces: 1/8 inch maximum with no abrupt changes.

F. Exposed Surface Texture: Smooth without texture, pock holes, or scratches over 1/64 inches within any 2 square feet.

3.14CLEANING

A. After final taping and sanding, lightly wipe GWB surfaces with a damp rag to remove dust and dirt.

B. Leave in condition to receive primer - sealer.

3.15SCHEDULE

A. Follow finish schedule and details on DRAWINGS.

B. Use typical GWB unless otherwise indicated. First layer of multi thicknesses may be gypsum backing board.

C. Use cement backer board behind tile in toilet and shower rooms.

D. Use water resistant GWB on toilet and shower room walls behind fiber reinforced plastic coated panels.

E. Use glass matt faced Gypsum Sheathing Board on exterior of exterior wall studs behind manufactured wall panels, brick and stone veneer.

F. Columns: Furring and GWB layers in accordance with ICBO or UL approved designs for 1 [2]-hour fire resistance.

G. Use fiberglass faced gypsum-sheathing board on roof side of parapets and curbs.

END OF SECTION

SECTION 09 68 00
CARPETING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete

B. Section 09 65 00 - Resilient Flooring

C. Section 09 69 00 - Access Flooring

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. The publications may be referred to in the text by basic designation only. In case of conflict the most stringent shall apply.

1. American Society for Testing and Materials (ASTM): ASTM D418 - Methods of Testing Pile Yarn Floor Covering Construction.
2. ASTM D1335 Test Method for Tuft Bind of Pile Yarn Floor Coverings.
3. ASTM D2646 - Test Method for Backing Fabrics.
4. ASTM D5252 Standard Practice for the Operation of the Hexapod Tumbler Drum Tester.
5. ASTM D2859 Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
6. ASTM E648 - Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
7. ASTM E662 - Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
8. ASTM F710 Preparing Concrete Floors to Receive Resilient Flooring.
9. ASTM F1861 Specification for Resilient Wall Base
10. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
11. National Fire Protection Association (NFPA): NFPA 258/ASTM E662 - Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
12. U.S. Department of Commerce (DOC): DOC-FF-1 Fire Spread Flammability Pile Test.
13. American Association of Textile Chemists and Colorists (AATCC): AATCC 13475 - Electrostatic Propensity of Carpet.
14. Carpet and Rug Institute (CRI) CRI 104 2000 - Standard for Installation of Commercial Carpet.

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15. International Building Code (IBC): 804 Interior Floor Finish Requirements.

1.3 SUBMITTALS

A. Manufacturers Literature:
   1. Materials and Construction.
   2. Installation Instructions and Specifications to be used on this job, including floor preparation, carpet manufacturer approved adhesives and seam locations, edge trim and expansion joint trim.

B. Samples:
   1. 6 by 6 inch of full range of manufacturers standard color - texture available for selection.

C. Written verification of manufacturer and installer qualifications with job experience names, addresses and telephone numbers.

D. Maintenance manuals: Carpet and carpet fiber manufacturer s instructions for cleaning and maintenance.

E. Shop drawings, showing the locations of seams and edge trim strips and different color or carpet type on a floor plan of the carpeted area.

F. Warranty.

G. Certification: Manufacturers Certification on manufacturer s letterhead, signed by the CONTRACTOR that the carpet:
   1. Meets these specifications and conforms to submitted literature.
   2. Conforms to specified fire hazard properties.
   3. Carpet and adhesive conforms to Carpet and Rug Institute indoor air quality low chemical emission program and qualifies for the low Volatile Organic Compound (V.O.C.) Green Label.
   4. Is recommended for heavy public traffic in corridors and [classrooms, offices and patient] rooms.
   5. Appearance Retention Rating (ARR).

1.4 MANUFACTURER QUALIFICATIONS

A. Manufacturer shall have been manufacturing commercial grade carpet for at least 25 similar successful jobs, and manufactured the carpet proposed for this job for the last 2 years.

B. List 5 jobs with similar traffic use in which the proposed carpet has been installed for at least 2 years. Include Owner Representatives Names, Address, and Phone Number for reference.

1.5 INSTALLER QUALIFICATIONS

A. Installer shall have successfully completed at least 5 carpet installations of similar size and complexity in the past 5 years.

B. Installer shall be approved in writing by the Carpet Manufacturer for carpet installation specifically on this job.

1.6 PRE-INSTALLATION CONFERENCE

A. Arrange a Pre-Installation Conference held at the job site on the first day of carpet installation.
   1. Attendance required for:
      a. Carpet Installer Superintendent
      b. Carpet Manufacturer s Technical Representative
      c. OWNER Representative

1.7 INSTALLATION QUALITY CONTROL

A. Carpet Manufacturer s Technical Representative shall be on site to oversee and approve the initial carpet preparation and installation.

B. First 150 square feet of carpet installed and approved by the OWNER shall be the standard for the rest of the installation, including seams, bases, transition, floor preparation and adhesives.

1.8 PRODUCT LABELING

A. Each carpet package shall have the following information attached or labeled when delivered to the jobsite:
   1. Manufacturer s Name, Type, Pattern, and Dye Lot.
   2. Fire Hazard Data.
   3. Carpet Research Institute Green Label : low chemical pollutant emissions and Volatile organic compounds (V.O.C.).

B. Adhesive: Label each container indicating:
   1. Manufacturer s Name, Type of Adhesive and Application Data.
   2. Carpet Research Institute Green Label : low chemical pollutant emissions, (V.O.C.).

1.9 DELIVERY, STORAGE AND HANDLING

A. Do not store carpet inside project building until wet materials such as paint, sealants, and adhesives have dried to acceptable emission levels.

B. Store materials in a clean, dry area and in accordance with CRI.

1.10INDOOR AIR QUALITY

A. The OWNER is concerned about indoor air quality and chemical emissions.

B. Verify building ventilation system is in proper working order. Operate building permanent ventilation system at maximum outdoor air flow before bringing carpet into building, during installation and minimum 72 hours after installation.

1.11TEMPERATURE AND HUMIDITY REQUIREMENTS

A. Maintain building, floor, and materials at 60 to 85 degrees F and between 20 to 65 percent relative humidity for 72 hours prior to, during and after installation.

1.12WARRANTY

A. Provide a fully executed minimum 10 year non-prorated warranty. Provide on the carpet manufacturer s letterhead, co-signed by the installer that the carpet will conform to the following:
   1. Wear: the surface yarn in any area will not be abrasively worn or loose resiliency by more than 10 percent during the warranty period if the carpet is properly maintained.
   2. Static Protection: the carpet will give protection against static discharges in excess of 3.0 kilovolts during the warranty period.
   3. [Broadloom Edge Ravel: the carpet will not edge ravel along seams or zipper during the warranty period.]
   4. Backing Adhesion: no delamination.
   5. Tuft bind: 20 pounds average per ASTM D1335.
   6. Colorfastness to Crocking: Rating of 4 minimum, wet and dry, in accord with AATCC-165.
   7. Colorfastness to Light: Rating of 4 minimum, after 160 AATCC fading in accord with AATCC-16, option E.
   8. Stain Resistance: Carpet shall meet GSA requirements for permanent stain resistant carpet per AATCC 175 modified by exposing sample to 100 revolutions of the Taber Abrader then stain tested in the abraded area. Test Rate of 8.0 or better on the AATCC Red 40 Stain Scale required.
   9. Exclusions for abnormal use and/or soiling will be allowed, however, any exclusion must be prefaced with a statement that the installed carpet is recommended for the intended use, i.e. Commercial corridors, classrooms, offices and waiting rooms.

B. Carpeting replaced under this warranty shall include removal, labor and materials and be done at no cost the OWNER.

1.13EXTRA MATERIALS

A. Provide 2 percent of each color - pattern installed [in full roll wide carpet], full tiles, and trim. Deliver to project location where directed.

B. Each piece of extra material shall be clearly labeled to identify exact style, color, manufacturer, and dimensions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturers names, numbers and features are listed to establish a standard of quality. Carpet may be provided from any of the acceptable manufacturers with equivalent features and colors. A maximum of two manufacturer's color-textures will be selected.

B. Acceptable manufacturers, subject to meeting specified criteria:
   1. Mannington: www.mannington.com
   2. Interface: www.interface.com
   3. Shaw Contract: www.shawcontractgroup.com
   4. The Mohawk Group: www.mowhawkgroup.com
   5. J&J Commercial: www.jj-invision.com
   6. Patcraft and Designweave: www.patcraft.com

C. Equivalent construction, textures, and colors from the listed Acceptable Manufacturers may be approved.

D. Substitutions in accord with Section 01 60 00 Product Requirements.

2.2 ENTRY WALK-OFF CARPET

A. Heavy-duty roll or tile textured loop carpet recommended for use in high traffic public entrances.
   1. Size: 18 by 18 inch minimum or continuous roll by .186 inch or 4.7 mm thick minimum.
   2. Face Yarn: Nylon polypropylene, or olefin with static control.
   3. Yarn Weight: 30 ounce minimum per square yard
   4. Primary Backing: Non-woven synthetic impervious to water. Suitable for gluedown
   5. Color: One standard brown or grey color will be selected throughout.
   6. Fire resistance: NFPA Class 1 or Radiant flux 1.1 w/cm†, smoke density less than 10 percent in accord with ASTM E648.
   7. 10 percent post-consumer; and 20% pre-consumer recycled content.
   8. Acceptable Products: Interface Foyer , Collins and Aikman Triad, Lees First Step , SBEMCO Ultra Dry , or Mannington Recoarse RE .

2.3 FIRE HAZARD CLASSIFICATION

A. Installed carpeting shall comply with IBC 804 including the following:
   1. Flammability: Floor Radiant Panel, NFPA 253 Class 1, (0.45 watts/CM† or Federal Flammability Test Standard FF 1-70 (Pill Test) or ASTM D2859: Passes.

2.4 ANTI STATIC CHARACTERISTICS

A. Carpet fibers shall have built in protection against static discharges in excess of 3.0 kilovolts (below normal human sensitivity) at 70 degree F. and 20 percent relative humidity per AATCC 134.

2.5 APPEARANCE RETENTION RATING

A.Based on a 12,000 cycle hexapod exposure test per ASTM D5252.

1. Appearance Retention Rating (ARR) 2.5 or greater for moderate traffic use (sleeping room).
2. ARR 3.0 or greater for heavy traffic (private offices).
3. ARR 3.5 required for severe traffic use (conference rooms, corridors, classrooms).

2.6 BASE

A. Thermoset rubber top-set cove base in accord with ASTM F1861.

B. 1/8 inch x 4 inch high unless otherwise noted.

2.7 EDGE TRIM

A. Base Cap: [for carpet base]

1. J shaped vinyl/rubber coved carpet base cap black color, sized as recommended to fit carpet used.
2. Mercer Products, Roppe Corporation, VCI Plastics, or approved.

B. Edge Trim:

1. Provide at:
   a. Carpet-to-carpet seams in doorways.[on wood floor sheathing]
   b. Where carpet meets different type flooring.
2. Extruded mill finish aluminum, 1-3/4 inch by 7/16 inch maximumhigh to fit over carpet.
3. Pemko 236 or approved.
4. Countersunk head screw attach at 12 inches on center drill-in expansion type for concrete.

C. Expansion Joint Trim:

1. Extruded clear aluminum.
2. Pemko 236, 252 or approved to fit over carpet.
3. 10 feet 0 inch minimum lengths.
4. Countersunk head screw attach at 12 inches on center.

D. Edge Trim

1. Provide at:
   a. Carpet end without floor finish.
   b. Where carpet meets different type flooring.

2. Extruded mill finish aluminum, 2-1/2 by 3/8 inch, tapered nose Pemko 174 or 236 or approved to fit over carpet.
3. 10 feet 0 inch minimum lengths.
4. Countersunk head screw attach 12 inches on center.

E. Trim attach: number 10 minimum at 12 inch maximum spacing for 3/4 inch minimum embedment - with drill-in expansion type for concrete.

2.8 PRIMERS, ADHESIVES, SEAM SEALERS AND FILLERS

A. Moisture resistant, waterborne non gypsum, non-flammable mildew resistant as recommended in writing by the carpet manufacturer for conditions of use, direct adhering to existing concrete or wood subfloors with low chemical emission (V.O.C.) emission conforming to Carpet & Rug Institute Green label guidelines.

B. Provide primers as recommended by adhesive and filler manufacturers.

2.9 CONCRETE MOISTURE SUPPRESSION SYSTEM [OPTION: CONSIDER SOIL]

A. Penetrating sealer recommended by manufacturer to seal and form a barrier layer in concrete floors to reduce moisture upward transmission through concrete and allow flooring adhesives to cure in accord with ASTM F3010.

B. Obtain compatibility approval from finish flooring manufacturer.

C. Provide complete system, including any primers.

D. Acceptable Manufacturers, subject of meeting specified criteria:
1. Sinak Corp , VC5 , www.sinak.com;
2. Creteseal , www.creteseal.com ;
3. Koester Water Vapor Reduction, www.koesterusa.com ;
4. Mapei Planiseal , www.mapei.com ;
5. Ardex Mc Ultra : www.ardexamericas.com

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive carpeting for defects that will adversely affect the Work, and for deviations beyond allowable tolerances.

1. Drawing dimensions are approximate: verify exact dimensions at installation site.

B. Verify subfloor is adequately dry and cured in accord with carpet manufacturers recommendations: concrete: cured 90 days minimum with 50 to 85 degree F temperature, free of oil and curing agents.

C. Moisture tests: for concrete floors on ground perform a minimum of three calcium chloride tests per ASTM F1869 or drilled Probe Tests per ASTM F2170 for verification of concrete dryness: 3 pounds moisture maximum per 1000 square foot in 24 hours. ASTM test probes: Transmex: www.transmexltd.com), or equal

D. Alkalinity tests: for concrete floors perform a minimum of three alkalinity tests per ASTM F710 for verification of pH levels: 5 to 9.

E. Verify building permanent ventilation system is operating at full capacity.

F. Start of work shall mean approval of the interfacing surfaces as capable of producing an acceptable job.

3.2 PREPARATION OF SUBFLOOR SURFACES

A. Clean subfloor to remove existing flooring, dirt, loose particles, oil, grease, curing compounds, and other foreign material detrimental to the adhesion and level laying of new carpet. Prepare subfloor in accord with flooring manfacturer recommendations and ASTM F710. Use State and Federal approved asbestos procedures.

B. Fill holes and cracks over 1/4 to 1/2 inch wide with filler approved by carpet adhesive manufacturer. Wider crack repair will be negotiated. Allow filler to dry and prime as recommended by filler manufacturer before installing carpet.

C. Smooth substrate to acceptable flatness by grinding or filling uneven joints and rough areas up to 5/16 inch plus or minus flat to feather edge as measured with a 10-foot straight edge.

D. EDIT [Provide for 15 percent of the subgrade to require grinding and filling to maximum 5/16 inch gap as measured with a 10-foot straightedge.]

E. Vacuum or damp mop substrate clean immediately prior to carpet installation.

F. Prime substrate as recommended by carpet adhesive manufacturer.

3.3 INSTALLATION

A. Remove carpet from packaging and open to allow to relax in the installation area 24 hours.

B. Inspect carpet before laying for streaking, shading spots and soil, tufts and same dye lots: no visible difference in side and end uniformity or other defects. Do not lay defective carpet.

C. Comply with techniques and materials recommended in writing by CRI Standard and by the carpet manufacturer and approved submittals with

particular attention to seaming and match any patterns along seams. Apply approved adhesive, roll and apply seam sealer in recommended manner and thickness.

D. Lay any patterns parallel to major space edges and in accordance with approved seam drawings. Make pile lay in same direction in every width and through unobstructed openings.

E. Use continuous full width lengths where possible. Minimize seams in traffic areas. Cut edges and seams to form tight non-conspicuous, non-raveling joints where exposed. At stairs wider than carpet width, seam only where tread meets riser bottom.

F. Treat cut seam edges with seam sealer 1/8-inch continuous bead applied to backing at yarn. Trim any loose material flush.

G. Install tiles using manufactures layout pattern.

H. Extend carpet under removable flanges and equipment. Cut and fit neatly around permanent fixtures, outlets and projections.

I. Remove any adhesive that dries or films over before use.

J. Run carpet continuously over stairs, cutting out for steel strips used for metal nosing.

K. Neatly trim and remove any loose threads or tufts.

L. Completed installation shall be smooth, continuously adhered and free from wrinkles, buckles, frayed areas, or distortion.

3.4 CARPET EDGE TRIM INSTALLATION

A. Install trim over carpet edges at junctions of different type carpet or different

flooring materials and where carpet edge does not abutt a vertical surface.

B. Anchor trim with expansion anchor type screws at concrete and screws into wood at 12 inches maximum. Adhesive is not acceptable.

C. Place trim over carpet joints under closed-door position where carpet meets different flooring materials at a door.

3.5 BASE INSTALLATION

A. Install base at all permanent vertical surfaces adjacent to new carpet: walls, columns and casework.

B. Adhere tightly around vertical surfaces with adhesive. Install any carpet base with plastic cap.

C. Install no joints within 12 inches of corner.

3.6 CLEAN UP

A. Dispose of surplus materials except cuttings over 12 inches by 6 feet to be delivered to OWNER. This is in addition to the extra material required.

B. Leave carpet and adjacent surfaces clean and free from adhesives or soil spots.

C. Vacuum carpet with a commercial upright beater type vacuum cleaner.

D. Replace any furniture relocated to original locations.

3.7 PROTECTION

A. Prohibit traffic over carpet for 48 hours after installation, use plywood sheets if necessary to protect.

B. Do not install sheet plastic over carpet for protection, if needed use non-staining Kraft protection paper.

END OF SECTION

SECTION 09 91 00
PAINTING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 01 35 40 LEED Credit Summary: Indoor Air Quality Products and Testing

B. Section 03 30 00 Cast in Place Concrete

C. Section 07 11 00 - Dampproofing

D. Section 07 14 00 Fluid Applied Waterproofing

E. Section 07 63 10 Flashing and Trim

F. Section 07 81 00 Applied Fire Resistive Materials

G. Section 07 81 23 Intumescent Fire Resistive Coatings

H. Section 07 92 00 Joint Sealants

I. Section 08 11 13 Hollow Steel Doors and Frames

J. Section 08 16 13 Fiberglass Doors and Frames

K. Section 08 54 13 Fiberglass Windows

L. Section 08 14 00 Wood Doors

M. Section 09 21 16- Gypsum Board Assemblies

N. Section 09 72 00 Wall Coverings

1.2 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this Specification. Publications may be referenced in the text by basic designation only. In case of conflict, the most stringent apply.

1. ASTM D16 Standard Terminology for Paint-Related Coatings, Materials, and Applications.
2. ASTM D610 Practice for Evaluating Degree of Rusting on Painted Steel Surfaces.
3. ASTM D714 Test Method for Evaluating Degree of Blistering of Paints.

4. ASTM D 2485 Test Methods of Evaluating Coatings for HighTemperature Service.
5. ASTM D3359 Standard Test Methods for Measuring Adhesion by Tape Test.
6. ASTM D4060 Test Method for Abrasion Resistance of Organic Coating by the Taber Abraser.
7. ASTM D4442 - Test Method for Direct Moisture Content Measurement of Wood and Wood-Base Materials
8. ASTM D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion-Testers.
9. ASTM D5894 Practice for Cyclic Salt Fog/UV Exposure of Painted Metal.
10. ASTM D6677 Standard Test Method for Evaluating Adhesion by Knife.
11. ASTM D7091 Practice for Nondestructive Measurement of Dry Film Thickness of Nonmetallic Coatings Applied to Ferrous and Nonmagnetic Nonconductive Coatings Applied to Non-ferrous Metals.
12. Society for Protective Coatings/Steel Structures Painting Council (SSPC) - Standards and Specifications.
    1) SSPC-SP 1 Solvent Cleaning.
    2) SSPC-SP 2 Hand Tool Cleaning.
    3) SSPC-SP 3 Power Tool Cleaning.
    4) SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
    5) SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
    6) SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
    7) SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
    8) SSPC-SP11, Power Tool Cleaning to Bare Metal.
    9) SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting before Recoating.
    10) SSPC-SP13/NACE No. 6, Surface Preparation for Concrete.
    11) SSPC-SP14 Industrial Blast Cleaning.
    12) SSPC-SP15 Commercial Grade Power Tool Cleaning.

1.3 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

A. Provide product data on all coating and finishing products; indicating application instructions including surface preparation, undercoating, reducing, and certification that the product is Best Line - Premium Grade .

B. Submit a full range of deep tone colors, pastel colors, and stains available from an acceptable paint manufacturer for selection of samples.

C. Submit a sample 1 by 2-inch minimum size illustrating the range of colors and textures available for each surface-finishing product.

D. Submit samples of selected colors representative of actual work as follows:
   1. Minimum size: 3 by 3-inches.
   2. Stain Colors: prepare on wood complete with transparent topcoat if scheduled.
   3. Approved samples shall become the final criteria for evaluating the color and appearance of completed work.
   4. One set of approved samples shall be kept on the job.
   5. Identify each sample as to finish, formula, color name, and number.

E. Submit manufacturer and applicator experience data with project owner phone numbers.

F. Submit certification of compliance with pollutant emission rates per Section 01 35 40 LEED Summary: Indoor Air Quality Products and Testing. G. Submit V.O.C. compliance certificate.

1.5 QUALITY ASSURANCE

A. Product Manufacturer: Company specializing in manufacturing paint and coating finish products with 25 jobs similar in scope to the work proposed.

B. Applicator: Specializing in commercial painting and coating application with at least 10 successful jobs like that proposed.

C. Verify coating thickness per manufacturers instructions using an approved dry film coating testing instrument.
   1. Make 5 separate spot measurements where directed with 3-gauge readings made for each location.
   2. The average of 5 spot measurements shall not be less than the specified thickness.

D. Paint applicator shall certify the following:
   1. Immediately before painting, surfaces conformed to the specified preparation; they were in the specified condition; and were clean, dry, and
      free of dust, rust, and mill scale to the degree required by this Specification.
   2. Surface preparation and coating use, mixing, application, and curing were done under the current printed instructions and instructions of the coating manufacturer, and these Specifications.
   3. The products specified were used or a listing of the names of the products used and their manufacturer was submitted and approved.
   4. The products were used within the shelf-life dates of each container of each product used.

5. The manufacturer s recommended dry film thickness of coatings on the work.
6. Compatible paints were used where coatings are applied over previously applied coatings.

1.6 INDOOR AIR QUALITY

A. Before painting inside the building [coordinate with User to] operate the building's permanent ventilation system at maximum outdoor airflow before mixing and applying paint, and for a minimum of 72 hours after application.

1.7 REGULATORY REQUIREMENTS

A. Conform to the International Building Code (IBC) for flame, fuel, and smokerating requirements for completed finishes.

1.8 MOCKUP

A. Before proceeding with Painting, finish one complete space or area of each color and substrate required: minimum 8x8 foot. Show selected colors, finish textures, materials, and workmanship.

B. Accepted mockup spaces or areas shall serve as a standard for the remainder of the work.

C. Locate mockup where directed.

D. Accepted mockup area may remain as part of the Work.

1.9 DELIVERY, STORAGE AND HANDLING

A. Store and protect products as recommended by the paint manufacturer.

B. Deliver products to the site in sealed and labeled containers.

C. Container labeling shall include the manufacturer s name, type of paint, brand name, manufacture data, coverage, surface preparation, drying time, clean up, color designation, and instructions for mixing and reducing.

D. Store paint materials at an ambient temperature of 45 degrees F to 90 degrees F in a well-ventilated area, unless required otherwise by the manufacturer s instructions. Only materials to be consumed within a 24-hour work period are allowed at the work site.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.10 TEMPERATURE AND HUMIDITY REQUIREMENTS

A. Provide continuous ventilation and heating equipment to maintain paint products and substrate dry and at ambient temperatures between 50- and 85degrees F. for 24 hours before, during, and 48 hours after application of finishes, unless permitted otherwise by coating manufacturer s recommendations.

1. Provide temperatures by temporary scaffold enclosures and heating as necessary.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 65 percent, unless permitted otherwise by the coating manufacturer s recommendations.

C. Provide lighting of 80-foot candles at work. Building lights may be used.

1.11 EXTRA MATERIALS

A. Provide a one-gallon container of each color used to OWNER for repair touchup.

B. Label each container with color, texture, and building locations, in addition to the manufacturer s label.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Companies meeting the Quality Assurance criteria and these specifications.

2.2 MATERIALS AIR QUALITY

A. Conform to governing regulations including Federal and State requirements for pollution, safety, and health. Maximum chemical pollutant emission volatile organic compounds (V.O.C.) for paints per USGBC LEED requirements.

2.3 PAINT MATERIALS

A. Provide compatible products under approved paint manufacturer including paint, varnish, stain, enamel, lacquer, fillers, and related products for prime, intermediate, and finish coats.

B. Accessory material not specifically indicated, but required, such as shellac, reducers, undercoats, primers, putty, and the like, shall be of quality not less than required by applicable Specification Standards and recommended

by the finish coat manufacturer in writing for compatibility and conditions of

use. C. Paints containing lead shall not be used.

D. All products Best Line - PREMIUM GRADE for professional trade sales recommended by the paint manufacturer for the conditions of use.

E. Mixing

1. Furnish ready-mixed products except as otherwise specified.
2. Follow the manufacturer s directions for:
    a. Field-mixing of pastes and powders.
    b. Field-catalyzing components.
    3. Coatings shall have good flowing application properties, capable of drying, or curing free of streaks or sags and yielding finish specified.

2.4 DEEP TONE COLORS

A. Deep tone colors will be required for 20 percent of the work.

B. A maximum of 15 different shades or tints of color will be selected for use in the job.

2.5 FINISHES

A. Refer to the schedule at the end of the specification for surface finishes.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate time and areas of work with OWNER. Allow for building occupancy during work.

3.2 EXAMINATION

A. Verify that surface and substrate conditions are ready to receive work as specified and as recommended by the paint manufacturer. Report any conditions that may adversely affect proper paint application.

B. Examine DRAWINGS, SPECIFICATIONS, and field conditions to determine the extent of exposed piping, ducts, conduit, electrical controls, cabinets, and equipment and allow for painting as required.

C. Measure the moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless the moisture content of surfaces is below the following maximums:

1. Gypsum Wallboard: 12 percent.

2. Interior Located Wood: 7 percent, measured per ASTM D4442.
3. Exterior Located Wood: 12 percent, measured per ASTM D4442. Minimum 36 hours after any water pressure washing.

D. Beginning of application means acceptance of existing surfaces.

3.3 PROTECTION

A. Protect elements surrounding the work of this section from damage or disfiguration.

B. Mask and shut down heat and ventilation intakes when painting adjacent exterior surfaces.

C. Repair damage to other surfaces caused by work of this Section.

D. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

E. Protection of work when stopping for the day:
   1. Erect barriers and post warning signs. Confirm that no dust-generating activities will follow shutting down for the day.

3.4 ITEMS NOT TO BE PAINTED

A. The following items shall be masked and not painted unless specifically scheduled:
   1. Items with factory finish paint, such as light fixtures, toilet partitions, factory-finished wall and soffit panels, vinyl wall coverings, and acoustical ceilings.
   2. Concealed areas such as pipe chases and areas above finish ceilings.
   3. Finished surfaces such as hardware trim, anodized aluminum, glass, stainless steel, bronze, and the like.
   4. Moving equipment wearing surfaces.
   5. Equipment data plates, manufacturer s permanent maintenance labels, and fire door and jamb labels.

3.5 PREPARATION

A. General: Clean and prepare the substrate for finish as specified and as recommended by the coating manufacturer for conditions of use.

B. Coordinate with OWNER for areas that cannot use water or blast cleaning.

C. Remove or coordinate and remove electrical plates, hardware, glazing stops, light fixture trim, and fittings before preparing surfaces and finishing. Replace removed items after painting.

D. Clean surfaces and correct surface defects.
   1. Remove oil grease and mildew with detergent or SSPC-SP1 cleaning solvent first (do not use paint thinner, hydrocarbons, or turpentine as they leave residue).
   2. Remove dirt, dust, loose material, rust-scale, oil-grease, mildew, release agents, and non-adhering paint by grit blast, pressure water blast, sandpapering, grinding, scraping, or wire brushing.

3. Sandpaper thick and sharp edges of the shop and existing paint and runs to smooth featheredge.
4. Lightly sand or abrade surfaces dull to ensure adhesion.
5. Fill or sand out cracks, holes, pits, and scratches, smooth to match the adjacent finish.
6. Remove sanding dust prior to painting.

E. Seal stain marks, which may bleed through subsequent, finishes.

F. Existing coating to be re-painted or finished: remove loose, blistered, scratched, corroded finish, scaled or crazed finish to base material surface or feather edges smooth. Where new work joins existing work, prepare existing surfaces extending to the nearest break in the plane intersecting wall, ceiling, or pilaster.

G. Impervious Surfaces: Remove mildew by scrubbing with solution of T.S.P. or 3 parts water to 1 part household bleach. Rinse with clean water and allow surface to dry.

H. Insulated Coverings: Remove dirt, grease, and oil from cloth jacketing.

I. Gypsum Board: Surfaces shall be clean, crack-free, joints finished, textured where specified prior to painting.
1. If surface defects appear after prime coating, repair defects.

J. Existing Gypsum Board Surfaces: Clean, then latex fill and smooth defects up to 2-inch holes flush with adjacent surface and match existing texture. Sand to feather edge. Spot prime defects after repair.

K. Galvanized Surfaces: Remove surfaces contamination and oils per SPC SP1 solvent cleaning and thoroughly rinse. Remove sheen per SPC SP2, hand tool cleaning, or SSPC-SP4 brush-off blast cleaning. After cleaning, and prior to painting, remove dust and similar containments by air blast or vacuum. Apply primer immediately after cleaning.

L. Existing Plaster Surfaces: Fill hairline cracks, and imperfections up to 2-inch holes with latex patching plaster feather edges. Make flush with adjacent surfaces and match existing texture. Wash and neutralize alkali surfaces.

M. Gypsum Plaster: Allow at least 30 days cure from installation of final plaster coat, before starting work.

1. Surfaces with excessive shrinkage or structural cracks are required to be repaired by plasterer.
2. Remove dust and other foreign matter.
3. Fill minor isolated hairline cracks with patching plaster and smooth off to match adjacent surfaces. Wash and neutralize high alkali surfaces.

N. Uncoated Steel and Iron Surfaces: remove grease, scale, dirt, and rust per SSPC-SP1, Solvent Cleaning. Clean per SSPC-SP3 power tool cleaning, or SSPC-SP2 hand cleaning, or SSPC-SP4 brush-off blast cleaning.

O. Shop Primed Steel Surfaces: Solvent clean per SSPC-SP1 followed by sanding, scraping and wire brushing per SSPC-SP2 hand cleaning or SP7 brush-off blast cleaning to remove loose, scratched or weathered-corroded shop finish primer weld burns and rust. Feather edges to make inconspicuous. After cleaning and prior to painting remove dust and similar containments by air blast or vacuum.

P. Interior Wood Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried, sand between coats.

Q. Wood to Receive Stain or Transparent Finish: Remove dust, grit, and foreign matter. Apply stain to ends and edges prior to installation.

R. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Apply back prime prior to wood installation. Seal knots, pitch streaks and sappy sections.

S. Glue Laminated Beams and Columns: Prior to finishing, wipe surfaces with solvent, remove grease and dirt then sand lightly.

T. Doors Scheduled for Painting: Paint top and bottom edges with paint after door fitting.

U. Wood Doors Scheduled for Transparent Finish: Seal top and bottom edges with clear varnish or lacquer after door fitting.

3.6 EXISTING PREVIOUSLY COATED SURFACES

A. After preparation as specified check for paint compatibility by applying a 2 to 3 square foot test patch of the proposed coating systems over existing sound coating. Allow to dry 7 days and test adhesion per ASTM D6677, ASTM D4541 or ASTM D3359. If adhesion fails: a different coating or complete removal of existing coating is required.

3.7 APPLICATION

A. Apply coatings to all visible exposed surfaces scheduled in accordance with approved coating manufacturer s instructions and approved submittals for the conditions of use.

B. Do not apply finishes to surfaces that are not clean, dull, and dry.

C. Apply each coat to uniform finish.

D. Sand or abrade lightly and clean between coats to achieve adhesion if recommended by coating manufacturer.

E. Allow applied coat to dry before next coat is applied. Recoat within time recommended by manufacturer.

F. Where clear finishes are required tint fillers to match wood. Work fillers and stains into the grain before set. Wipe excess from surface. G. Change colors or finishes at corners and joints.

H. Apply materials so that the following results are obtained.
1. Smooth uniform appearance, underlying paint edges feathered, free of brush marks, uneven orange peel, sags, runs or foreign matter.
2. Complete coverage without skips or streaks and without heavy build-up in details.
3. Close match with approved color.
4. Sharp edges at adjoining materials or at color changes.
5. Work stain finishes thoroughly into wood by brushing or rolling.

I. Inspection of Coats: Do not apply additional coats until each completed coat has been inspected by the ARCHITECT/CONTRACTING OFFICER.
1. Only inspected and approved coats of paint shall be considered in determining number of coats applied.
2. Refinish entire surface if coat is not acceptable.

3.8 FINISHING MECHANICAL AND ELECTRICAL

EQUIPMENT A. Paint shop primed items.

B. Remove unfinished louvers, grilles, covers, steel glazing stops, access panels, and other loose components and paint separately.

C. Clean, prime and paint exposed mechanical and electrical work including pipes, pipe insulation, conduit, boxes, ducts, hangers, brackets, collars and supports.

D. Protect and retain legibility of data plates and identification markings on mechanical and electrical equipment by masking.

E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles and convector and baseboard cabinets to match face panels.

F. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.9 CLEANING

A. As Work proceeds, promptly remove excess paint products where spilled, splashed or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Remove waste, cloths, and material, which may constitute fire or V.O.C. hazard daily from site.

D. Leave surfaces not required to be finished under this section undamaged and clean and free of paint products from work of this Section.

3.10 COATING SCHEDULE

A. General:
1. For the purposes of this schedule each coat shall be at least dry to the touch before proceeding with the following coat.
2. Coating materials shall be recommended by manufacturer for condition of use and compatible with undercoats.
3. Minimum number of coats is scheduled. Apply additional finish coats as necessary to provide uniform appearing coverage.
4. Refer also to DRAWINGS and Finish Schedule.
5. Sherwin Williams products are referenced. Other manufacturers having similar specifications meeting Quality Assurance specifications may be used.

B. Exterior Coating Schedule:
1. Wood Painted:
   a. One coat topcoat compatible exterior latex primer sealer; Sherwin Williams ProBlock .
   b. Two coats, exterior latex enamel finish, satin sheen Sherwin Williams, A-100 .
2. Wood Stained:
   a. Two coats: acrylic solid color stain: Sherwin Williams Woodscapes .
   b. [OPTION: 2 coats water-based semi-transparent acrylic stain, Sherwin Williams Woodscapes semi transparent stain.]

C. Interior Coating Schedule:

1. Structure ceiling joists, beams, and deck:
   a. First Coat: waterborne acrylic dry fall 3 to 4.5 dry mils thick, white color eggshell, Sherwin Williams B42 W0002 , or approved. Any factory painted decking shall be dulled by wire brushing or brush off blasting and welds and abrasions spot primed.
   b. Finish Second Coat: same as first coat.
2. Wood - Transparent:

a. One coat semi-transparent stain.
b. Filler coat (open grain wood only).
c. One coat sealer.
d. 2 topcoats water borne Polyurethane Varnish: clear satin sheen. Sherwin Williams Wood Classics A68 .

3. Plaster, Gypsum Board:
   a. Spot prime any stains with stain blocking primer sealer over stained area; Sherwin Williams Quick Dry B51 W08670, sealer primer surfacer, topcoat compatible.
   b. First Coat: Latex high build primer Surfacer: Sherwin Williams Preprite B28 .
   c. 2 coats washable acrylic latex enamel, eggshell sheen on walls, flat on ceilings. Sherwin Williams ProMar 200 B31 2600.
      1) Apply finish coat with uniform roller texture as approved in the mockup.

3.11 COLOR SCHEDULE

A. Unless otherwise specified, refer to the Finish Schedules and Drawings. Match adjacent surface color for the following:
   1. Access doors, registers, radiation unit covers, exposed piping, electrical conduit, and mechanical/electrical panels.
   2. Exterior wall and roof mounted pipes, ducts, conduits, flues, and flashing.

[Edit the following]

B. Exterior and interior windows and doors, their framing and trim: different color from adjacent walls.

C. Paint surfaces visible behind vents, louvers, grilles and reveals in public areas:
flat black.

D. Ceilings shall be painted [same] a different color [as] than walls.

E. Doors all the same color with a different color than frames.

F. Roof fascia different color than wall.

G. [Five] different color schemes for the painting of rooms.

H. [Three] different colors for doors.

I. [Two] different colors for exterior concrete, Portland Cement Plaster and masonry.

END OF SECTION

SECTION 10 44 16
FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 PRODUCTS FURNISHED BUT NOT INSTALLED IN THIS SECTION

A. Mounting embedments, anchorage, block outs, or other items to be incorporated into the adjacent structure.

B. Provide a minimum of 16 gages by 6-inch sheet steel mounting across 3 studs behind the gypsum board.

1.2 RELATED SECTIONS

A. Section 09 21 16 - Gypsum Board Assemblies

1.3 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this Specification. Publications may be referenced in the text by basic designation only. In case of conflict, only the most stringent shall govern:

1. Underwriters Laboratories Inc. (U.L.) listing and " Building Materials Directory".
2. National Fire Protection Association (NFPA) 10 - Standard Portable Fire Extinguishers.
3. NFPA 14 Installation of Standpipe, Private Hydrants and Hose Systems.
4. International Fire Code (IFC) 906
5. International Building Code (IBC) 11: ANSI A117.1

1.4 SUBMITTALS

A. Submit dimensions, operational features, materials, finishes, fasteners, anchorage installation instructions, typical details, and location in completed work.

B. Submit operations and maintenance data, including refilling and recertification.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Protect extinguishers from freezing.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS

A. U.L. Labeled dry chemical 2A-10BC rechargeable type. 1. Pressure gage
2. Stainless steel or aluminum nozzle and trigger control.

B. Extinguishers shall be fully charged.

2.2 EXTINGUISHER AND HOSE CABINET: PUBLIC AREAS

A. Cabinets are not required in staff and custodian areas: Provide wall bracket-mounted fire extinguishers without cabinets in mechanical, electrical, and elevator rooms.

B. Trim: Self-trimming overlapping flanges return to a wall surface for installation after the wall finish is applied. Maximum 4-inch projection from wall finish surface and recessed handles to meet ADA clearance requirements.
1. Brushed aluminum or stainless-steel finish.

C. Door: It has a partial or full-view tempered safety glass front, a pull-to-break open lock handle, and a full-length piano hinge for a 180-degree opening.
1. Door frame stainless steel or brushed aluminum.
2. Label: "Fire Extinguisher" or Fire Hose in red color, two-inch minimum high letters.

2.3 WALL SIGN

A. Wall mount angle shaped two-faced .060-inch plastic glo-brite white and red color with Fire Extinguisher message 12-inch-high x 6-inch wide: www.emedco.com

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWING details and verify field conditions for defects that adversely affect the completed work and deviations beyond allowable tolerances.

B. Verify that the rough openings for the cabinet are correctly sized and located.

C. Beginning installation shall mean acceptance of the interfacing surfaces as capable of producing an acceptable job.

3.2 INSTALLATION

A. General: Installation shall be as recommended by the manufacturer and approved submittal for the conditions of use: complete and ready to use, with

all necessary attachments, adaptors, and accessories.

1. Coordinate with interfacing and related trades as necessary. The gypsum board shall run continuously behind the cabinet wall recess for wall fire and sound resistance.
2. Mount rigidly and permanently into solid backing.
3. Seal continuously between the cabinet and adjacent wall with Sealant per Section 07 92 00 Joint Sealants.

B. Anchorage: Standard commercial threaded or expansion anchors are recommended for intended use by their manufacturer's literature, which indicates lateral (shear) and pullout (tension) data for approval.

1. Minimum anchor diameter: 0.25 inch.
2. Each anchor shall be capable of developing at least a 200-pound lateral load and a 200-pound pullout load.

C. Mount the operating handle of the extinguisher a maximum of 48 inches above the floor.

1. Surface mount cabinets and extinguishers not in cabinets: 27 inches to bottom from the floor

D. Mount extinguishers not in cabinets onto hook into solid backing in the wall.

3.3 CLEAN UP

A. Leave extinguisher, cabinet, and adjacent areas clean and free from stains or surplus materials resulting from installation.

3.4 SCHEDULE

A. Typical Installation: Extinguisher in the cabinet at locations indicated and a minimum of the following:

1. Provide one extinguisher for every 1500 square feet, 75 lineal feet of travel distance per IFC 906, and a minimum of one extinguisher at every exit and exterior door on each floor.

END OF SECTION

SECTION 14 24 00
HOLE-LESS HYDRAULIC PASSENGER ELEVATORS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 05 12 00 - Structural and Miscellaneous Steel Framing

B. Section 06 10 00 Rough Carpentry

C. Section 07 13 26 Self-Adhering Wall Waterproofing

D. Section 07 13 60 Self-Bonding Floor Waterproofing

E. Section 09 21 16 - Gypsum Board Assemblies

F. Division 23 - Mechanical Systems Equipment and Equipment Room and Shaft Venting

G. Division 26 - Electrical Systems - Power and Telephone

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Key cylinders for elevator operation.

1.3 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification. Publications may be referenced in the text by basic reference only. In case of conflict the most restrictive shall govern.

1. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
2. Americans with Disabilities Act - Accessibility Guidelines for Buildings and Facilities (ADAG).
3. ANSI/ASME A17.1 - Safety Code for Elevators and Escalators.
4. International Building Code (IBC).
5. ANSI/ASME A17.2 - Inspector’s Manual for Elevators and Escalators.
6. ASTM A36 - Specification for Carbon Structural Steel.
7. ASTM A167 - Specification for Stainless and Heat-Resisting ChromiumNickel Steel Plate, Sheet, and Strip.
8. ASTM A366 - Specification for Commercial Steel (CS) Sheet, Carbon, (0.15 Maximum Percent) Cold-Rolled.
9. ASTM A653 - Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by Hot-Dip Process.
10. ASTM B221 - Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

11. ASTM F1344 - Specification for Rubber Floor Tile.
12. ANSI/AWS D1.1 - Structural Welding Code, Steel.
13. ANSI/NFPA 80 - Fire Doors and Windows.
14. ANSI/UL 10B - Fire Tests of Door Assemblies.
15. APA - American Plywood Association.
16. NEMA LD3 - High Pressure Decorative Laminates.
17. NEMA MG1 - Motors and Generators.
18. ANSI/National Fire Protection Association - NFPA 70 - National Electrical Code (NEC).
19. Society for Protective Coatings (SSPC) - Steel Structures Painting Manual.
20. International Building Code (IBC) [as amended by Municipality of Anchorage.]

1.4 SYSTEM DESCRIPTION

A. Hydraulic Elevator System complete and ready to operate including holeless cylinder arrangement that does not require a hole below pit floor and does not require a separate machine room.

1.5 SUBMITTALS

A. Shop Drawings: Indicate the following information:
   1. Location and sizes in floor plan and section detail of rails, cylinders, access doors, doors, frames and shaft plan and height dimensions.
   2. Motor and hydraulic pump, valves, controller, selector, governor and other component locations.
   3. Car, guide rails with attachment to structure, buffers, and other components in shaft.
   4. Rail bracket spacing; maximum forces imposed on guide rails requiring load transfer to building structural framing. Seismic design data; certified by a Licensed Professional Engineer.
   5. Individual weight of principal components; forces at points of support.
   6. Clearances and over travel dimensions of car.
   7. Locations for car light and telephone.
   8. Expected heat dissipation of elevator equipment.
   9. Electrical and telephone characteristics and connection requirements.
   10. Show arrangement of equipment so moving elements and other equipment can be removed for repairs or replaced without disturbing other components. Arrange equipment for clear passage through access door.

B. Product Data: Provide data on the following items:
   1. Signal and operating fixtures, operating panels indicators.
   2. Car design, dimensions, layout, components, lighting and finishes.
   3. Car and shaft door and frame details.

4. Electrical characteristics and connection requirements.

C. Samples: Submit two samples each 6 by 6 inch in size illustrating car interior finishes, car and shaft door and frame finishes.

D. Certification from manufacturer and installer that elevator proposed meets IBC requirements.

E. Certification from installer that shaft, pit, layout and dimensions, and electrical service are adequate for elevator system being provided. F. Parts catalog, maintenance and operations data.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 10 years documented experience.

B. Installer: Workers specializing in performing the work of this section with minimum 5 years Alaskan experience and approved by elevator equipment manufacturer.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable portions of IBC, ANSI/ASME A17.1, and NEC code as amended locally for manufacture and installation of elevator system.

B. Conform to IBC for provisions for the physically disabled. Include emergency communication system with combination speaker - acknowledgment indicators and push button controls, wire to building telephone board. Mount in cabinet with lever handle door in car.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., or a testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

D. IBC seismic requirements for components and attachment to building structure for seismic zone indicated on Structural Drawings.

1.8 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work of this section, and after submittals are approved.

B. Attendance required of persons directly involved with the work of this section.

C. Review schedule of installation, installation procedures and conditions,

and coordination with related work.

1.9 WARRANTY

A. Provide one-year manufacturer's warranty from date of Substantial Completion.

B. Warranty: Include coverage for elevator operating equipment and controls.

1.10 MAINTENANCE SERVICE

A. Furnish service and maintenance of elevator system and components for one year from date of Substantial Completion.

B. Examine system components every three months. Clean, adjust, and lubricate equipment.

C. Include systematic examination, adjustment, and lubrication of elevator equipment; maintain hydraulic fluid levels. Repair or replace parts as necessary. Use parts produced by the manufacturer of the original equipment.

D. Perform work without removing elevator from service during peak traffic periods.

E. Provide emergency call service during week day work hours for this maintenance period.

F. Maintain in Alaska an adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure the fulfillment of this maintenance service, within 3 days.

G. Perform maintenance work using competent and qualified personnel, under the supervision of the elevator manufacturer or original installer.

H. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

1.11 OPERATION AND MAINTENANCE DATA

A. Include a parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.

B. Provide technical information and special tools for servicing operating equipment. Provide non proprietary software for maintenance and service by OWNER.

C. Include legible schematic of hydraulic piping and wiring diagrams of installed electrical equipment. List symbols corresponding to identity or markings on machine room and shaft apparatus.

1.12 OWNER INSTRUCTIONS

A. Provide minimum of three hours training in operations, trouble shooting and preventative maintenance of elevator systems by manufacturer approved person.

B. Obtain a receipt from OWNER that training has been given.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS, SUBJECTS TO SPECIFIED CRITERIA:

A. Pre-Engineered Hydraulic System ADA Disabled Access of Type not requiring jack hole below pit and not requiring separate machine room. All components supplied by same manufacturer.

B. Otis or Thyssenkrupp systems are acceptable.

2.2 MINIMUM CHARACTERISTICS OF THE ELEVATOR SYSTEM:

A. Rated Net Capacity: 3500 lbs.

B. Rated Speed: 100 feet per minute.

C. Car Size: 77 by 65 inches minimum inside clear.

D. Car Height: 8 feet minimum inside clear.

E. Number of Stops: 2.

F. Number of Openings: 2 Front, 0 Rear.

G. Shaft and Car Door Opening Sizes: 42 inches wide by 84 inches high.

H. Door Type: Double leaf.

I. Door Operation: Centered bi-parting opening.

J. Floor to Floor Total Travel: per DRAWINGS.

K. Computer microprocessor controlled with full collective operation. Automatic by means of car and shaft buttons. Seismic Design: In accordance with IBC as indicated by structural DRAWINGS and ANSI/ASME A17.1.

2.3 MATERIALS

A. General: Provide manufacturer s standard elevator system.

B. Rolled Steel Sections, Shapes, and Rods: ANSI/ASTM A36.

C. Sheet Steel: ANSI/ASTM A366 or ASTM A653 zinc coated.

D. Stainless Steel: ASTM A167 Type 304 satin finish.

E. Aluminum: ASTM B221, extruded.

F. Plywood: APA Structural I, Grade C-D, and pressure fire resistance treated, dried and sanded.

2.4 EQUIPMENT

A. Motor, Controller, Pumps, Valves, Cylinders, Regulators, Fluid Tank, and fluid fire resistant per ASTM A17.1 Controls, Buttons, Wiring and Devices, Indicators: As required for operations, installed per NEC.

2.5 GUIDE RAILS

A. Rails, Cables, Spring Buffers, Attachment Brackets and Anchors: to fit structure and span between floors indicated, sized according to code with safety factors.

2.6 PUMP UNIT

A. The pumping unit shall be of integral design including electric motor, with solid state starter, silencer, positive displacement screw type pump, hydraulic control system, storage tank, necessary piping connections and a controller, all mounted on a structural steel bedplate as a single self-contained unit. The motor and pump assembly shall be rubber isolation mounted. A structural steel frame shall support the tank.

2.7 ELECTRICAL COMPONENTS

A. Provide necessary electrical control and power wiring, junction boxes, disconnect switch, motor contactor, in conduit to connect to building power at a single junction box within 8 feet of elevator equipment.

B. Include wiring and connections to electrical devices in elevator car shaft, and between outside of shaft. Provide car emergency communications system with telephone connections, in accord with ADAG 4.10.14.

C. Install electrical components inside appropriate NEC approved NEMA enclosures.

D. Products shall be in accord with NEC as amended locally.

E. Electrical Characteristics: Verify and provide compatible with that available.
   1. 208 volts, three-phase 60 Hz.
   2. Separate lighting: 120 volts, 1 phase, 60 Hz.
   3. Starter Characteristics: Solid state motor starter.

F. Disconnect Switch: on equipment under provisions of NEC.

G. Battery Powered Emergency Return Unit (ERU)

2.8 LUBRICATION

A. Grease Fittings: For lubricating bearings requiring periodic lubrication.

B. Grease cups: Automatic feed type.

C. Lubrication Points: Visible and easily accessible.

2.9 CAR FABRICATION

A. Frame: Rigid and braced, rolled or formed steel sections welded joints, mounted on resilient isolators.

B. Platform: Steel frame, with pressure treated fire resistant plywood subflooring assembly, ready to receive floor finish.

C. Car Finish: manufacturer's standard pre-engineered including:
1. Flooring: Rubber tile 1/8 inch thick, 125-psi static load rated per ASTM F1344: ROPPE Textured Design or approved
2. Walls: Plastic Laminate: NEMA LD3, vertical grade type, .030 inches; color/pattern and matte surface finish as selected.
3. Front Return Panel: Stainless Steel.
4. 6 inch Stainless steel wall base plates.
5. Ceiling: suspended center ceiling of satin stainless laminate or white painted steel.
6. Light Fixtures: LED around perimeter ceiling. Automatic shut off when system not in use.
7. Ventilation: Fan in ceiling.
8. Control Panel and Face Plate: Satin Stainless Steel with illuminating call buttons.
9. Indicator Panel: Above control panel with illuminating position indicators.
10. Hand Rails: 1-1/4 to 1-1/2 inch diameter Stainless Steel tubing per ADAG, spaced from wall 1-1/2 inches; placed at rear wall, and side walls, return ends per ADAG.
11. Certificate Frame and Glazing: metal frame, clear tempered glass attached with tamper proof screws.
12. Pad hooks: stainless steel.
13. Protective pads: one set, canvas cover, padded, brass grommets to match pad hooks, covering side and rear walls and front returns.

2.10 CAR ENTRANCES

A. Car Doors: Satin Stainless Steel; 16-gage metal, of hollow construction satin finish.

B. Car Door Frames: Satin Stainless Steel; or enamel on steel: 16 gage metal welded corner design of hollow insulated construction. U.L 1-1/2-hour fire rating.

C. Threshold Sills: Extruded aluminum with grooved surface 1/4 inch thick minimum thickness.

2.11 SHAFT ENTRANCES

A. Shaft Doors and Frames: manufacturer's standard pre-engineered including:
   1. Shaft Doors: Stainless Steel; 16 gage 1.5 thick metal, of hollow sandwich construction satin finish.
   2. Shaft Door and Frame construction: UL 1-1/2 hour fire rating; insulated satin stainless steel satin finish sandwich panel door construction 1-1/4 inch thick, minimum.
   3. Threshold Sills: Extruded aluminum grooved surface 1/4 inch thick complete with angle supports to building structure. Coordinate exact location to allow elevator service.

B. Painted rough surfaced steel pit access ladder: welded 18 inch wide with 3/4 inch steel rungs at 12 inch spacing and spaced from wall, extending from bottom of pit to 4 feet above floor, complete with angle supports screwed into building structure.
   1. Coordinate exact location to allow elevator maintenance.

2.12 FINISHES

A. Structural Metal Surfaces not exposed to public view: wipe clean with solvent of oil or grease; clean surfaces of rust; prime paint and 2 coats of enamel or galvanized steel.

B. Wood surfaces not Exposed to Public View; fire resistive treated and one coat primer; one coat enamel.

C. Steel Exposed to Public View: Clean and degrease metal surface; spray one coat of paint primer; two coats of spray applied enamel color as selected. D. Stainless Steel Exposed to Public View: No. 4 brushed satin finish.

2.13 CAR OPERATING PANELS

A. Provide surface mount operating panels in car with an integral face plate; containing illuminated call buttons corresponding to floors served, in car alarm button, and in DOOR OPEN DOOR CLOSE buttons.

B. Position alarm button in accord with ADAG; not more than 54 inches above car floor.

C. Include the following features:
   1. Independent service switch.
   2. Inspection switch.
   3. Fan or blower switch.
   4. Light switch.
   5. Additional operating switches for the special features specified.
   6. 120 V, 20 A convenience receptacle in service cabinet.

D. ADAG compliant emergency communication system in compartment.

2.14 CONTROLS

A. Comply with ADAG including automatic self leveling, reopening if doors obstructed, and door response time.

B. Provide visual illuminated indicators near controls with audible signals.

C. Buttons: 3/4 inch minimum dimension Stainless Steel Illuminating type, one button only at landings; marked with arrows, including indications. Center at 42 inches above floor. Designate by Braille and raised standard alphabet characters and Arabic numerals. Raised designations shall be placed immediately to the left of the buttons to which they apply.

D. Locate highest button in elevator Car control panel and the center of the emergency communications telephone handset, not more than 48 inches above floor level.

E. Sound audible tone signal in car when car is stopping at a floor.

F. Include with illuminated landing indicators, audible tone signals.

G. In each Car provide Arabic numerals 5/8 inch in height raised 0.03 inch or Braille numerals immediately to left of floor buttons to identify each floor.

H. At each floor landing provide 2-inch high floor numerals raised and Braille message provided on both jambs.

2.15 AUTOMATIC OPERATION

A. Provide manufacturer’s standard microprocessor computer controlled software based built-in logic with minimum mechanical relays.

B. Set system operation so that upon momentary pressure of a hall button from another landing dispatch car to that landing.

C. Allow call registered by momentary pressure of hall button at any time, to remain registered until car stops in response to that call at that landing.

D. If hoistway door is not opened within a short interval after car has stopped at terminal, allow car to respond to any call from the other landing.

E. Door Control Features:
   1. Program door control to open doors automatically when car arrives at floor.
   2. If doors are prevented from closing for approximately 20 seconds because of an obstruction, automatically disconnect door reopening devices, close doors more slowly until obstruction is cleared and sound buzzer.
   3. Door Safety Devices: comply with IBC: photoelectric light beam detection using multi-beam array projecting across the car door opening.

F. Interconnect elevator car control system with building fire and smoke alarm system, security card access system, and with building telephone system.

2.16 FIREFIGHTER'S SERVICE

A. Provide "Firefighter's Operation" in accordance with ANSI/ASME A17.1 and IBC.

2.17 LIMITED ACCESS SERVICE

A. Keyed In-Car Lock-out: Incorporate a key operated switch hall button which disables any other car calls.

B. Allow "Firefighter's Service" to take control priority over "Limited Access Service."

C. Provide wiring to incorporate future card reader system in car and hall.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine DRAWINGS and verify field conditions to receive elevator system are properly sized and supports adequately sized and positioned.

B. Verify that shaft, pit, and machine room is ready for work of this section.

C. Verify that electrical power is available and of the correct characteristics.

D. Start of work shall indicate acceptance of conditions as capable of producing on acceptable job.

3.2 INSTALLATION

A. Install in accordance with IBC, ANSI/ASME A17.1, and manufacturers approved submittals.

B. Install system components and connect. Install piping between hoistway plunger and pump unit above floor.

C. Mount motor and pump as one unit on vibration and acoustic isolators. Place unit on structural supports and bearing plates. Securely fasten to building against lateral seismic displacement.

D. Accommodate equipment in space indicated.

E. Install guide rails using threaded bolts with metal shims and lock washers under nuts. Compensate for expansion and contraction movement of guide rails.

F. Accurately machine and align guide rails. Form smooth joints with machined splice plates.

G. Bolt or weld brackets directly to structural shaft framing.

H. Field Welds: Chip and clean away oxidation and residue, wire brush; spot paint prime and finish with two enamel coats.

I. Coordinate installation of shaft wall construction.

J. Install door frames and headers into shaft. Grout sills solidly in place at concrete structure. Provide metal shim alignment and screw thresholds into structure.

K. Install pit access ladder.

3.3 ELECTRICAL INSTALLATION

A. Provide electrical power and control wiring in conduit, boxes, and accessories connected to building system in accord with NEC as amended locally.

B. Install electrical components and wiring to single point for connection into building electrical system.

3.4 TOLERANCES

A. Guide Rail Alignment: Plumb and parallel to each other within 1/8 inch in accordance with ANSI/ASME A17.1 AND ANSI/ASME A17.2.

B. Car movement: Smooth with no objectionable lateral or oscillating movement or vibration.

3.5 FIELD QUALITY CONTROL

A. Perform tests required by ANSI/ASME A17.2.

B. Provide two weeks advance written notice of date and time of tests.

C. Supply instruments and execute specific tests.

D. Perform the following tests in the presence of the Owner and Architect/Engineer:
   1. Test elevator system by transporting at least 4 persons up from lowest floor four times over full travel distance in 10 minutes.
   2. Time elevator travel between floors at not more than that on approved submittals. Measure time from when doors start to close until car has stopped level at next floor and doors are opening.
   3. Test continuously for 30 minutes: Verify no overheating in accord with manufacturer's recommendations.

3.6 TESTS BY REGULATORY AGENCIES

A. Perform tests required by regulatory agencies.

B. Schedule tests with agencies and Architect/Engineer, or Owner present.

C. Furnish test and approval certificates issued by agencies.

3.7 ADJUSTING

A. Adjust for smooth acceleration and deceleration of car so not to cause passenger discomfort.

B. Adjust automatic floor leveling at each floor to achieve 1/4-inch maximum from flush.

C. Adjust for smooth quiet operation without obvious steps of acceleration or jerks.

3.8 CLEANING

A. Remove protective coverings from finished surfaces.

B. Clean surfaces and components ready for use. Remove any debris and extra material caused by elevator installation.

END OF SECTIONEND OF SECTION

APPENDIX F

FORMS

CONSTRUCTION BID FORM

NAME _____

ADDRESS _____

_____

To the CONTRACTING OFFICER, ALASKA RAILROAD CORPORATION:

In compliance with your Invitation to Bid Number, **Invitation to Bid 25-24-213167**, the Undersigned proposes to furnish and deliver all the materials and do all the work and labor required in the construction of the **ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install**, located in Fairbanks, Alaska according to the plans and specifications and for the amount and prices named herein as indicated on the Cost Schedule, which is made a part of this Bid.

The Undersigned declares that he/she has carefully examined the contract requirements and that he/she has made a personal examination of the site of the work; that he/she understands that the quantities, where such are specified in the Cost Schedule or on the plans for this Project, are approximate only and subject to increase or decrease, and that he/she is willing to perform increased or decreased quantities of work at unit prices bid under the conditions set forth in the Contract Documents.

The Undersigned hereby agrees to execute the said contract and bonds within **Ten (10) Calendar Days**, or such further time as may be allowed in writing by the Contracting Officer, after receiving notification of the acceptance of this Bid, and it is hereby mutually understood and agreed that in case the Undersigned does not, the accompanying bid guarantee shall be forfeited to the Alaska Railroad Corporation as liquidated damages, and said Contracting Officer may proceed to award the contract to others.

The Undersigned agrees to commence the work within **Ten (10) Calendar Days** after the effective date of the Notice to Proceed and to complete the work by _____, unless extended in writing by the Contracting Officer.

The Undersigned proposes to furnish a Payment Bond in the amount of One Hundred Percent (100%) and a Performance Bond in the amount of One Hundred Percent (100%) (of the contract), as surety conditioned for the full, complete and faithful performance of this contract.

The Undersigned acknowledges receipt of the following addenda to the drawings and/or specifications (give number and date of each).

Addenda No.	Date Issued	Addenda No.	Date Issued	Addenda No.	Date Issued
_____		_____		_____	
_____		_____		_____	
_____		_____		_____	

NON-COLLUSION AFFIDAVIT

The Undersigned declares, under penalty of perjury under the laws of the United States, that neither he/she nor the firm, association, or corporation of which he/she is a member, has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this Bid.

The Undersigned has read the foregoing proposal and hereby agrees to the conditions stated therein by affixing his/her signature below:

_____	_____
Signature	Name and Title of Person Signing
_____	_____
Telephone Number	Facsimile Number

Form 395-0121 (12/99)

ALASKA RAILROAD CORPORATION - BID BOND

ITB 25-24-213167 ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install	DATE BOND EXECUTED
PRINCIPAL (Legal name and business address)	TYPE OF ORGANIZATION ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION
	9 STATE OF INCORPORATION

SURETY(IES) (Name and business address)		
A.	B.	C.
PENAL SUM OF BOND		DATE OF BID

We, the PRINCIPAL and SURETY above named, are held and firmly bound to the Alaska Railroad Corporation (ARRC), in the penal sum of the amount stated above, for the payment of which sum will be made, we bind ourselves and our legal representatives and successors, jointly and severally, by this instrument.

THE CONDITION OF THE FOREGOING OBLIGATION is that the Principal has submitted the accompanying bid or proposal in writing, date as shown above, on the following project: _____, in accordance with contract documents filed in the office of the Contracting Officer, and under the Invitation for Bids therefore, and is required to furnish a bond in the amount stated above.

If the Principal's bid is accepted and he/she is offered the proposed contract for award, and if Principal fails to enter into the contract, then the obligation to ARRC created by this bond shall be in full force and effect.

If the Principal enters into the contract, then the foregoing obligation is null and void.

PRINCIPAL				
Signature(s)	1.	2.	3.	Corporate Seal
Name(s) & Titles [Typed]	1.	2.	3.	

CORPORATE SURETY(IES)				
SURETY A	Name of Corporation		State of Incorporation	Liability Limit $
	Signature(s)	1.	2.	Corporate Seal
	Name(s) & Titles [Typed]	1.	2.	

CORPORATE SURETY(IES)				
SURETY B	Name of Corporation		State of Incorporation	Liability Limit $
	Signature(s)	1.	2.	Corporate Seal
	Name(s) & Titles [Typed]	1.	2.	

CORPORATE SURETY(IES)				
SURETY C	Name of Corporation		State of Incorporation	Liability Limit $
	Signature(s)	1.	2.	Corporate Seal
	Name(s) & Titles [Typed]	1.	2.	

INSTRUCTIONS

1. This form shall be used whenever a bid bond is submitted.

2. Insert the full legal name and business address of the Principal in the space designated. If the Principal is a partnership or joint venture, the names of all principal parties must be included (e.g., "Smith Construction, Inc. and Jones Contracting, Inc. dba Smith/Jones Builders, a Joint Venture"). If the Principal is a corporation, the name of the state in which incorporated shall be inserted in the space provided.

3. Insert the full legal name and business address of the Surety in the space designated. The Surety on the bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. Individual sureties will not be accepted.

4. The penal amount of the bond may be shown either as an amount (in words and figures) or as a percent of the contract bid price (a not-to-exceed amount may be included).

5. The scheduled bid opening date shall be entered in the space marked Date of Bid.

6. The bond shall be executed by authorized representatives of the Principal and Surety. Corporations executing the bond shall also affix their corporate seal.

7. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

8. The states of incorporation and the limits of liability of each surety shall be indicated in the spaces provided.

9. The date that bond is executed must not be later than the bid opening date.

Form 395-0120

CONTRACTOR RESPONSIBILITY QUESTIONNAIRE

PART I - INSTRUCTIONS

1. All Bidders/Proposers submitting a Bid/Proposal for federally funded contracts are to complete and submit all Parts of this Questionnaire with their Bid or Proposal. Failure to complete and return this questionnaire, any false statements, or failure to answer question when required, may render the bid/proposal non-responsive. All responses must be typewritten or printed in ink. All information must be legible.

2. Please state "not applicable" in questions clearly not applicable to Bidder/Proposer in connection with this solicitation. Do not omit any question.

3. The completed Questionnaire must be sworn to by a partner (if partnership), a duly authorized officer or individual (if a corporation or LLC), or a principal (if a sole proprietorship).

4. The term "Proposer" includes the term "Bidder" and also refers to the firm awarded the Contract. The term "Proposal" includes the term "Bid".

5. ARRC reserves the right to inquire further with respect to Proposer's responses; and Proposer consents to such further inquiry and agrees to furnish all relevant documents and information as requested by ARRC. Any response to this document prior or subsequent to Proposer's Proposal which is or may be construed as unfavorable to Proposer will not necessarily automatically result in a negative finding on the question of Proposer's responsibility or a decision to terminate the contract if it is awarded to Proposer.

PART II - IDENTITY OF PROPOSER

1. Proposer's Full Legal Name: _____
2. The Proposer represents that it operates as the following form of legal entity: (Check whichever applies and fill in any appropriate blanks.)

- ☐ an individual or sole proprietorship
- ☐ a general partnership
- ☐ a limited partnership
- ☐ a joint venture consisting of: _____and _____ (List all joint ventures on a separate sheet if this space is inadequate.)
- ☐ a non-profit organization
- ☐ a corporation organized or incorporated under the laws of the following state or country: _____ on the following date: _____
- ☐ a limited liability company organized under the laws of the following state or country: _____on the following date: _____

3. Proposer's federal taxpayer identification number: _____

4. Proposer's Alaska business license number: _____

5. Proposer's contractor's license number (for construction only): _____

6. Proposer's legal address: _____

Telephone Number: (____) _____ Fax Number: (____)_____

7. Proposer's local or authorized point of contract address:

Name:_____ Title:_____

Address: _____

Telephone Number: (____) _____ EMAIL: _____

8. How long has the Proposer been in business? _____

9. Has Proposer been in business under another name? If so, identify name and dates used.

_____

_____

10. Does your firm consider itself to be an MBE, WBE or DBE?
YES ☐ NO ☐
If answer is "YES," attach a copy of certification.

11. Number of employees: _____ including _____ employees in the State of Alaska.

PART III-CONTRACTING HISTORY

1. Has the Proposer been awarded any contracts within the last five years by ARRC, the State of Alaska, or any other public entity for the same or reasonably similar goods or services sought by this solicitation? If none, answer "No". If yes, on a separate sheet of paper describe those contracts beginning with the most recent. State the name of the contracting entity; give a brief description of the contract and the contract number, the dollar amount at award and at completion, date completed; state the contract period, the status of the contract, and the name, address, and telephone number of a contact person at the agency. Indicate if award was made to Proposer as prime contractor or joint venture.
Proposer need not provide more than three such descriptions.
YES ☐ NO ☐

2. Has the Proposer been awarded any private sector contracts within the last five years for the same or reasonably similar goods or services sought by this solicitation? If none, answer "No." If yes, on a separate sheet of paper provide the name and address of the contracting entity, a brief description of work, the dollar amount at award and at completion, date completed, status of the contract and name, address and telephone number of contact person as to each, beginning with the most recent. Indicate if Proposer acted as prime contractor or joint venture. Proposers need not provide more than three such descriptions.

YES □ NO □

NOTE: ANY "YES" ANSWERS TO #3 BELOW MUST BE FULLY EXPLAINED ON A SEPARATE SHEET OF PAPER AND ATTACHED TO THIS QUESTIONNAIRE.

3. In the past five years has the Proposer been the subject of any of the following actions?

A. Been suspended, debarred, disqualified, or otherwise declared ineligible to bid?

YES □ NO □

B. Failed to complete a contract for a public or private entity?

YES □ NO □

C. Been denied a low-bid contract in spite of being the low bidder?

YES □ NO □

D. Had a contract terminated for any reason, including default?

YES □ NO □

E. Had liquidated damages assessed against it during or after completion of a contract?

YES □ NO □

F. Been a defaulter, as principal, surety or otherwise?

YES □ NO □

G. Been denied an award of a public contract based upon a finding by a public agency that your company was not a responsible contractor?

YES □ NO □

H. A public entity requested or required enforcement of any of its rights under a surety agreement on the basis of your company’s default or in lieu of declaring your company in default?

YES □ NO □

I. Been denied a performance or payment bond by a surety company?

YES □ NO □

J. Been required to pay back wages and/or penalties for failure to comply with state or federal prevailing wage or overtime laws?

YES □ NO □

4. Does Proposer currently possess the financial, organizational, technical, equipment, facilities, and other resources necessary to supply the goods or services sought by this solicitation? If no, on a separate sheet of paper describe how you intend to obtain the resources necessary to supply the goods or services sought by this solicitation.

YES □ NO □

5. Does Proposer have any present or anticipated commitments and/or contractual obligations that might impact its ability to meet the required delivery or performance requirements of this solicitation? If yes, on a separate sheet of paper describe any apparent conflicts as between the requirements/commitments for this solicitation with respect to the use of Proposer's resources, such as management, technical expertise, financing, facilities, equipment, etc.

YES □ NO □

PART IV-CIVIL ACTIONS

If "Yes" to Parts IV or V, provide details on a separate sheet of paper including a brief summary of cause(s) of action; indicate if Proposer, its principals, officers or partners were plaintiffs or defendants; define charges explicitly, by what authority, court or jurisdiction, etc. In the case of tax liens, please indicate whether the liens were resolved with the tax authorities. Please submit proof of payment or agreements to pay the liens. Complete details are required!

1. Violations Of Civil Law. In the past five years has Proposer, any of its principals, officers or partners been the subject of an investigation of any alleged violation of a civil antitrust law, or other federal, state or local civil law?

YES □ NO □

2. Lawsuits With Public Agencies. At the present time is, or during the past five years has Proposer, any of its principals, officers or partners been a plaintiff or defendant in any lawsuit or arbitration regarding services or goods provided to a public agency?

YES □ NO □

3. Bankruptcy. During the past five years, has the Proposer filed for bankruptcy or reorganization under the bankruptcy laws?

YES □ NO □

4. Judgments, Liens And Claims. During the past five years, has the Proposer been

the subject of a judgment, lien or claim of $25,000 or more by a subcontractor or supplier?

YES □ NO □

5. Tax Liens. During the past five years, has the Proposer been the subject of a tax lien by federal, state or any other tax authority?

YES □ NO □

PART V-COMPLIANCE WITH LAWS AND OTHER REGULATIONS

1. Criminal: In the past five years has the Proposer, any of its principals, officers, or partners been convicted or currently charged with any of the following:

A. Fraud in connection with obtaining, attempting to obtain, or performing a public contract, agreement or transaction?

YES □ NO □

B. Federal or state antitrust statutes, including price fixing collusion and bid rigging?

YES □ NO □

C. Embezzlement, theft, forgery, bribery, making false statements, submitting false information, receiving stolen property, or making false claims to any public agency?

YES □ NO □

D. Misrepresenting minority or disadvantaged business entity status with regard to itself or one of its subcontractors?

YES □ NO □

E. Non-compliance with the prevailing wage requirements of the State of Alaska or similar laws of any other state?

YES □ NO □

F. Violation of any law, regulation or agreement relating to a conflict of interest with respect to a government funded procurement?

YES □ NO □

G. Falsification, concealment, withholding and/or destruction of records relating to a public agreement or transaction?

YES □ NO □

H. Violation of a statutory or regulatory provision or requirement applicable to a public or private agreement or transaction?

YES □ NO □

I. Do any principals, officers or partners in Proposer's company have any

felony charges pending against them that were filed either before, during, or after their employment with the Proposer?

YES □ NO □

2. Regulatory Compliance. In the past five years, has Proposer or any of its principals, officers or partners:

A. Been cited for a violation of any labor law or regulation, including, but not limited to, child labor violations, failure to pay correct wages, failure to pay into a trust account, failure to remit or pay withheld taxes to tax authorities or unemployment insurance tax delinquencies?

YES □ NO □

B. Been cited and assessed penalties for an OSHA or Alaska/OSHA "serious violation"?

YES □ NO □

C. Been cited for a violation of federal, state or local environmental laws or regulations?

YES □ NO □

D. Failed to comply with Alaska corporate registration, federal, state or local licensing requirements?

YES □ NO □

E. Had its corporate status, business entity's license or any professional certification, suspended, revoked, or had otherwise been prohibited from doing business in the State of Alaska?

YES □ NO □

PART VI-FINANCIAL

Copies of the following documents are to be submitted with this Questionnaire:

1. Proposer's current Alaska Business License, if required by state law.

2. Proposer's Financial Statements may be requested:

A. PUBLICLY TRADED COMPANIES: Financial information will be accessed on-line. However, if additional information is needed, it will be specifically requested from the Proposer.

B. NON-PUBLICLY TRADED COMPANIES WITH AUDITED OR REVIEWED FINANCIAL STATEMENTS: Statements, including balance sheet, statement of earnings and retained income, with footnotes, for the most recent three years **may be requested.**

NOTE: ARRC reserves the right to ask for additional documentation if it is reasonably required to make a determination of integrity and responsibility relevant to the goods or services the Proposer will provide to ARRC if awarded a contract. All financial information provided is considered confidential and not subject to public disclosure under Alaska law.

NOTICE TO PROPOSERS

A material false statement, omission or fraudulent inducement made in connection with this Questionnaire is sufficient cause for denial of a contract award or revocation of a prior contract award, thereby precluding the Proposer from doing business with, or performing work for ARRC, either as a vendor, prime contractor, subcontractor, consultant or subconsultant for a period of five years. In addition, such false submission may subject the person and/or entity making the false statement to criminal charges under applicable state and/or federal law.

PART VII -VERIFICATION AND ACKNOWLEDGMENT

The undersigned recognizes that the information submitted in the questionnaire herein is for the express purpose of inducing ARRC to award a contract, or to allow Proposer to participate in ARRC projects as contractor, subcontractor, vendor, supplier, or consultant. The undersigned has read and understands the instructions for completing this Questionnaire.

STATE OF _____

COUNTY OF _____

I, (printed name) _____, being first duly sworn, state that I am the (title) _____ of Proposer. I certify that I have read and understood the questions contained in the attached Questionnaire, and that to the best of my knowledge and belief all information contained herein and submitted concurrently or in supplemental documents with this Questionnaire is complete, current, and true. I further acknowledge that any false, deceptive or fraudulent statements on the Questionnaire will result in denial or termination of a contract.

I authorize ARRC to contact any entity named herein, or any other internal or outside resource, for the purpose of verifying information provided in the Questionnaire or to develop other information deemed relevant by ARRC.

_____ _____
Signature of Certifying Individual Date

Subscribed and sworn to before me this _____ day of _____, 20___

_____
Signature of Notary
Notary Public in and for the State of _____

My Commission Expires: _____

NOTICE TO PROPOSERS

A material false statement, omission or fraudulent inducement made in connection with this Questionnaire is sufficient cause for denial of a contract award or revocation of a prior contract award, thereby precluding the Proposer from doing business with, or performing work for ARRC, either as a vendor, prime contractor, subcontractor, consultant or subconsultant for a period of five years. In addition, such false submission may subject the person and/or entity making the false statement to criminal charges under applicable state and/or federal law.

ALASKA RAILROAD CORPORATION

SUBCONTRACTOR LIST

[First Tier Subcontractors Only]

The apparent low bidder shall complete this form and submit it so as to be received by the Contracting Officer prior to the close of business on the **Fifth (5th) Working Day** after receipt of written notice from the Alaska Railroad Corporation.

Failure to submit this form with all required information by the due date will result in the bidder being declared non-responsive and may result in the forfeiture of the Bid Security.

Scope of work must be clearly defined. If an item of work is to be performed by more than one (1) firm, indicate the portion or percent of work to be done by each.

Check as applicable: ☐ All work on the below-referenced project will be accomplished without subcontracts greater than ½ of 1% of the contract amount.

Or

☐ Subcontractor List is as follows:

FIRM NAME, ADDRESS, TELEPHONE NUMBER	BUSINESS LICENSE NUMBER AND CONTRACTOR'S REGISTRATION NUMBER	SCOPE OF WORK TO BE PERFORMED	TOTAL DOLLAR AMOUNT OF WORK

I hereby certify that the above-listed licenses and registrations were valid at the time bids were received for this project. For contracts involving Federal-aid funding, Alaska Business License and Contractor Registration will be required prior to award of a subcontract.

_____ _____

COMPANY NAME SIGNATURE BY AND FOR THE BIDDER

_____ _____

COMPANY ADDRESS PRINTED NAME OF BIDDER

_____ _____

COMPANY ADDRESS DATE OF BID

_____ _____

ALASKA RAILROAD CORPORATION - SAMPLE CONSTRUCTION CONTRACT

Contract Number: _____

This CONTRACT, between the ALASKA RAILROAD CORPORATION, herein called ARRC, acting by and through its Contracting Officer, and **_____.**

A Corporation, incorporated under the laws of the State of Alaska, its successors and assigns, hereinafter called the Contractor, is effective the date of the signature of the Contracting Officer on this document.

Billing Information: Invoices shall be submitted to Accounts Payable, Alaska Railroad Corporation, PO Box 107500, Anchorage, AK 99510-7500. Please reference your contract number on all invoices and correspondence.

WITNESSETH: That the Contractor, for and in consideration of the payment or payments herein specified and agreed to by ARRC, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor required in the construction of the following project: **ITB 25-24-213167 ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install** at the prices bid by the Contractor for the respective estimated quantities aggregating approximately the sum of: **Bid amount _____ dollars and /cents ($_____.00)** for the Base Bid and such other items as are mentioned in the original Bid, which Bid and prices named, together with the Contract Documents (Invitation to Bid, Addenda & Contract) and Contractors Bid are made a part of this Contract and accepted as such, the project being situated between the Alaska Railroad stations of Potter and Girdwood, Alaska.

It is distinctly understood and agreed that no claim for additional work or materials, done or furnished by the Contractor and not specifically herein provided for shall be allowed by ARRC, nor shall the Contractor do any work or furnish any material not covered by this Contract, unless such work is ordered in writing by ARRC. In no event shall ARRC be liable for any materials furnished or used, or for any work or labor done, unless the materials, work, or labor are required by the Contract or on written order furnished by ARRC. Any such work or materials which may be done or furnished by the Contractor without written order first being given shall be at the Contractor's own risk, cost, and expense and the Contractor hereby covenants and agrees to make no claim for compensation for work or materials done or furnished without any such written order.

The Contractor further covenants and agrees that all materials shall be furnished and delivered and all labor, equipment, shall be done and performed, in every respect, to the satisfaction of ARRC by _____, 2025.

It is expressly understood and agreed that in case of the failure on the part of the Contractor, for any reason, except with the written consent of ARRC, to complete the furnishing and delivery of materials and the doing and performance of the work before the aforesaid date, ARRC shall have the right to deduct from any money due or which may become due the Contractor, or if no money shall be due, ARRC shall have the right to recover liquidated damages as spelled out in General Conditions, Construction. The bonds given by the Contractor in the sum of: **100% of Bid Amount $_____ Payment Bond, and 100% of Bid Amount $_____ Performance Bond**, to secure the proper compliance with the terms and provisions of this Contract, are submitted herewith and made a part hereof.

IN WITNESS WHEREOF, the parties hereto have executed this Contract and hereby agree to its terms and conditions.

CONTRACTOR

_____
Name of Contractor

_____ _____
Signature Date

_____
Name and Title

(Corporate Seal)

ALASKA RAILROAD CORPORATION

_____ _____
Contracting Officer (Signature) Date

_____
Typed or Print Name

ALASKA RAILROAD CORPORATION - PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

That_____

of: _____ as Principal,

and _____

of: _____as Surety,

firmly bound and held unto the Alaska Railroad Corporation in the penal sum of _____ Dollars ($_____), good and lawful money of the United States of America for the payment whereof, well and truly to be paid to the Alaska Railroad Corporation, we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said Alaska Railroad Corporation, on the _____ of _____, 20_____,

for_____, said work to be done according to the terms of said contract.

ARRC Project: ITB 25-24-213167 ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install

NOW, THEREFORE, the conditions of the foregoing obligation is such that if the said Principal shall comply with all requirements of law and pay, as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work under said contract, whether said labor be performed and said materials and supplies be furnished under the original contract, any subcontract, or any and all duly authorized modifications thereto, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, We have hereunto set our hands and seals this _____ day of _____, 20_____.

Principal: _____

Address: _____

Telephone Number: _____

Contact Name: _____

By: _____

By: _____

Surety: _____

Address: _____

Contact Name: _____

By: _____

By: _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

_____ _____

Alaska Railroad Corporation [Authorized Representative] Date

(Instructions on Next Page)

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, shall be used whenever a payment bond is required. There shall be no deviation from this form without approval from the Contracting Officer.

2. The full legal name, business address, telephone number, and point of contact of the Principal and Surety shall be inserted on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.

3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be entered in words and in figures.

4. The bond shall be signed by authorized persons. Where such persons are signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

Form 395-0126

ALASKA RAILROAD CORPORATION - PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

That_____

of: _____ as Principal,

and _____

of: _____as Surety,

firmly bound and held unto the Alaska Railroad Corporation in the penal sum of _____ Dollars ($_____), good and lawful money of the United States of America for the payment whereof, well and truly to be paid to the Alaska Railroad Corporation, we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said Alaska Railroad Corporation,

on the _____ of _____, 20_____,

for_____,

said work to be done according to the terms of said contract.

ARRC Project: ITB 25-24-213167 ARRC 1400 Wasilla Shops Cr., Elevator Const. & Install

NOW, THEREFORE, the conditions of the foregoing obligation is such that if the said Principal shall well and truly perform and complete all obligations and work under said contract and if the Principal shall reimburse upon demand of the Alaska Railroad Corporation any sums paid him/her which exceed the final payment determined to be due upon completion of the project, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, We have hereunto set our hands and seals this _____ day of _____, 20_____.

Principal:_____

Address: _____

Telephone Number: _____

Contact Name: _____

By: _____

By: _____

Surety: _____

Address: _____

Contact Name: _____

By: _____

By: _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

_____ _____

Alaska Railroad Corporation [Authorized Representative] Date

(Instructions on Next Page)

INSTRUCTIONS

1. This form shall be used whenever a performance bond is required. There shall be no deviation from this form without approval from the Contracting Officer.

2. The full legal name, business address, telephone number, and point of contact of the Principal and Surety shall be inserted on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.

3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be entered in words and in figures.

4. The bond shall be signed by authorized persons. Where such persons are signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

APPENDIX G

COST SCHEDULE

COST SCHEDULE: A Bidder's Failure to provide the information requested in this Appendix may be cause for rejection of the bid on the basis on non-responsiveness. Cost shall be bid in accordance to Appendix C, Scope of Work, and Appendix E Construction Specifications.

AWARD CRITERIA: An award will be made to the low, responsive, responsible bidder that meets the requirements as set forth in the specifications and compliance thereof.

The Alaska Railroad Corporation reserves the right to determine that all offered materials will serve the application intended. An award may be made in the aggregate of Base Bid and or any combination of Base Bid and Additive Alternates, whichever is deemed by the Contract Administrator to be in the best interest of the ARRC. The successful bidder shall hold unit prices of all additives firm for a period of thirty (30) days from the date of bid opening.

NON-COLLUSION AFFIDAVIT: The Undersigned declares, under penalty of perjury under the laws of the United States, that neither he/she nor the firm, association, or corporation of which he/she is a member, has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this Bid.

PAY ITEM			
Item No.	**Item Description**	**Unit**	**Lump Sum**
1	Wasilla Elevator Installation & Construction	LS	

BIDDERS NAME AND ADDRESS:

_____	_____
COMPANY NAME	SIGNATURE BY AND FOR THE BIDDER
_____	_____
COMPANY ADDRESS	PRINTED NAME OF ABOVE BIDDER
_____	_____
CITY, STATE ZIP CODE	DATE OF BID
_____	_____
CONTACT PHONE & CELL NUMBER	E-MAIL ADDRESS