PACIFIC VIEW CONDOMINIUMS

1238 N Marion Ave
Seaside OR, 97138

BUILDING ENVELOPE REPAIRS

Project Specifications
Bid Set

November 22, 2023
J2 Project #5631001

J2 BUILDING CONSULTANTS

SECTION 00 01 10
TABLE OF CONTENTS

SECTION 00 20 00
INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 THE WORK.

A. Title: Pacific View Condominiums

1. Project Location: 1238 N Marion Ave, Gearhart, OR 97138
2. Project Description: As described in Section 01 11 00 Summary of Work.

B. Owner: Scott Samuelson

1. Address: 1238 N Marion Ave, Gearhart, OR 97138

C. Client Rep: Paul Tice, Community Manager

1. Address: 1238 N Marion Ave, Gearhart, OR 97138

D. Consultant: **J2 Building Consultants, Inc.**

Address: 4504 S Corbett Ave, Ste 100 Portland, OR 97239

1.2 PRE-BID SITE WALK & QUESTIONS

A. Prior to the scheduled bid opening, a Pre-Bid Site Walk will be held for the purpose of considering questions posed by the Bidders. **The conference will be open to pre-approved General Contractors and their selected Sub-Contractors only**. There will be a required sign in; sub-contractors not pre-selected by a GC are not invited to attend.

B. Pre-Bid Site Walk shall take place on **Friday, December 1, 2023, 10 AM – 11 AM**

C. Pre-Bid Questions will be due **Monday, December 18, 2023, by End of Day**

1.3 BID DUE DATE

A. Bids are due on **Friday, January 12th, 2024, by 5:00 PM PST**

1.4 CONSTRUCTION TIME

A. Estimated Start Date: **TBD**

B. Schedule: Contractor to provide a project schedule for each building/phase of the project.

C. Required Completion Date: **TBD**

1.5 CONSTRUCTION PHASE PLAN

A. Along with the bid and construction schedule, the Contractor is to supply a conceptual phase plan that indicates staging areas (material storage, job trailer, toilets, etc.) for the different phases of the work. This shall be consistent with the schedule noted in item 1.3.C above.

1.6 REFERENCES

A. Contractor to provide references for three similar completed jobs (full strip and re-clad of occupied multifamily wood framed buildings of at least 24 units). References shall include project name,

address, owner name and contact information, consultant name and contact information, # of units, and a brief project description.

1.7 DEFINITIONS

A. The "Owner" or "Client" is Scott Samuelson

B. The "Consultant" is J2 Building Consultants, Inc.

C. "Bidding Documents" include the Invitation to Bid, Instructions to Bidders, the Bid Form, Substitution Request Form, Contract Documents, and Addenda issued prior to receipt of bids.

D. The "Contract Documents" proposed for the Work consist of the Owner-Contractor Agreement, the General Conditions of the Contract, the Drawings, the Specifications, the Project Manual and all Addenda issued prior to and all Modifications issued after execution of the Contract.

E. The "Contract Documents" consists of the Bid Documents, Construction Contract Documents, the Specifications, and the Drawings.

F. "Addenda" are written or graphic instruments issued by the Consultant prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

G. A "Bid" is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.

H. The "Total Bid" is the sum stated on the Bid Form for which the Bidder offers to perform the Work described in the Bidding Documents.

I. A "Bid Alternate" is an amount stated in the Bid Form to be added to or deducted from the amount of the Total Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

J. A "Bidder" is the person or entity who submits the Bid.

K. An "Allowance" is an amount, in addition to, the Work's price to be used as an additional amount for unseen or undeterminable or additionally requested work. If this amount is unused it will be refunded to the Owner.

L. The "Contract" is the subcontract or supply contract agreement between the Contractor and the Bidders representations

1.8 BIDDER REPRESENTATIONS

A. Each bidder has read and understood the Bidding Documents and the Bid is made in accordance therewith.

B. Each bidder has visited the site, has familiarized themselves with the local conditions under which the Work is to be performed, and have correlated their observations with the requirements of the proposed Contract Documents.

C. Each bidder has verified the reasonableness of scope, stated allowances, and any addenda or revisions.

D. The Bid each bidder has made is based upon the materials, systems, and equipment required by the Bidding Documents without exception.

1.9 BIDDING DOCUMENTS

A. Other than bidding Contractors, Bidding Documents will not be issued directly to Subcontractors or others by J2 Building Consultants, Inc.

B. Bidders shall use complete sets of Bidding Documents in preparing Bids; the Consultant assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

C. The Consultant has made copies of these Bid Documents available to a select list of pre-qualified bidders exclusively for the purpose of obtaining proposals and cost estimates to do the Work. The Consultant does not confer a license or grant permission to use these bid documents for any purpose other than the specific project for which they were created. **All Bid Documents remain the property of J2 Building Consultants, Inc.**

D. Should Bidders choose to electronically post these bid documents for Subcontractors to bid, the bidder shall make certain Subcontractors do not contact J2 directly. All Scope of Work related questions from Subcontractors shall be addressed through the Contractor submitting these documents.

1.10 INTERPRETATION OR CORRECTION OF BID DOCUMENTS.

A. General Contractors shall promptly notify the Consultant of any ambiguity, inconsistency, or error, which they may have discovered upon examination of the Bidding Documents or of the site and local conditions. General Contractor shall first contact the Consultant.

1. **Subcontractors and vendors are not permitted to directly contact Owner, Owner's reps, or J2 Building Consultants, Inc directly. Any subcontractor questions or clarification requests must be sent through the General Contractor**.

B. Bidders and their Subcontractors requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Consultant at least five days prior to the date for receipt of Bids. The person submitting the request shall be responsible for its prompt delivery. Clarification request will only be accepted from invited Bidders.

C. Any interpretations, correction or change of the Bidding Documents will be made by Addenda. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, and/or changes. Where conflicts have not been brought to the Consultant's attention prior to bidding, the Bidder will be deemed to have elected the more-costly method(s), product(s), and material(s).

D. Refer to Specification sections for products installed. Proposed product substitutions shall be submitted after a Contractor has been selected. Substitutions will not be accepted with the bid at or after the bid date.

E. J2 Building Consultants will be available to answer specific questions regarding scope and will share responses to all known bidders.

1.11 ADDENDA

A. Addenda will be emailed or delivered to all who are known by the Consultant to have received a complete set of Bidding Documents.

B. No Addenda will be issued later than three days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one that includes postponement of the date for receipt of Bids.

C. The Bidder shall ascertain prior to submitting their bid that they have received all Addenda issued and shall acknowledge the receipt of such Addenda on the Bid Form.

1.12 BID FORM REQUIREMENTS

A. Make bids upon the forms provided, properly signed, and with all items filled out. Do not change the wording of the Bid Form. Do not add words to the Bid Form. Unauthorized conditions, limitations, or provisions attached to the bid may be cause for rejection of the bid. If alterations by erasure or interlineations are made for any reason, explain such erasures or interlineations with a signed statement from the Bidder. Bidders may attach a copy of their standard proposal form to their bid. However, in the event of discrepancy in the terms and conditions between the BID FORM and the bidder's proposal form - the BID FORM shall govern.

B. Address bids to the Owner and email to J2 Building Consultants on, or before, the day and hour set for opening bids. Enclose each bid and any other required documents in Adobe PDF format. It is the sole responsibility of the Bidder to see that their bid is received by J2 Building Consultants on time.

1.13 PROPOSAL SUMS

A. The sum of money shown on the Bid Form covering all Work included in the Total Bid shall include all items of labor, material, equipment, overhead and compensation to complete all of the work under each particular heading, unless specifically noted otherwise.

B. Contractor must include a Schedule of Values with the bid submittal and identify separately Lump Sum Bid and Allowance amounts for items addressed in the scope of work. Refer to Section 00 400 Bid Form for outlined Schedule of Values.

1.14 EXAMINATION OF DOCUMENTS AND SITE

A. Before submitting a bid, each Bidder shall examine the Contract Documents and shall visit the site of the Work. Each Bidder shall fully inform themselves prior to bidding as to existing conditions and limitations under which the Work is to be performed. The Bidder shall include in their bid a sum to cover the cost of items necessary to perform the Work as set forth in the proposed Contract Documents. All quantities shall be verified in the field by the Bidder. No allowance will be made to a Bidder because of lack of such examination or knowledge.

B. **The submission of a bid will be considered as conclusive evidence that the Bidder has made such examination.**

C. Access to the grounds is allowed following prior arrangement with the Construction Manager, with no exceptions. Unscheduled access to interior or secured areas will not be permitted. All subcontractors must be scheduled by bidding contractor.

1.15 WITHDRAWAL OF BIDS

A. A Bidder may withdraw their bid, either personally or by written request, at any time prior to the scheduled time for opening bids.

B. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

C. No Bidder may withdraw their bid for a period of thirty calendar days after the date set for opening thereof.

1.16 CONSIDERATION OF BIDS

A. Opening of Bids: Bids shall be opened privately. An abstract of the Total Bid will be made available to the Bidders upon request, after a contract has been awarded to the successful Bidder.

B. Rejection of Bids: The Owner shall have the right to reject any or all Bids, to reject a Bid not accompanied by data required by the Bidding Documents or to reject a Bid that is in any way incomplete or irregular.

C. Acceptance of Bid (Award): It is the intent of the Owner to award a contract to the lowest responsible Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive any informality or irregularity in any Bid or Bids received and to accept the Bid or Bids which, in his judgment, is in his own best interests.

D. The Owner reserves the right to reduce or change the scope of work once bids for the full scope of work are received and reviewed.

1.17 EXECUTION OF AGREEMENT

A. The form of Agreement which the successful bidder will be required to execute is a modified AIA Document A104-2017 Agreement (or similar mutually acceptable document) between Owner and Contractor where the contract basis of payment shall be a stipulated sum.

B. The Bidder to whom the Contract is awarded shall meet all conditions set forth in the Bid Forms, Drawings, and Specifications.

C. The Bidder to whom the Contract is awarded shall, within five (5) calendar days after notice of award and receipt of the Contract from the Owner, sign and deliver required copies of the Contract to the Owner.

D. Within five (5) days after mutual execution of the Contract, the Bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance, as required by the Contract Documents.

E. Certificates of Insurance and Bonds shall be approved by the Owner before the successful Bidder may proceed with the Work. Failure or refusal to provide Certificates of Insurance in a form satisfactory to the Owner shall subject the successful Bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required materials.

1.18 INSURANCE REQUIREMENTS

A. Contractor shall provide Certificates of Insurance evidencing insurance coverage filed with the Owner within five (5) working days of award of Contract and prior to commencement of the Work. The certificate shall be on the appropriate form and shall read as follows:

1. “It is hereby understood and agreed the Owner and J2 Building Consultants, Inc. have been added as primary additional insured’s.”

B. Contractor’s Insurance is primary and any other insurance maintained by the Owner and Construction Manager shall be secondary and not responsible for any defense or indemnity until the additional primary insurance is exhausted; notwithstanding any “other insurance” clauses to the contrary.

C. All Certificates of Insurance shall include a provision that the coverage will not be canceled, terminated or otherwise modified without at least 30 days of prior written notice being given to the Owner.

D. Such certificates shall contain a waiver of subrogation in favor of the Owner.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 00 40 00
BID FORM

PART 1 - GENERAL

1.1 BIDDER INFORMATION

Project Name: Pacific View Condos

To: J2 Building Consultants
c/o James Jenkins
OR: 4504 S Corbett Ave, Ste 100
Portland, OR 97239

For: Exterior Building Repairs

Date: _____
Bidder to enter date

Submitted By:

_____
Bidder Name

_____
Bidder Address

_____
Bidder City, State & Zip

_____
Bidder Email

_____
Bidder Phone

_____
Contractor's License Number

1.2 SCHEDULE OF VALUES (BASE BID)

Contractor is required to submit a Schedule of Values with submitted bid. NO EXCEPTIONS. These items are noted as "Base Scope" items in the description of work. Costs are to be "lump sum" which means that labor, material, contractor overhead and profit, and all other fees/mark-ups are included in bid.

No.	Keynotes (Sheet A0.2)	Title/Description	Value
1	Division 1 of Specs	**General Conditions**: Project Management/Payment Procedures/ Project Meetings/Submittal Procedures/Temporary Facilities/ Closeout Procedures	
2	R1, R4, R5, R7, R8, R9, R10, R11, R14, R15, R16, and R17	**Main Roof:** Remove and replace roofing and accessories	
3	Same as #2 above	**Clubhouse Roof:** Remove and replace roofing and accessories	
4	A1 and A2	**Attic (Main):** HVAC duct connections and insulation	
5	F1, F3, F4, F5, F6, F7, F9, F10 and F11	**Main Fenestrations:** Remove and replace windows and doors	
6	Same as #5 above	**Clubhouse Fenestrations:** Remove and replace windows and doors	
7	W1, W6, W7, W8, W9, W10, W11, W12, W13 and W14	**Main Walls:** Remove and replace sheathing, WRB, cladding and accessories	
8	Same as #7 above	**Clubhouse Walls:** Remove and replace sheathing, WRB, cladding and accessories	
9	D1, D2, D5, D8, D9, D10, D11, D12, D13, and D14	**Rear Decks:** Remove and replace/repair deck framing, surface and guards	
10	D1, D5, D6, D7, D8, D9, D10, D12, D13, D14 and D15	**Front Entry Landings:** Remove and replace/repair deck framing, surface and guards	
NA	NA	**Crawlspace & Below Grade**	NA
11	M1, M2, M3 and M4	**Paint/Coating/Sealer:** New coatings on all surfaces as described	
12	M5	**Site Railings:** Remove and replace first floor railings at front elevation	
		SUBTOTAL	

1.3 ALLOWANCES

Allowances shall be used to compensate the Contractor for the work directed by the Owner in addition to those items included in the Lump Sum Bid as described in the Scope of Work, Plans, and Specifications. Work that must be done to complete the Lump Sum Bid shall be included in the Lump Sum Bid regardless of whether additional similar work is being directed under Allowances.

The following allowances will be included in the Total Bid Amount below in Section 1.4. Allowance monies invoiced shall include all materials, labor, cost for delivery, installation, insurance, applicable business taxes, overhead, profit and all other General Conditions items. All unused Allowances shall be deducted from the contract amount in the form of a deductive Change Order at the end of the project.

No.	Keynotes (Sheet A0.2)	Item/Description	Value
1	R2	**Roof Decking Replacement:** Assume 5% roof decking replacement. This will involve additional removal (contractor means and methods) to stagger end joints of decking material.	
2	R3	**Framing Repairs**	$10,000
3	R13	**Fall Protection:** Contractor design-build roof anchor installation	
4	A3	**Fire Wall Repairs:** Correct observed deficiencies with fire assembly walls and misc. attic framing	$2,500
5	A4	**Organic Growth Remediation:** Clean and treat organic growth on framing/sheathing. Assume 2 attics 200sf each for a total of 400sf.	
6	W2	**Wood Framing Repair:** Replace/repair damaged wall framing	$25,000
7	W3	**CMU Repair:** Repair damaged CMU at carport/clubhouse	
8	W4	**Brick Repair:** Tuckpoint and repair exposed brick	
9	D3	**Framing and Hardware Replacement:** Replace damaged deck/entry/carport framing and hardware not in base scope	$40,000
10	D4	**Steel Framing Repair:** Repair/replace steel framing where deteriorated (and out of scope)	$20,000
11	D16	**Stair Stringers/Tread Repair:** Repair/replace entry stair stringers and treads where deteriorated	$10,000
12	D17	**Concrete Pier Repair:** Repair/replace concrete pedestals/piers at rear decks and carports	$10,000
13	M6	**Lighting:** All new exterior light fixtures	
14	M7	**Landscaping:** Restore landscaping to pre-construction conditions	
15	M8	**Interior Repairs:** Misc. interior repairs (except as noted in window install notes, which is base scope)	

16	M10	**Garage Ceiling:** Fire assembly repairs at parking garage ceiling	
17	NA	**General Contingency Allowance:** 10% of base bid	
		SUBTOTAL	

1.4 TOTAL BID AMOUNT

The Total Bid Amount shall be identified on line items below:

Base Bid Amount (from Section 1.2 above) $_____

Allowance total (from Section 1.3 above) $_____

Total Bid Amount (Base Bid + Allowance) **$**_____

1.5 ADD ALTERNATES

All Add Alternates shall include all materials, labor, cost for delivery, installation, insurance, applicable business taxes, overhead, profit and all other General Conditions items. After final selection of Add Alternates by the Owner, these items will be included in the contract amount with no change in General Conditions value.

Add Alternates are described in further detail under specific Scope of Work descriptions of Specification Section 01 100 Summary of Work.

No.	Keynotes (Sheet A0.2)	Item/Description	Value
1	F2	**Window and SGD Remove and Reinstall:** Deduct to reinstall vs. replace windows (for pricing purposes only – assumes that all windows are adequately rated)	
2	F8	**Swing Door Remove and Reinstall:** Deduct to reinstall vs. replace swing doors (for pricing purposes only – assumes that all windows are adequately rated)	
3	W5 – Main Bldg	**Exterior Insulation:** Install rigid exterior insulation over sheathing before WRB insulation	
4	W5 - Clubhouse	**Exterior Insulation and Cladding:** Install insulation, WRB and cladding over CMU at exposed side of clubhouse and carport building. This item should include a deduct for omitting the base scope coating on the CMU.	
5	M9	**Fire Doors:** Add missing doors at back of garage	

1.6 OVERHEAD AND PROFIT ON CHANGE ORDERS

Provide Profit and Overhead rates charged for Change Order work (to include all applicable contractor "mark-ups" for subcontractor work, materials, etc.):

1. Profit & Overhead: _____%

1.7 TIME AND MATERIAL WORK

For T&M Allowances and Change Order work, provide hourly labor rates for trades listed below. Rates shall include all labor burden, payroll taxes, benefits, small tools allowance, overhead, profit, bonds, and insurance (i.e., contractor "mark-ups", noted above, do not apply to these rates as they include this already).

Material and Subcontractors used to complete Change Order work shall be charged at cost plus profit and overhead amounts specified above.

1. Laborer: _____$/hour
2. Carpenter: _____$/hour
3. Superintendent: _____$/hour
4. Painter: _____$/hour

5. Drywall Hanger: _____$/hour

6. Drywall Finisher: _____$/hour

1.8 SCHEDULE

Provide estimate number of weeks to Substantial Completion of Project:_____**weeks**

1.9 ADDENDA

Acknowledge receipt and review following Addenda (if any) with initials:

Addenda #1: Not Applicable

1.10 TIME

This Bid shall remain in effect for 90 days.

1.11 SUBCONTRACTORS

All subcontractors shall have verifiable, credible experience with similar projects.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 00 73 16
INSURANCE REQUIREMENTS

PART 1 - GENERAL

1.1 CONTRACTORS LIABILITY INSURANCE

Add to General Conditions of Contract the following supplemental information:

A. Contractor shall purchase and maintain such insurance as will protect it from the claims set forth below which may arise out of or result from Contractor's operations under this Contract whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

1. Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the work to be performed.

2. Claims for damages because of bodily injury, occupational sickness or disease, or death of its employees under any applicable employer's liability law.

3. Claims for damages because of bodily injury or death of any person other than its employees.

4. Claims for damages insured by usual personal injury liability coverage.

5. Claims for damages because of injury to or destruction of tangible property, including loss of use.

6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

7. Any other type of claims for which Contractor may be responsible under this Contract.

8. Claims for property damage to condominium property other than work performed by Contractor's own employees.

B. Coverage Forms:

1. Contractor's General Liability insurance shall be written on an industry standard Commercial General Liability Occurrence form and shall include the following coverage extensions: Stop Gap Liability, Per Project Aggregate (CG 25 03) and Contractual Liability (including that assumed specifically under this contract).

2. In addition, the Owner and Consultant shall be named as primary additional insured's (form CG 20 10 11/85 or equivalent which must cover completed operations) with respect to work performed by or for the Contractor on behalf of the Owner. This endorsement shall be primary and non-contributory to any other insurance carried by the aforementioned parties. The requirement that the endorsement be primary and non-contributory shall expressly be stated on the endorsement or shall be implied into the endorsement based upon the parties' mutual intent as expressed herein.

3. Contractor's Auto Liability insurance shall be written on an industry standard Business Auto Liability policy form covering "any" automobile, whether owned, hired, rented, borrowed or otherwise.

4. Contractor's Workers' Compensation insurance shall be written on an industry standard Workers' Compensation and Employer's Liability policy form (WC 00 00 00), where applicable.

5. All workers' compensation insurance companies shall have a Best's rating of A8 or better.

C. Contractor's Liability insurance shall be written for not less than the following limits of liability. Umbrella/excess liability policies shall be at least following form to the primary policies.

1. Worker's Compensation

2. Statutory Bodily Injury by Accident or Disease

3. Employer's Liability

$1,000,000	Bodily Injury by Accident - Each Accident
$1,000,000	Bodily Injury by Disease - Policy Limit
$1,000,000	Bodily Injury by Disease - Each Employee

4. General Liability - Bodily Injury, Personal Injury, and Property Damage

$2,000,000	General Aggregate
$1,000,000	Products and Completed Operations Aggregate
$1,000,000	Personal Injury
$1,000,000	Each Occurrence

5. Stop Gap Liability

$500,000	Each Accident
$500,000	Disease - Policy Limit
$500,000	Disease - Each Employee

6. Automobile Liability

$500,000	Bodily Injury and Property Damage - Per Accident

7. Umbrella Policy with limits of $5,000,000 shall also be provided.

D. Certificates of Insurance evidencing the above coverages shall be filed with the Owner within five (5) working days of award of Contract and prior to commencement of the work and shall be on the appropriate form and shall read as follows:

"It is hereby understood and agreed the Owner and Consultant have been added as primary additional insured's."

E. Contractor's insurance is primary, and any other insurance maintained by the Owner and Consultant shall be secondary and not responsible for any defense or indemnity until the additional insurance primary insurance is exhausted; notwithstanding any "other insurance" clauses to the contrary.

F. All certificates of insurance shall include a provision that the coverage will not be canceled, terminated or otherwise modified without at least 30 days prior written notice being given to the Owner.

G. Such certificates shall contain a waiver of subrogation in favor of the Owner.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. General Requirements: Refer to Division 1 for general project requirements.

B. Existing Assemblies: Refer to Sheet A0.2 or A0.3 for existing Roof, Wall, Deck and/or Fenestration Types

C. Scope of Work Description:

1. Refer to Sheet A0.1 of the Plans for project address, site plan, general notes, and a high level overview of the project

2. Refer to Sheet A0.2 for Scope of Work description, replacement material, detail references, and specification cross references.

3. Refer to Sheet A0.2 or A0.3 for proposed Roof, Wall, Deck, and/or Fenestration types.

4. Refer to “A sheets” for relevant building elevations, floor plans and/or sections. Refer to “S sheets”, if applicable, for structural notes, framing plans and details. Refer to “W sheets” for weatherization detailing. References to these drawings originate with the Scope of Work matrix on Sheet A0.2.

1.2 EXISTING CONIDTIONS AND FIELD REVIEWS

A. Existing Conditions:

These contract documents do not contain an “as built record” nor do they provide extensive detailing of the existing conditions. These documents provide anticipated weatherization details and processes one could infer from visual observations of existing conditions. During the course of demolition and construction, Contractor shall provide Requests for Information (RFIs) where additional details are needed to facilitate appropriate repairs of conditions not described herein.

Remediation projects of this nature require a collaborative team approach to be successful. Weekly project meetings, periodic Field Reviews, mock-ups of assemblies and clear communication between the Contractor, Consultant and Owners are critical to resolving decisions needed during the construction process.

B. Field Reviews:

J2 Building Consultants will be providing periodic Field Reviews of the exterior installation to verify general conformance with Contract Documents. The cost of this compliance work shall be the responsibility of the Owner. The cost of correcting any work deemed “non-conforming” by the J2’s Field Reviews shall be the responsibility of the Contractor.

State of Washington Multi-Family/Condominium Projects Only: In addition to the design being prepared/stamped by a licensed design professional, Washington State’s RCW 64.55 for condominium re-

habilitation requires periodic Field Reviews. The Field Reviews, noted above, provided by J2 Building Consultants will meet this standard of care and will require cooperation from the Contractor. If the project does not need to conform to RCW 64.55, J2 intends to provide a similar standard of care unless specifically noted otherwise.

1.3 HAZARDOUS MATERIAL SURVEY

A Hazardous Material Survey or "Good Faith Survey" must be performed prior to the commencement of work. This survey is to be performed at all areas where contractor is to remove/replace or disturb existing materials. If not previously provided by the owner, the contractor is responsible to arrange for, and pay for, the necessary testing of these areas. The Owner is to pay for any required abatement unless it is specifically noted in the Scope of Work Description and Bid Form that these services are in Contract. All testing and abatement shall be performed by qualified firms per federal, state and/or local requirements.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 20 00
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 GENERAL

A. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.

B. Schedule of Values:

1. Coordinate preparation of the Schedule of Values with the Construction Schedule.

2. Submit the Schedule of Values no later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.

C. Format and Content:

1. Use the Specifications table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line-item for each Specification Section.

2. Include the following Project identification:

   a. Project name and location.

   b. Name of Consultant.

   c. Consultant’s Project number.

   d. Contractor's name and address.

   e. Date of submittal.

3. Arrange the Schedule of Values in tabular form (see AIA Document G703) with separate columns to indicate the following for each item listed:

   a. Related Specification Section or Division.

   b. Description of Work.

   c. Scheduled Value.

   d. Work completed from previous application.

   e. Work completed from this period.

   f. Materials presently stored not included in Work completed.

   g. Total completed and stored to date.

   h. Percentage of Contract Sum completed to nearest percent.

   i. Balance to Finish.

   j. Retainage.

4. Provide a breakdown of the Contract Sum in sufficient detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.

5. Provide a separate line item for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed. Items purchased or fabricated but not installed will be paid for only if:

   a. Stored in a bonded warehouse, or;

   b. A bill of sale is made to the Owner.

6. Provide separate line items for initial cost of the materials, for each subsequent stage of completion, and for total installed value.

7. Show line items for indirect costs and margins on costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.

   a. Temporary facilities and items that are not direct cost of Work-in-place may be shown as separate line items or distributed as general overhead expense.

8. Allowance and Contingency items:

   a. Prior to commencing work on any Allowance/Contingency item, the Contractor and Consultant shall agree on the extent of work required. In addition to receiving permission to proceed, the Contractor shall photo document the work and notify Consultant if the scope increases.

   b. Provide a log of receipts and/or timesheets for each individual Allowance/Contingency category to document Time and Expenses for each category. Time and Expenses shall add up to the amount requested in the Payment Application for each category.

9. Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives change the Contract Sum.

10. Change Orders and percent completion will be evaluated separately for each change.

1.2 APPLICATIONS FOR PAYMENT

A. Applications for Payment shall be consistent with previous applications and payments as certified by the Consultant and paid for by the Owner.

B. Payment-Application Times:

   1. A meeting to negotiate percentage completion will occur on or before the 25th of each month to establish the percentage completion at that date.

   2. The Owner's representative, Consultant, lending institution's representative, Contractor, Contractor's project manager, and Contractor's superintendent shall attend.

C. Payment-Application Forms:

   1. Use AIA Document G702 and Continuation Sheets G703 as the form for Applications for Payment, or as approved by the Owner and Consultant.

D. Application Preparation:

1. Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The Consultant will return incomplete applications without action.

2. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.

3. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal:

1. Submit three (3) executed original copies of each Application for Payment to the Consultant within 48 hours of application for payment meeting. One (1) copy shall be complete, including waivers of lien and similar attachments.

2. Transmit each copy with a transmittal listing attachments and recording appropriate information related to the application.

F. Waivers of Lien:

1. With each Application for Payment, submit waivers of lien from every entity who may file a lien arising out of the Contract and related to the Work covered by the payment.

2. Submit partial waiver for the amount requested, prior to deduction for retainage.

3. When an application shows completion of an item, submit final or full waivers.

4. Submit each Application for Payment with Contractor's waiver of lien for the period of construction covered by the application.

   a. Submit Final Applications for Payment with final waivers from every entity involved with performance of the Work covered by the application who may file a lien.

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

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

1. List of subcontractors (to date).

2. List of principal suppliers and fabricators.

3. Schedule of Values.

4. Contractor's Construction Schedule (preliminary if not final).

5. Submittal Schedule (preliminary if not final).

6. Copies of permits other than the MUP, Shoring and Excavation Permit, and Building Permit, copies of which the Owner will provide to the Contractor.

7. Copies of licenses from governing authorities.

8. Certificates of insurance and insurance policies for the General Contractor.

9. Performance and payment bonds.

10. Initial progress report.

11. Data needed to acquire Owner's Insurance.

12. Initial settlement survey and damage report (if required).

1.3 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

A. Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

B. Administrative actions and submittals that shall precede or coincide with this application include the following. Refer to Division 01 Closeout Procedures for additional requirements.

1. Occupancy permits.

2. Warranties and maintenance agreements.

3. Approved Maintenance Manuals and Maintenance Instructions.

4. Changeover information related to Owner's occupancy (if required).

5. Final cleaning.

6. Application for reduction of retainage and consent of surety.

7. List of incomplete Work, recognized as exceptions to Consultant's Certificate of Substantial Completion.

1.4 FINAL PAYMENT APPLICATION

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

1. Completion of Project closeout requirements: see Division 01 Closeout Procedures.

2. Completion of items specified for completion after Substantial Completion.

3. Transmittal of Project construction records to the Owner.

4. Proof that taxes, fees, and similar obligations were paid.

5. Removal of temporary facilities and services.

6. Change of door locks to Owner's access (if required).

7. Assurance that unsettled claims will be settled.

8. Assurance that Work not complete and with exceptions will be completed without undue delay.

9. Removal of surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS - (NOT APPLICABLE)

PART 3 - EXECUTION - (NOT APPLICABLE)

END OF SECTION

SECTION 01 25 13
PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes requirements for proposing substitutions to specified products.

1.2 SUBSTITUTION REQUEST REQUIREMENTS

A. Material or equipment indicated by manufacturers name indicates Owner preference and expected quality and installation. Substitutions are not encouraged except for extreme cases including unexpected unavailability, delay of product delivery, substantial product material cost increases, etc.

B. Substitution Requests, submitted by Contractor will not be considered, except for the following reasons. Indicate one or more reasons why substitution is required with Substitution Request.

1. Unavailability: Specified item has been discontinued or is unavailable in time to meet Construction Schedule through no fault of Contractor or subcontractor.

2. Unsuitability: Subsequent information discloses specified item is unsuitable, inappropriate, and unable to perform properly or to fit designated space.

3. Regulatory Requirements: Substitution is required to comply with Code interpretations or insurance regulations.

4. Warranty: Manufacturer or fabricator declare specified item to be unsuitable for use intended or refuses to certify or warrant performance of specified item for Project.

5. Cost Savings: Contractor to review with Owner prior to submitting to Architect.

6. Time Savings: Contractor to review with Owner prior to submitting to Architect.

C. During Construction Period, Contractor will be notified in writing of Architect's decision to accept or reject Substitution Request.

1.3 SUBMITTAL REQUIREMENTS

A. All substitutions are subject to Owner and Architect approval. To be considered, requests for substitutions must include a point by point comparison between the proposed substitute and the specified manufacturer and model. The comparison must confirm that the proposed substitute is equal to or exceeds the quality of the specified products. Incomplete submittals will not be considered. No substitutions will be considered without a formal submittal review.

B. Submit two copies of Substitution Request. Limit each Substitution Request Form (Section 01 621) to one product or system.

C. Burden of proof is upon Substitution Request, as proposed, to show compliance with specified requirements. Submit drawings, product data, samples, certified test results, and as needed to fully describe Substitution request for evaluation by Architect.

D. Where product data includes other than that proposed by substitution Request, clearly mark, or otherwise indicate, exact substitution.

E. Document each Substitution Request with complete data substantiating that proposed substitution complies with provisions of Contract Documents.

F. Submission of Substitution Request constitutes representation that Bidder or Contractor:

1. Has investigated proposed product and determined that it meets or exceeds, in all respects, specified product.

2. Shall provide the same or better warranty for substitution as for specified product.

3. Shall be responsible for effect of substitution upon related Work, shall coordinate installation, and be responsible for other changes which may be required for Work to be complete in all respects, in compliance with design intent and in compliance with all applicable codes and regulatory requirements.

4. Be responsible for additional costs, which may subsequently become apparent. This includes additional costs for required additional Architect's or Consultant's services made necessary by the substitution.

5. Shall provide all cost savings to Contract Sum as credits.

6. Shall provide specified product, material, or system should substitution be rejected, at no change in Contract Sum.

G. Substitutions indicated or implied on submittals, such as Shop Drawings, will not be accepted.

H. Products and materials included in the Work, but not specified or approved by Substitution Request, are defined as Non-Conforming Work. Contractor shall remove and replace with conforming Work at Contractor's expense with no increase in Contract Time, as directed by Architect.

1.4 OWNER WILL NOT CONSIDER

A. Substitution Requests which do not provide adequate or clearly defined information for complete and timely appraisal.

B. Substitutions which, if accepted, will require substantial revisions of Contract Documents.

C. Substitution indicated or implied by Shop Drawings and other submittals.

D. Substitutions not approved by published Addendum during Bid Period or not approved in writing by Architect during Construction period.

E. Substitutions not submitted on completed Substitution Request Form.

F. Requests resulting from failure to allow sufficient time to order and receive material.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION – NOT APPLICABLE

END OF SECTION

SUBSTITUTION REQUEST FORM

SUBMITTED TO: **J2 BUILDING CONSULTANTS, INC**

8425 44th Ave W

Mukilteo, WA 98275

PROJECT:

Subcontractor Requesting

Substitution: _____

SPECIFIED ITEM:

_____ _____ _____

SECTION NO. *PARAGRAPH NO.* *DESCRIPTION OF SPECIFIED ITEM*

The undersigned requests consideration for following substitution to that specified.

PROPOSED SUBSTITUTION:

_____

ATTACHED DATA

Include complete dimensional information and technical data, laboratory tests, product description, specifications, drawings, photographs, performance, and test data as necessary for evaluation. Clearly identify proposed substitution and portions of data from other items where more than one item is described. Include description of changes to Contract Documents required by proposed substitution. See Division 01 Section Product Substitution Procedures for detailed requirements.

Include complete information on changes to Drawings and Specifications which proposed substitution will require for its proper installation.

Submit with request all necessary samples and substantiating data to prove equal quality, performance, and appearance to that specified. Clearly mark manufacturer's literature to indicate equality in performance. Indicate differences in quality of materials and construction.

Fill in Blanks Below:

A. Does the substitution affect dimensions shown on drawings? Y ☐ N ☐

If yes, clearly indicate changes:

_____

_____

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

_____

_____

C. What effect does the substitution have on other trades, other contracts, and contract completion date?

_____

D. What effect does substitution have on applicable code requirements?

_____

_____

E. Difference between proposed substitution and specified item?

_____

_____

F. Manufacturer's guarantees for the proposed substitution and specified item?

Same ☐ Different ☐ Explain:

_____

_____

G. List names and addresses of three similar projects on which proposed substitution was used, date of installations, and Architects names and addresses.

_____

Name:_____

Location:_____

Architect: _____

_____

Name:_____

Location:_____

Architect: _____

_____

Name:_____

Location:_____

Architect:_____

H. Cost and Schedule Impact:

_____

_____

CERTIFICATION

Undersigned certifies that following paragraphs are correct, except as modified by attachments:

1. Proposed substitution does not affect dimensions shown on Drawings.
2. Undersigned will pay for changes to building design, including engineering design, detailing, and construction costs, caused by requested substitution.
3. Proposed substitution request clearly states adverse effects on other trades, Construction Schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for proposed substitution.

Undersigned further states that function, appearance, and quality of proposed substitution are equivalent or superior to specified item.

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 PROJECT MANAGEMENT

A. The Contractor shall take all measures to ensure safety while on site.

B. The Project Team consists of the Owner or Owners Representative, the Consultant, and the General Contractor.

C. The Contractor's Project Manager and Site Superintendent shall attend scheduled project meetings every week on an agreed upon day and time to be established by the Project Team. See Section 01 300 Project Meetings for further information.

D. The Contractor shall be responsible for any required inspections, and shall schedule and coordinate the inspections directly with the responsible building official(s).

E. Compliance Reviews of the building exterior installation shall be conducted. The frequency of reviews will be performed as the Observer deems necessary. The Compliance Observer shall be provided access to portions of the work before it is covered. The Contractor, Owner, and Consultant shall receive these Compliance reports at the same time.

F. The Contractor shall coordinate the work so as not to interfere with the work of others, and will not delegate responsibility for coordination to any Subcontractor.

G. The Contractor shall coordinate all construction operations with the Consultant. Provide special consideration for noisy operations, interruption of mechanical and electrical services. Protect landscaping and fixtures.

H. The Contractor must complete a portion of the work with his or her own forces.

I. The Contractor is responsible training the crew to execute the work to comply with the construction documents.

J. The Contractor shall not knowingly install any defective materials. All workmanship shall be of the highest quality and shall conform to all plans, specifications, state and local building codes, as well as current industry and manufacturer standards.

K. The Contractor is responsible for examining the construction documents, and submitting a Request for Information (RFI) to resolve questions or request a clarification in the field.

L. Written communication between the Contractor and Consultant shall be in the form of the following:

1. Architect's Supplemental Instruction (ASI) (For the purpose of this document, "Architect" also refers to "Consultant" or "Engineer", whichever is applicable to the Project.)
2. Construction Change Directives (CCD)
3. Request for Information (RFI)
4. Change Order Proposals (COP)
5. Change Orders (CO)

6. Submittal Transmittals

7. Meeting Minutes

M. Contractor shall provide a log of RFIs and Submittals at each meeting.

N. Where there is a conflict between the Specifications, Drawings and the Contractor's Agreement and/or General Conditions, the Agreement and/or General Conditions shall govern

O. For payment procedures, see 01 20 00 Payment Procedures.

1.2 PROJECT COORDINATION

A. This Project is intended to conform to the International Building Code "current" edition including any local amendments. Comply with applicable Codes, ordinances, regulations, and requirements of authorities having jurisdiction.

B. Contractor to submit copies of permits, licenses, certifications, inspection reports, releases, notices, judgments, and communications from authorities having jurisdiction.

C. Contractor to apply for, obtain, and pay for all permits required to perform the Work. These permits include, but are not limited to Planning, Building, Mechanical, Plumbing and Electrical.

D. Referenced standards are part of the Contract Documents and have the same force and effect as if bound with these Specifications.

E. Except where specifically indicated otherwise, comply with the latest standard in effect as of the date of the Owner/Contractor Agreement, unless an earlier standard is recognized by the authorities having jurisdiction.

F. Where conflicts arise between one document or authority and another, the more stringent regulation shall apply.

1.3 SITE COORDINATION

A. Work may only commence during the hours of Monday through Friday from 8:00 a.m. to 5:00 p.m., excluding Holidays, or as agreed upon by the Owner, Consultant, and Contractor at the Pre-Construction Meeting.

B. The Residents shall occupy the property during entire construction period. Legal egress to and from the site and each unit shall be maintained at all times. The Contractor shall cooperate with Owner during construction operations to minimize conflicts and facilitate the resident's needs.

C. Smoking and music is not allowed on site.

D. The Contractor shall maintain access to existing walkways, corridors, egress stairs and pathways. Do not close or obstruct walkways, corridors, stairways or pathways without written permission from Owner and the building officials with jurisdiction over this property.

E. Driveways and Entrances: Keep driveways and entrances serving premises clear and accessible at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize use of driveways and entrances.

F. Maintain Owner access to parking spaces and garages at all times. Do not use these areas for parking or storage of materials unless the Consultant, Contractor, and Owner have agreed to their use in advance.

G. The Owner shall provide lay down area for storage of materials and space for job trailers. All Contractor access to the site shall be coordinated with the Consultant, Contractor, and the Owner's construction committee in a Preconstruction Meeting. Parking instructions to be determined at preconstruction meeting.

H. The Contractor shall keep the site safe, free from debris and protect stored materials at all times.

I. The Contractor shall coordinate with the Owner prior to removing any landscape elements. This work shall be at the Owner's expense. If landscaping is damaged during the work, the Contractor shall be responsible for the cost of restoring the landscaping to its original condition.

J. Contractor must protect decks, guardrails, windows, etc., below all work areas from damage, dust and debris. Contractor shall be responsible for the cost of any repair of any work-related damage.

K. Contractor is responsible for the cost to repair any incidental damage caused to buildings, interiors, property, landscaping, vehicles, or other resident property.

L. Dumpster(s) and portable toilets will be provided by Contractor. On site locations for these items will be agreed upon by Consultant, Contractor, and Owner at the Preconstruction Meeting.

M. Water and site power will be provided to the Contractor by the Owner via exterior faucets and outlets. Distribution from the sources to the work areas will be the responsibility of the Contractor.

N. Special Site Considerations

1. This scope of work is limited to the condominium lots indicated on the construction documents. Do not use or disturb any properties beyond those in which work is indicated.

2. There are no designated staging areas on the site. Contractor responsible to arrange for and obtain permission and/or permits for necessary staging areas.

3. Schedule material deliveries to minimize impact to occupants and neighbors.

4. Obtain necessary permits from the local jurisdiction prior to occupying public streets, sidewalks and or rights-of-way for construction access and/or staging. Comply with all conditions of such permit.

1.4 WEATHER PROTECTION

A. Contractor shall be required to provide a weather-protected area for material storage and staging on site at a location agreed upon by the Contractor, Consultant, and Owner at the Preconstruction Meeting.

B. The Contractor shall be responsible for all temporary weather protection, enclosures and heat necessary to complete the Work and accommodate the needs of the Residents. All new work will be protected from the weather per manufacturer's and Consultant's instructions.

C. All work must be completed in dry conditions. All new and reused materials must be dry and stable. All existing building materials, to which new materials are being applied, must be dried out prior to installation. Contractor shall provide weather protection to ensure dry conditions. All materials shall be stored on proper dunnage to prevent contact with earth, grass or pavement. Materials shall also be covered to protect against weather.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

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

1. Pre-construction conferences.
2. Pre-installation conferences.
3. Mock-up review
4. Progress meetings.

1.2 SUBMITTALS

A. Meeting Minutes.

B. Construction Progress Schedules.

1.3 PRE-CONSTRUCTION CONFERENCE

A. Consultant will schedule a Pre-Construction Conference before starting construction. Responsibilities and personnel assignments will be reviewed. See each Division for pre-installation conferences required for that aspect of the Work.

B. Attendees: As necessary, authorized representatives of the Owner and Consultants; the Contractor's superintendent; subcontractors; and other concerned parties shall attend. All participants shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items that could affect progress, including the following:

1. Tentative construction schedule.
2. Critical work sequencing and long-lead items.
3. Designation of key personnel and their duties.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for Requests for Information (RFIs).
6. Procedures for testing and inspecting.
7. Procedures for processing Applications for Payment.
8. Submittal procedures.
9. Preparation of Record Documents.
10. Use of the premises.

11. Work restrictions.
12. Owner's occupancy requirements.
13. Responsibility for temporary facilities and controls.
14. Construction waste management and recycling.
15. Parking availability.
16. Office, work, and storage areas.
17. Security.
18. Progress cleaning.
19. Working hours.

D. Minutes: Contractor to record and distribute meeting minutes.

1.4 PRE-INSTALLATION CONFERENCES

A. The General Contractor will conduct a conference before each activity requiring coordination with other operations. Appropriate Subcontractors are required to attend the conferences.

1. The following list provides for pre-installation conferences for items of particular interest. This list does not limit or exclude any other required pre-installation conferences. See also requirements of applicable Divisions.

a. Exterior pre-installation conference(s) include the following:

1) Division 06 Rough Framing.
2) Division 07 Weather Resistive Barrier.
3) Division 07 Siding.
4) Division 07 Sheet Metal Flashing and Trim.
5) Division 07 Joint Sealants.
6) Division 08 Vinyl Windows.
7) Division 09 Exterior Paintings.

B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation shall attend. The General Contractor will advise Consultant of scheduled meeting dates.

C. Agenda: Review the progress of other operations and preparations for the activity under consideration at each pre-installation conference, including requirements for the following:

1. The Contract Documents.
2. Applicable permits.
3. Requests for Information (RFI's).

4. Related Change Orders.
5. Submittals.
6. Review of mockups.
7. Possible conflicts and compatibility problems.
8. Time schedules.
9. Weather limitations.
10. Manufacturer's written recommendations.
11. Warranty requirements.
12. Acceptability of substrates.
13. Testing and inspecting requirements.
14. Installation procedures.
15. Coordination with other Work.
16. Required performance results.
17. Protection of adjacent Work.

D. Minutes: General Contractor or Consultant to record significant discussions and distribute the record of the meeting to everyone concerned, including the Owner and the Consultant.

E. Subcontractor is not to proceed with the installation if the conference cannot be successfully concluded. Subcontractor is responsible for initiating actions necessary to resolve problems and reconvene the conference.

1.5 PROGRESS MEETINGS

A. Progress meetings will be conducted at the Project Site at weekly intervals, or as necessary.

B. Attendees: The Owner, Consultant, and other entities concerned with current progress or involved in planning, coordination, or future activities shall be represented. Participants shall be authorized to conclude matters relating to the Work.

C. Agenda:

1. Review and correct or approve minutes of the previous meeting. Review items of significance that could affect progress. Include topics for discussion appropriate to project status.
2. Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Construction Schedule. Determine how to expedite construction behind schedule; secure commitments from parties involved to do so. Discuss revisions required to insure subsequent activities will be completed within the Contract Time.

D. Minutes: Contractor to record the minutes of the meeting and distribute to all concerned parties.

1. Schedule Updating: Contractor shall revise Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS - NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUBMITTAL PROCEDURES

A. Submit electronic copies of submittals to Consultant for review.

B. Allow one (1) week for initial review. Allow more time if the Consultant must delay processing to permit coordination. Allow one (1) week for reprocessing.

C. No extension of contract time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

D. Verify that field measurements and affected adjacent Work are coordinated.

E. Submit as necessary to complete Work of this Contract within Contract Time.

F. Substitutions to Specified Items: Do not indicate or otherwise imply substitutions to specified items on submittals.

G. Provide a submittal schedule to the Consultant, Owner, and others as necessary, within 7 days of construction start. List submittals to be provided, expected date of submittal to Consultant, and requested date of return. Update submittal schedule if project schedule deviates from initially provided submittal schedule. See Part 4 of this Section for suggested schedule.

H. Coordinate and consolidate Submittals to include complete assemblies and systems. Partial or incomplete submittals will not be reviewed until complete submittal is received.

I. Deviations on Submittals: Identify deviations from Contract Documents, conforming to standard shop practices or industry standards by drawing cloud or other identifying marking around deviation and noting change.

J. Product and System Limitations: Indicate condition which may be detrimental to successful performance or completion of the Work.

1.2 SUBMITTAL FORMAT

A. Transmittal Form: Accompany each submittal with AIA form G801 or General Contractor's own transmittal form.

B. Submittal Identification: Sequentially number transmittal forms in order submitted. Include Project, Contractor, subcontractor or supplier, Drawing and Detail number, specification Section number, manufacturer, fabrication, product and material as appropriate.

C. Contractor's Certification: Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of Contract Documents. Review submittals for adequate installation interface with Work of other trades, including requirements for lighting, ductwork, and sprinklers. Failure of Contractor to review submittal will cause submittal to be rejected and not reviewed.

1.3 CONSULTANT'S REVIEW

A. Consultant is responsible for reviewing Submittals as verification to the design intent, and conformance to provisions of Contract Documents.

B. Consultant's review does not relieve Contractor from:

1. Establishing necessary field verified dimensions, tolerances, clearances, qualities, and fabrication processes.

2. Taking responsibility for necessary means and methods to complete the Work.

3. Conforming to provisions of Contract Documents, except where deviations are approved by Consultant.

C. Engineer will stamp and sign each submittal. Where Engineer indicates that submittal has been reviewed or no exceptions have been taken to submittal, proceed in accordance with Contract Documents. Otherwise make corrections or re-submit as indicated.

1.4 RE-SUBMITTALS

A. Revise initial submittal as directed and re-submit. Follow procedures specified for the initial submittal. Make corrections or changes in the submittals required by Consultant.

B. Revise and make re-submittals until no exceptions are taken. Identify changes on re-submittal made since previous submittal.

1.5 SHOP DRAWINGS

A. Number and Format: Submit three (3) copies, except as otherwise specified, plus additional copies that contractor will require for distribution.

B. Distribution: Submit all copies to Consultant for review. One (1) copy will be retained by Consultant, and remaining copies will be returned to Contractor for distribution. Maintain one (1) copy for Project Record Documents to be delivered to Owner at Project completion.

C. Maintain one (1) copy of each Shop Drawing as Project Record Document for delivery to Owner at Project completion.

D. Presentation: Hand drafted or computer generated, delineated to present information in a clear and thorough manner. Freehand drawings not approved. Do not use Contract Drawings as Shop Drawings.

E. Changes to Submittals which affect Contract Sum or Contract Time: Do not distribute or begin Work related to submittal. Promptly notify Consultant.

1.6 PRODUCT DATA, DESIGN DATA AND TEST REPORTS

A. Number of Copies: Submit three (3) copies, except as otherwise specified, plus additional copies that Contractor will require for distribution.

B. Identification: Mark each copy to identify specific products, models, options, tolerances, dimensions, and other pertinent data.

C. Manufacturer's Standard Data: Modify drawings and diagrams to delete inapplicable information. Supplement to provide information unique to Project.

D. Content: Include information necessary for assessing conformance with and design concept expressed by Contract Documents.

1.7 SAMPLES

A. Quantity or Number: Submit three (3) sets each, except as otherwise specified, plus additional samples as required by Contractor for distribution.

B. Distribution: Submit all copies to Consultant for review. One (1) reviewed and stamped sample will be sent to from Consultant to Owner, one (1) sample retained by Consultant, and remaining samples will be returned to Contractor for distribution.

C. Identification: Label each sample with Project Title and complete product identification, including manufacturer, model number, descriptive name, supplier, and as applicable, to sample identification.

D. Functional Characteristics: Include parts, attachments, and components, as applicable. Coordinate with interfacing Work.

1.8 CERTIFICATES & MANUFACTURER INSTRUCTIONS

A. Number: Submit three (3) copies each in accordance with procedures for Product Data above.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION - NOT APPLICABLE

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Project Manager, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 01 Section "Allowances" for testing and inspecting allowances.

2. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

3. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

4. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Project Manager.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee

payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.

b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.

e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Project Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect or Project Manager.

2. Notify Architect and Project Manager seven days in advance of dates and times when mockups will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect's and Project Manager's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

6. Demolish and remove mockups when directed, unless otherwise indicated.

K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 49.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.

3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect, Project Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect or Project Manager and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.

5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.

7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.

1. Distribution: Distribute schedule to Owner, Architect, Project Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

2. Notifying Architect, Project Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, through Project Manager, with copy to Contractor and to authorities having jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.

6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

A. TBD

3.2 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.

3. Date test or inspection results were transmitted to Architect.

4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's and Project Manager's reference during normal working hours.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies temporary services and facilities, including utilities, construction and support facilities, security and protection. Note, not all sections will apply to particular job.

1.2 GENERAL

A. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use and obtain required certifications and permits.

B. Conditions of Use:

1. Keep facilities clean and neat. Operate in a safe and efficient manner. Take necessary fire prevention measures.

2. Do not overload, or permit facilities to interfere with progress.

3. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

C. Materials and Equipment: Provide new materials and equipment or undamaged previously-used materials and equipment in serviceable condition, and suitable for the use intended.

D. Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost including, but not limited to, Owner, Consultant, testing agencies, and authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Scaffolding or Other Means of Construction Access: Provide safe and secure access to all areas of work.

B. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

C. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service. Contractor shall arrange for, maintain and pay for all temporary utilities until final acceptance by Owner.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install telephone line(s) for each field office.

J. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail, in common-use facilities.

3.2 SUPPORT FACILITIES INSTALLATION

A. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion or as directed by Owner. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas as indicated on Drawings.

1. Provide dust-control treatment that is non-polluting and non-tracking. Re-apply treatment as required to minimize dust.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.

2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. De-watering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.

E. Project Identification and Temporary Signs: Provide Project identification and other signs as directed by Owner. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

F. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

G. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

H. Temporary Cutting Area: Designate a central wood cutting area(s) to minimize waste, provide for reuse of scraps and minimize dust and wood scraps.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Storm Water Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

C. Tree and Plant Protection: Protect existing trees and plants from damage.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

F. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

G. Barricades, Warning Signs, and Lights: Provide to allow for owners use of site and public building entry, ant to protect pedestrians, existing facilities and adjacent properties from damage. Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Covered Walkway: Erect structurally adequate, protective, covered walkway for passage of individuals along adjacent public street(s) as required. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

I. Building Entry Protection: Maintain a protected entryway for building occupants' egress to and from building during construction.

J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

K. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Prohibit smoking in interior construction areas.

2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

L. Temporary Guardrails and Handrails: Provide temporary guardrails and handrails per WISHA requirements.

M. Temporary Stairs: Provide temporary and code compliant stairs where removal of required stairs is necessary.

3.4 OPERATION, TERMINATION, AND REMOVAL

A. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

B. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until directed by Owner.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

D. At Substantial Completion, renovate permanent facilities used during the construction period, including but not limited to:

1. Replace air filters and clean inside of ductwork and housings.
2. Replace worn parts and parts subject to unusual operating conditions.
3. Replace burned out lamps.

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENTATION CONTROL (T.E.S.C.)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes but is not limited to the implementation and maintenance of a comprehensive erosion control plan that complies with the local City, County, and State Clearing and Grading regulations. The contractor is responsible for implementing Best Management Practices (BMPs) in accordance with Authority having jurisdiction's requirements. The information provided on the contract plans should be considered a minimum for the anticipated construction and conditions. The contractor shall be responsible for adding additional BMPs as conditions change at no additional cost to the Owner as required by the City Inspector or the Consultant if warranted by site stability. The Contractor shall coordinate installation and inspections of the BMPs with the local Clearing and Grading Inspector. Additional BMP's shall be stockpiled on site as requested by the Clearing and Grading Inspector.

B. This Section includes the following:

1. Silt Control Measures.
2. Temporary Stormwater Runoff Control.
3. Measures to keep streets clean.
4. P.E. sheeting cover for exposed soil.
5. Maintaining, monitoring, and supplementing silt control, storm water runoff control measures and additional BMP's as required by the local jurisdiction.

1.3 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents. They are part of this section insofar as specified and modified herein. The Contractor shall have one copy of the each of the following documents at the job site. The bidder in submitting a bid acknowledges that he is familiar with the documents named in References and that they are incorporated into this document by reference. The Standard Plans and Policies apply only to performance and materials and how they are to be incorporated into the work. The legal/contractual relationship sections and the measurements and payment sections do not apply to this document.

1. NA

1.4 SUBMITTALS

A. Product Submittals: Not Required for this Scope of Work.

1.5 REGULATORY REQUIREMENTS

A. Work to comply with local jurisdictional standards. The Contractor shall coordinate with the City Clearing and Grading Inspector.

B. The Contractor is responsible for providing all information required by the NPDES Permit for construction, including but not limited to turbidity log as required and SWPPP (updated to reflect construction progress/phasing).

1.6 SEQUENCING AND SCHEDULING

A. Install erosion control measures in work areas prior to any clearing, grubbing, demolition, general site grading, or other construction in the area. Erosion control items shall be installed and removed at various times throughout the duration of the project.

1.7 MAINTENANCE

A. Maintain erosion control through the duration of the project.

B. Maintain erosion control until after substantial completion per this Section and as approved by the City Inspector and the Consultant.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Filter Fabric Fence: Permanent Erosion Control, High Serviceability, Class B.

B. Straw Mulching: As approved by local jurisdiction.

C. Filter Fabric: Mirafi 140N or equal.

D. Filter Bag Inserts: Commercially manufactured filter bags specifically manufactured for silt filtering and which will provide filtering performance required. Filter bags shall be equipped with high flow bypass and shall be in accordance with local jurisdiction standards.

PART 3 - EXECUTION

3.1 GENERAL

A. The implementation of the Erosion Control system and the maintenance, replacement and upgrading of these facilities is the responsibility of the Contractor until all construction is approved. The Temporary Erosion and Sediment Control (TESC) facilities must be maintained in conjunction with all clearing and grading activities, and in such a manner as to ensure that sediment laden water does not enter the drainage system or violate applicable water standards in accordance with Authority having jurisdiction's requirements and the contract documents.

B. The TESC facilities shown on the plans are the minimum requirements for anticipated site conditions. During the construction period, the erosion control facilities installed may require maintenance, relocation or upgrading (e.g. additional sumps, relocation of ditches and silt fences, etc.) as shown on the plans or as needed. Contractor shall pay for all costs associated with the construction, maintenance, upgrading and removal of the erosion control system throughout project duration.

C. Adequate temporary and permanent control of surface water runoff and subsurface seepage will be required in order to allow site access, grading, and construction of underground utilities to proceed. Site preparation and initial construction activities should be planned to minimize

disturbance to the existing ground surface particularly during extended wet weather periods when the presence of excess moisture will render the site soils more prone to disturbance. During wet site conditions, equipment traffic should not be allowed on exposed sub grade areas. Erosion of the soil will occur as exposed surfaces are disturbed due to construction activity and exposure to climatic conditions. The Contractor shall be responsible for protecting disturbed or prepared surfaces by some form of weather cover if left exposed for more than 2 days or if wet weather is forecasted. Contractor shall also protect disturbed or prepared surfaces from surface ponding, storm water runoff, and construction traffic. The Contractor will be solely responsible for any repairs required to these surfaces at no additional cost to the owner.

D. Access Streets and Roadways: Provide wheel cleaning stations to clean wheels and undercarriage of trucks before leaving site, as necessary to prevent dirt from being carried onto public streets. If streets are fouled, clean immediately in conformance with Authority having jurisdiction and all governing requirements and regulations.

E. Provide a dedicated concrete wash out collection area for the rinsing of mixer trucks. This water is to be removed from the site and not discharged onto the ground, into the storm drainage system or the sanitary sewer system.

3.2 EXAMINATION

A. Verify locations of existing catch basins and related storm drainage features that may be impacted by construction activities.

3.3 PREPARATION

A. Locate existing utilities, avoid damage or disturbance. For aid in utility location call "Dial a Dig 1 800 424 5555, 48 hours (two working days) prior to beginning construction. Provide and pay for additional marking as required.

B. Survey limits of work to install silt fence.

C. Perform clearing or other work required to installing erosion control.

3.4 CONSTRUCTION

A. Filter Fabric Fence:

1. Field adjust location to perimeter of clearing and stripping. Location shown on drawings is schematic.

2. Cast all trench excavation soils from fence installation to the Construction side of fence.

3. Overlap filter fabric fence joints minimum 1 foot prior to backfilling trench.

B. Polyethylene Sheeting:

1. Overlap joints minimum 28 inches. Overlap in direction of drainage and prevent water from draining onto material being protected.

2. Secure in place to prevent movement and damage.

3. Provide sandbags at 2.5 feet spacing and tie the sand bags together with rope on slopes greater than 3:1. Minimize driving stakes through plastic.

C. Filter Bag Inserts:

1. Install on all new and existing catch basins within project limits, or downstream of project subject to possible sedimentation.

2. Install per manufacturer's recommendations, City requirements and as shown in the documents.

D. Quarry Spalls:

1. Install as check dams in swales, at temporary construction entrances, at all pipe outfalls and as necessary for site stabilization during construction.

2. Install in all open conveyance ditches at a grade of greater than 5%.

3. Install in minimum thickness of 12 inches and as indicated in the documents.

E. Diversion Swales and Berms:

1. Construct in a manner to intercept, divert, and channel runoff to sediment ponds. Plan locations are schematic. Field adjust, move, and reconstruct as necessary during construction to maintain drainage to sediment ponds and allow construction to proceed. Provide rock check dams at minimum 100 feet spacing. Additional straw bale check dams to be used if necessary to trap sediments.

F. Check Dams:

1. Rock – Construct from quarry spalls such that drainage flows through rocks. Key rock into ground to stabilize check dam. Raise elevations of ends of check dams to prevent drainage around ends. Provide 18-inch long splash pad on downstream side to prevent scouring from high flows or overtopping.

G. Mulch

1. Mulch exposed soils not protected by other means. Provide continuous covering minimum depth 4 inches. Apply mulch with tackifier to prevent blowing.

3.5 ADJUSTMENTS AND REVISIONS

A. Adjust or move swales, berms, pipes, culverts, bales, and silt fences as necessary during construction to direct site runoff to temporary ponds, silt filters, and grass swales.

3.6 PROTECTION AND MAINTENANCE

A. Protection

1. Where possible, maintain natural vegetation for additional silt control in addition to the measures indicated in the documents.

2. Prevent silt-laden water from leaving site or from entering off-site storm sewer systems.

3. All slopes, cut, or fill areas where work has stopped for more than 30 days in dry season or more than two days in wet season shall be stabilized by mulching, polyethylene sheeting or other method to prevent erosion and sediment transport.

4. Keep all off-site parking areas and streets clean from construction activities. Paved surfaces shall be kept clean by the use of vacuum and sweeping equipment, hand shovels and brooms or other accepted methods suitable of removing dirt, rock, silt and sand. No street washing will be allowed.

B. Supplementary Measures:

1. Provide additional silt control and temporary erosion control measures as required to protect soils and prevent silt laden runoff from leaving project site at no additional cost to the Owner.

C. Maintenance:

1. Monitor and maintain silt control measures. Remove accumulations of sediment when more than 50 percent of silt storage capacity is filled.

2. Maintain all temporary erosion control facilities until need for each facility has been superseded by other stabilization methods or until Consultant authorizes removal.

3. Inspect and repair temporary erosion control facilities. Inspect entire system to ensure proper operation a minimum of once per week, before forecasted storms, during and after storms, and prior to weekends and holidays.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Removal of temporary facilities.

B. Final cleaning.

C. Systems demonstrations.

D. Closeout procedures.

E. Closeout submittals.

1.2 RELATED SECTIONS

A. General Conditions of the Contract: Fiscal provisions, legal submittals, and other administrative requirements.

B. Division 01 Section Submittal Procedures: Submission of Record Drawings and Operation and Maintenance manuals.

1.3 REMOVAL OF TEMPORARY FACILITIES

A. Remove construction barriers and enclosures.

B. Clean and restore areas to eliminate evidence of temporary facilities, fencing, barriers and enclosures.

1.4 FINAL CLEANING

A. Execute cleaning, during progress of the Work, and at completion of the Work, as specified herein.

1. Employ only skilled workers for final cleaning.

2. Clean all materials affected by the building process.

3. Remove stains, spots, marks and dirt from decorative Work, electrical and mechanical fixtures, fitments, walls and floors.

4. Vacuum clean and dust building interiors, behind grilles, louvers and screens at affected areas.

5. Wax, seal, shampoo or prepare floor finishes, as recommended by the flooring material manufacturer in affected areas.

6. Remove dirt and other disfigurations from exterior surfaces.

7. Clean and sweep decks, gutters, walkways, sumps and catch basins.

8. Sweep and pressure-wash clean paved areas.

9. Perform final cleaning of interior and exterior of windows and glass doors. Include cleaning of sliding door tracks.

B. Materials: Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces. Use as recommended by surface material manufacturer and cleaning material manufacturer.

C. Low-Toxic Cleaning: Use low-toxic cleaning supplies for surfaces, equipment, and worker's personal use. Options include several soybean-based solvents and cleaning options (SoySolv) and citrus-based cleaners. Biodegradable products, and low-or zero-VOC products are also recommended. Avoid cleaning products designated by MSDS as toxic, flammable, caustic or reactive, to the greatest extent possible.

D. Disposal Requirements: Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws. Dispose of rubbish, debris, and waste materials at periodic intervals away from the site and in a legal manner.

E. Dust Control: Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

1.5 SYSTEMS DEMONSTRATION

A. Prior to final inspection, demonstrate operation of each system to the Consultant and Owner's representatives.

B. Arrange and coordinate instruction of Owner's staff in operation, maintenance, and adjustment of building equipment, systems and finishes by suppliers and subcontractors, using submitted Operation and Maintenance Manuals as the basis for instruction.

1.6 STARTING AND ADJUSTING

A. Provide instruction of Owner's representative in starting and adjusting of building equipment using provided operation and maintenance data as the basis for instruction.

1.7 CLOSEOUT SUBMITTALS

A. At the time of Substantial Completion, review for completeness and submit maintenance manual contents, operating and maintenance instructions, project record "as-built" drawings, warranties, extra stock and materials. Submit three (3) copies of O&M manual, two (2) for Owner and one (1) for Consultant.

B. Submit required documentation such as statutory declarations, warranties, certificates of approval, or acceptance from regulating bodies.

C. Submit certificates of inspection provided by authorities having jurisdiction.

D. Submit final meter readings for utilities and coordinate transfer for future billings with Owner

1.8 CLOSEOUT PROCEDURES

A. When Contractor considers the Work ready for review by Owner and Consultant for Substantial Completion, submit to Consultant written certification that Contract Documents have been reviewed, that the Work has been inspected, "Punch List" items have been corrected, and that requirements for Substantial Completion have been completed.

B. Submit certified copy of Consultant's final "Punch List", itemizing Work completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed, and dated by Consultant.

C. Within two (2) weeks upon receipt of certification, Consultant will either review the Work to determine completion status, or advise Contractor of prerequisites not fulfilled.

D. Should Consultant consider Work to be incomplete or defective, Consultant will notify Contractor in writing, listing incomplete or defective Work to be performed prior to Final Completion.

1. Perform necessary Work, and when complete, make new submittal for Final Completion.

2. Consultant will review the Work for second time without additional reimbursement.

3. Should further review be required to determine Substantial Completion of Work, Consultant will be reimbursed as specified by this Section.

E. Following determination that Work is complete, Consultant will provide Certificate of Substantial Completion to Owner recommending Final Acceptance of Work.

F. Owner will issue Final Acceptance letter after determination that requirements for Final Completion have been fulfilled.

1.9 RE-INSPECTION FEES

A. Should the Contractor require re-inspection of a partial list of deficiencies or should the Consultant be required to perform more than one re-inspection due to the failure of the Work to comply with the claims of status and completion made by the Contractor:

1. The Owner will compensate the Consultant for such additional services.

2. The Owner will deduct the amount of such compensation from the final payment to the Contractor.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION – NOT APPLICABLE

END OF SECTION

SECTION 02 40 00
DEMOLITION AND MOISTURE DAMAGE

PART 1 - GENERAL

1.1 SUMMARY

A. The work includes demolition or removal of all items, materials and appurtenances required to complete work as described in Drawings and Specifications. All materials resulting from demolition work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the limits of the property. Do not allow accumulations inside or outside the buildings. Store materials which cannot be removed daily in areas specified by the Owner.

B. Moisture Damage: Moisture damaged materials will be identified after removal of existing siding. Areas of removal will be marked by Consultant for removal by contractor. After removal, areas will be sprayed with 2 coats of Bor-A-Care with Mold-care fungicide.

1.2 QUALITY ASSURANCE

A. Reuse: Some items removed may be scheduled for re-use. Provide an identification system to insure items are re-set in original location. Provide an area protected from weather and damage to store items to be re-set.

B. Structural Elements: Do not remove structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

C. Operational Elements: Do not remove operating elements and related components in a manner that results in reducing their capacity to perform as intended or results in increased maintenance or decreased operational life or safety.

D. Miscellaneous Elements: Do not remove miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or results in increased maintenance or decreased operational life or safety.

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

F. Dust Control: Take appropriate action to check the spread of dust to occupied portions of the building and to avoid the creation of a nuisance, in the surrounding area. Do not use water if it results in hazardous or objectionable conditions. Comply with all dust regulations imposed by local air pollution agencies.

G. Buildings: Protect existing work that is to remain in place, or that is to be reused. Repair items damaged during performance of the work or replace with new. Do not overload structural elements. Provide new supports or reinforcement for existing construction weakened by demolition or removal work.

1.3 SUBMITTALS

A. Fungicide Treatment (see 2.1 B)

1.4 WARRANTY

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

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

B. Moisture Damaged Material: After removing moisture damaged materials as indicated by Consultant, provide fungicide treatment of all adjacent areas to a minimum of two feet beyond area of removal.

1. Bor-A-Care with Mold-Care. Contractor shall have two (2) cartons on site for use to treat damaged areas. Mix and apply per manufacturer's instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

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

C. Utilities: Locate utilities before cutting. Provide temporary utilities as needed. Cap, valve, or plug and seal ends of abandoned utilities to prevent entrance of moisture or other foreign matter.

3.3 PERFORMANCE

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

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

3.4 CLEANING

A. Remove debris of the Work of this section on a daily basis and dispose of in a legal manner.

B. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 03 01 30
CONCRETE REPAIR MORTAR

PART 1 - GENERAL

1.1 SUMMARY

A. Application of nonsag concrete repair mortar with integral corrosion inhibitor for vertical and overhead applications.

1.2 SUBMITTALS

A. Comply with Section 01 33 00.

B. Product Data: Submit manufacturer's technical data sheets and LEED product information for each product.

C. Submit list of project references as documented in this Specification under Quality Assurance Article. Include contact name and phone number of person charged with oversight of each project.

D. Quality Control Submittals:

1. Provide protection plan of surrounding areas and non-cementitious surfaces.

1.3 QUALITY ASSURANCE

A. Comply with Section 01 40 00

B. Qualifications of Manufacturer:

1. Manufacturer Qualifications: Company with minimum 15 years of experience in manufacturing of specified products.

2. Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.

3. Applicator Qualifications: Company with minimum of 5 years experience in application of specified products on projects of similar size and scope, and is acceptable to product manufacturer.

a. Successful completion of a minimum of 5 projects of similar size and complexity to specified Work.

C. Field Sample:

1. Install at Project site or pre-selected area of building an area for field sample, minimum 4 feet by 4 feet (2 m by 2 m), using specified material.

2. Apply material in accordance with manufacturer’s written application instructions.

3. Manufacturer’s representative or designated representative will review technical aspects; surface preparation, repair, and workmanship.

4. Field sample will be standard for judging workmanship on remainder of Project.

5. Maintain field sample during construction for workmanship comparison.

6. Do not alter, move, or destroy field sample until Work is completed and approved by Architect.

7. Obtain Architect's written approval of field sample before start of material application, including approval of aesthetics, color, texture, and appearance.

1.4 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.

D. Precondition materials to 70 degrees F plus or minus 5 degrees F (21 degrees C plus or minus 3 degrees C) before mixing.

PART 2 - PRODUCTS

A. Manufacturers:

1. Subject to compliance with requirements, provide products from the following manufacturer:

Master Builders Solutions

889 Valley Park Drive

Shakopee, MN 55379

Customer Service: 800-433-9517

Technical Service: 800-243-6739

Direct Phone: 952-496-6000

Website: https://mbcc.sika.com/en-us

B. Environmental Requirements:

1. Do not use products under conditions of precipitation or freezing weather. Do not apply material at temperatures below 40 degrees F (4 degrees C) or above 90 degrees F (32 degrees C). Use appropriate measures for protection and supplementary heating to ensure proper curing conditions per the manufacturer's recommendations if application during inclement weather occurs.

2.2 MATERIALS

A. Nonsag, lightweight, 1-component, high-strength, polymer-modified, silica-fume-enhanced repair mortar with integral corrosion inhibitor for vertical and overhead applications.

1. Manufactured to be placed from 1/4 inch (6 mm) to 2 inches (51 mm) per lift.

2. Acceptable Product: MasterEmaco N 425 (formerly Gel Patch) by BASF.

B. Properties of mixed cementitious repair materials:

1. Working Time, 70 degrees F (21 degrees C): 20 to 30 minutes.

2. Color: Concrete gray

C. Properties of cured cementitious repair materials:

1. Compressive Strength, ASTM C109, Modified:

   a. 1 Day: 2,150 psi (14.8 MPa).

   b. 7 Days: 5,600 psi (38.6 MPa).

   c. 28 Days: 6,750 psi (46.5 MPa).

2. Splitting Tensile Strength, ASTM C496, Modified, wet cure:

   a. 1 Day: 310 psi (2.1 MPa).

   b. 7 Days: 560 psi (3.9 MPa).

   c. 28 Days: 610 psi (4.2 MPa).

3. Flexural Strength, ASTM C348, Modified:

   a. 1 Day: 500 psi (3.4 MPa).

   b. 7 Days: 800 psi (5.5 MPa).

   c. 28 Days: 1,110 psi (7.7 MPa).

4. Bond Strength, ASTM C882, Modified, mortar scrubbed into substrate:

   a. 1 Day: 900 psi (6.2 MPa).

   b. 7 Days: 1,900 psi (13.1 MPa).

   c. 28 Days: 2,450 psi (16.9 MPa).

5. Chloride Permeability, AASHTO T277, ASTM C1202 Table 1:

   a. Very low range.

6. Length Change, ASTM C157, wet cure:

   a. 1 Day: Plus 0.019 percent, in/in.

   b. 7 Days: Plus 0.028 percent, in/in.

   c. 28 Days: Plus 0.034 percent, in/in.

7. Length Change, ASTM C157, dry cure at 50 percent relative humidity:

a. 1 Day: Minus 0.026 percent, in/in.

b. 7 Days: Minus 0.11 percent, in/in.

c. 28 Days: Minus 0.15 percent, in/in.

8. Modulus of Elasticity, ASTM C215:

a. 5.6 x 105 psi (3,861 MPa).

9. Linear Coefficient of Thermal Expansion, ASTM C531:

a. 5.3 x 10-6 in/in/degree F.

10. Water Absorption, ASTM C642:

a. 28 Days: 4 percent.

11. VOC Content:

a. 0 lbs per gal (0 g/L), less water and exempt solvents.

D. Accessories

1. Zinc Rebar Primer – one component zinc-rich epoxy rebar primer

a. MasterProtect P 8100AP

2. Bonding Agent / Corrosion Inhibitor – bonding agent and rebar primer with integral corrosion inhibitor.

a. MasterEmaco P 124

3. Curing Compound

a. MasterKure CC 1315

PART 3 - EXECUTION

3.1 INSTALLERS

A. Work shall be carried out by skilled tradesmen familiar with the application of the product system specified.

3.2 EXAMINATION

A. Comply with Section 01 77 00.

3.3 SURFACE PREPARATION

A. Protection: Protect adjacent Work areas and finish surfaces from damage during repair mortar application.

B. Prepare surfaces in accordance with manufacturer's instructions.

C. Ensure surfaces are clean, sound, and free of laitance, standing water, dirt, duct, grease, oil, efflorescence, paint, curing compounds, form oils, and other surface contaminants.

D. Remove loose materials.

E. Prepare concrete substrate to fractured aggregate profile for proper adhesion.

F. Clean exposed steel reinforcement to white-metal finish and prime with anti-corrosion coating acceptable to product manufacturer.

G. Saw-cut straight edges along repair area perimeters minimum of 1/4 inch (6 mm) deep to avoid featheredges.

H. Report cracks that appear in interface area of patch or overlay to Architect, and repair as directed.

I. Continue expansion and control joints through repair or as directed by Architect.

3.4 MIXING:

A. Mix materials in accordance with manufacturer's instructions.

B. Mix no more material than can be placed in 20 to 30 minutes at 70 degrees F (21 degrees C) and 50 percent relative humidity.

3.5 APPLICATION:

A. Apply and cure repair mortar in accordance with manufacturer's instructions.

B. Placement:

1. Dampen surface with clean water to obtain saturated surface-dry (SSD) with no standing water.

2. Apply small quantity of mixed repair mortar to SSD substrate. Thoroughly key-in and work material throughout cavity to promote bond. Alternatively, mix and apply MasterEmaco P124 in accordance with manufacturer's instructions.

3. Place repair mortar and key-in and compact thoroughly to secure bond.

4. Apply repair mortar in lifts of 1/4 inch (6 mm) to 2 inches (51 mm).

5. Avoid featheredging. For optimum mechanical bond on successive lifts, thoroughly score each lift and allow reaching initial set before next layer is applied.

6. Trowel repair mortar to desired finish after initial set.

C. Curing:

1. Damp cure for 3 days.

2. Use appropriate curing compound if surface cannot be damp cured.

3.6 PROTECTION:

A. Protect repair mortar from damage during construction.

B. Protect from freezing for minimum of 24 hours after application.

END OF SECTION

SECTION 04 01 20
UNIT MASONRY RESTORATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cutting and Chipping

B. Repairing of Cracks

C. Restoration Work

D. Removal of Paint

E. Cleaning

1.2 RELATED SECTIONS

A. Coordinate the Work of this Section with the Work of other Sections specifying remedial work, corrective measures, and restoration work, including Section 01 71 23 - Field Engineering, Section 01 74 14 - Cleaning, and Section 02 41 19 - Selective Structure Demolition.

1.3 MEASUREMENT AND PAYMENT

A. Measurement: Repair and restoration of existing masonry will be measured for payment by the lump-sum method, acceptably performed and completed.

B. Payment: Repair and restoration of existing masonry will be paid for at the indicated Contract lump-sum price as indicated in the Bid Schedule of the Bid Form.

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C881Specification for Epoxy-Resin-Base Bonding System for Concrete

2. ASTM C928Specification for Packaged, Dry Rapid-Hardening Cementitious Materials for Concrete Repairs

3. ASTM C1107Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

4. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete

B. International Code Council (ICC):

1. ICC Evaluation Service - Evaluation Report AC1531 – Building Code Requirements for Masonry Structures.

2. ICC Evaluation Service - Evaluation Report AC15318R – Commentary on Building Code Requirements for Masonry Structures.

3. ICC Evaluation Service - Evaluation Report AC530.1 – Specification for Masonry Construction.

1.5 DEFINITIONS

A. The station or building involved in this work will be in continuous operation during the construction period. This will require that the Contractor plan the Work carefully to work around unavoidable obstacles in the prosecution of the Work. It will require further that the Contractor

complete some new construction facilities required in the renovation work before proceeding with the masonry restoration work.

B. Provide such additional temporary facilities as may be required to facilitate continuous, unobstructed station or building operations during transitional construction work.

1.6 REGULATORY REQUIREMENTS

A. In addition to the foregoing referenced standards, the regulatory requirements that govern the work of this Section include the following code requirements:

Oregon Building Code, Chapter 14, “Existing Structures.”

1.7 QUALITY ASSURANCE

A. Repair and restoration of existing masonry surfaces shall be performed by a skilled and experienced subcontractor specializing in the restoration of masonry with at least five years experience in the type of work involved.

B. Repair and restoration of existing stone and unit masonry work shall achieve security, strength, and weather protection, as applicable and required, and shall preserve the integrity and continuity of fire-rated assemblies.

C. Repair and restoration of existing masonry work shall successfully duplicate undisturbed adjacent finishes, colors, textures, and profiles. Where there is a dispute as to whether or not duplication is successful or has been achieved to a reasonable degree, the Engineer's judgment shall be final.

PART 2 - PRODUCTS

2.1 MATERIALS, EQUIPMENT, AND FACILITIES

A. Requirements: Provide all materials, equipment, tools, appurtenances, facilities, and services as required for performing and completing all repair and restoration of existing stone and unit masonry as indicated.

B. Equipment, Tools, and Materials: Provide appropriate and proper equipment, tools, and materials for the chipping and air-pressure cleaning of cracks in masonry, for pressure injection grouting of cracks in mortar joints, for sandblasting or water-blasting of masonry surfaces, and for hose cleaning of masonry.

C. Stone and Unit Masonry Materials: Where cut stone or concrete masonry units are damaged and require replacement, provide new stone or masonry units that match exactly the species, color, and texture of adjacent masonry surfaces. Replacement cut stone and concrete masonry units require approval of the Engineer before they may be used in the work.

D. Mortar Bonding Agent: Adhesive for the bonding of new mortar and grout to existing masonry and mortar shall be an epoxy adhesive meeting requirement of ASTM C881, of type required for the conditions.

E. Mortar Repair Materials:

1. Mortar: Mortar for joints and tuckpointing shall be an epoxy mortar, polymer-fortified mortar, or similar high-strength bonding mortar conforming with ASTM C928. Minimum compressive strength at 28 days shall be 2,500 psi.

2. Sand: Sand shall be a clean, washed, kiln-dried, fine sand, all passing a U.S. Standard No. 16 sieve.

F. Grout: Grout for pressure-injection grouting shall be a high-strength, non-shrink, cementitious adhesive grout conforming with ASTM C1107, Grade C, or a high-strength, non-shrink, manufactured epoxy adhesive grout. Minimum compressive strength at 28 days shall be a minimum of 2,000 psi.

G. Cleaning Agent: Mild solution of hydrochloric acid or muriatic acid, for washing of stubborn stains on masonry.

PART 3 - EXECUTION

3.1 REQUIREMENTS

A. Perform cutting, chipping, patching/restoring work, and cleaning in a manner to prevent damage to other work, and as required to return exterior building surfaces to essentially their original condition and configuration.

B. Major cracks shall be repaired and filled by pressure-injection grouting. All other cracks shall be repaired in the manner most appropriate and as required for weatherproofing or waterproofing the building or structure.

C. Do not cut or alter structural members when not indicated without prior approval of the Engineer.

D. Finish or refinish as required to match adjacent finishes.

3.2 CUTTING AND CHIPPING

A. Cutting and chipping work shall be neatly and accurately performed with proper tools and equipment. Cuts shall be of minimum size required for the work. Check the locations carefully of existing steel reinforcement before cutting or chipping.

B. Existing work to remain shall be properly protected to prevent damage from cutting and chipping operations.

3.3 REPAIRING OF CRACKS

A. Cracks shall be repaired and filled with grout by the pressure-injection process. Masonry joint cracks shall be mapped, and the injection shall be on center-to-center spacings as necessary to achieve proper structural bonding. Replace all cut stone and masonry units that have cracks across the face.

B. Adhesive material shall be mixed with grout in proportion necessary to provide structural bonding of concrete. Grout material shall be inserted into cracks by pressure-injection grouting in accordance with the manufacturer's installation instructions and recommendations.

C. Minor cracks too small for injection grouting shall be repaired as specified in Article 3.04 for restoration work.

D. Small holes, cracks, and other imperfections to be painted shall be suitably primed and patched with a compound recommended by the manufacturer of the paint to be applied to these surfaces as specified in Section 09 91 00 - Painting.

3.4 RESTORATION WORK

A. Preparation of Existing Surfaces: Where masonry is cracked or spalled, cut or chip out to solid surface. Use power wire brush and high pressure air to clean masonry of dirt, dust, and loose particles. Clean exposed reinforcing bars with power wire brushing to remove all visible corrosion.

B. Repairing of Masonry:

1. Repairing and patching of existing masonry surfaces and joints shall be expertly performed with specified adhesive, mortar, and grout materials. At completion, patched surfaces shall match adjacent existing surfaces as closely as possible.

2. Mortar bonding agent, mortar, and grout shall be applied or installed where indicated, or where otherwise required, in accordance with the manufacturer's instructions and recommendations.

3. Where necessary to build out cut, spalled, or chipped masonry surfaces, mix mortar bonding agent, mortar, and sand into a special mortar, and apply in layers as required to fill out or build up surfaces. Float, trowel, or texture surfaces to match adjacent existing surfaces.

4. Where indicated or required to replace existing, damaged cut stone or concrete masonry units, expertly cut out damaged units with masonry saw or cutting wheel. Clean out all loose particles and dust with air-pressure cleaning. Then install new units to match adjacent existing masonry surfaces as closely as possible, including joint treatment.

C. Tuckpointing:

1. Joints of cut stone and concrete unit masonry shall be routed out and tuckpointed as herein specified. Only such tuckpointing shall be performed as required to put all joints of the building in good repair.

2. Faulty joints to be tuckpointed shall be routed out the full width of the existing joint with a machine masonry cutting wheel to a minimum depth of 3/8 inch into the existing mortar. Newly routed joints shall be washed clean before tuckpointing.

3. Tuckpointing mortar shall be the repair mortar specified in Article 2.01.E herein.

3.5 REMOVAL OF PAINT

A. Where removal of existing paint film is required for restoration of masonry surfaces, existing painted masonry surfaces shall be sandblasted by the "wet" sandblast method to remove all such paint film. Surfaces not to be sandblasted shall be properly masked and otherwise protected to preclude any damage to these surfaces.

B. Wet sandblasted surfaces shall be thoroughly dry or dried before painting work is started as specified in Section 09 91 00 - Painting.

3.6 CLEANING

A. Where existing masonry surfaces are indicated to be cleaned or washed to remove dirt, dust, and stains, such surfaces shall be washed clean to an even and uniform effect, free of stains and blemishes. Include adjacent cornices, ledges, and masonry ornaments. Method of cleaning (e.g. high-pressure water, steam cleaning, or diluted acid cleaning) are subject to approval by the Engineer.

B. All adjacent glass areas shall be cleaned after washing of masonry surfaces.

C. Replace any glass damaged by the cleaning operations.

END OF SECTION

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Aluminum pipe and tube railings.

2. Steel pipe and tube railings

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails:

a. Uniform load of 50 lbf/ ft. applied in any direction.

b. Concentrated load of 200 lbf applied in any direction.

c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. applied in any direction.

b. Concentrated load of 200 lbf applied in any direction.

c. Uniform and concentrated loads need not be assumed to act concurrently.

3. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.

b. Uniform load of 25 lbf/sq. ft. applied horizontally.

c. Infill load and other loads need not be assumed to act concurrently.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.3 SUBMITTALS

A. Product Data: For anchoring fasteners and paint products.

B. Shop Drawings and Engineer Calculations: Include plans, elevations, sections, details, and attachments to other work.

1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Such drawings and calculations shall be submitted to the city for approval prior to installation.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

PART 2 - PRODUCTS

2.1 MANUFACTURER/FABRICATION

1. Precision Rail of Oregon: 10735 SE Foster Road Portland, OR 97266 855-776-7245
2. American Railworks: 13127 Beverly Park Rd. Lynnwood WA 98087 866-506-3191
3. Rail Pro:
    a. Seattle Area: 18862 72nd Ave S. Kent, WA 98032 425-251-5958
    b. Portland Area: 14110 NW 3rd Ct. Vancouver, WA 98685 503-517-0968
4. Jensen Lee Construction: 2110 Buchanan Loop Ste #6, Ferndale, WA 98248 360-746-8043
5. Or Consultant Approved Equal

2.2 METALS

A. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

B. Aluminum: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

1. Extruded Bars and Tubing: ASTM B 221 (ASTM B 221M), Alloy 6063-T5/T52.
2. Extruded Structural Pipe and Round Tubing: ASTM B 429, Alloy 6063-T6.
3. Castings: ASTM B 26/B 26M, Alloy A356.0-T6.

2.3 MISCELLANEOUS MATERIALS

A. Fasteners: Provide concealed fasteners, unless unavoidable or standard for railings indicated.

1. Aluminum Railings: Type 304 stainless-steel fasteners with synthetic washers to prevent galvanic corrosion..

B. Anchors: Provide cast-in-place or torque-controlled expansion anchors, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488.

C. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

D. Shop Primers: Provide primers that comply with Division 09 painting Sections.

E. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.

F. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.

G. Shop Primer for Galvanized Steel: Zinc-dust, zinc-oxide primer compatible with finish paint systems indicated, and complying with SSPC-Paint 5.

H. Grout and Anchoring Cement: Factory-packaged, nonshrink, nonmetallic grout complying with ASTM C 1107; or water-resistant, nonshrink anchoring cement; recommended by manufacturer for exterior use.

2.4 FABRICATION

A. General: Fabricate railings to comply with design, dimensions, and details indicated, but not less than that required to support structural loads.

B. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

C. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds, using manufacturer's standard system of sleeve and socket fittings.

D. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings.

E. Form changes in direction by bending.

F. Form curves by bending in jigs to produce uniform curvature; maintain cross section of member throughout bend without cracking or otherwise deforming exposed surfaces.

G. Close exposed ends of railing members with prefabricated end fittings.

H. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated.

I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated.

2.5 FINISHES

A. Aluminum:

1. Kynar finish. Custom color selected from available powder coat colors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation.

1. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

2. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

B. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

C. Anchor posts in concrete by inserting into preset steel pipe sleeves or formed or core-drilled holes and grouting annular space.

D. Anchor posts to metal surfaces with oval flanges.

E. Anchor railing ends to concrete and masonry with round flanges connected to railing ends and anchored to wall construction with anchors and bolts.

F. Attach handrails to wall with wall brackets.

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.

2. For steel-framed partitions, fasten to steel framing or concealed steel reinforcements using self-tapping screws of size and type required to support structural loads.

3. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting.

4. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Provide framing with dimension lumber, framing with engineered wood products, plywood sheathing, subflooring and underlayment where detailed. Coordinate with roofing sections to avoid duplication.

B. Provide wood battens, furring, grounds, nailers, blocking, wood bucks, cants and backing where required.

C. Provide rough hardware, preservative treatment, and fasteners.

D. Provide temporary and permanent bracing.

E. Provide plywood backing at windows and doors as detailed.

F. Provide vapor retarders, weather resistive air barriers, and moisture barriers to walls, soffits, and ceilings to areas that will become inaccessible to other trades. Refer to Division 09 Paints and Coatings for PVA paint.

G. See Drawings for other engineering notes, verifications, and inspections.

1.2 QUALITY ASSURANCE

A. Wood framing members shall conform to PS 20, American Softwood Lumber Standards. The surface to which abutting edges or ends are attached shall not be less than 1 ½ inch wide. For internal corners or angles, the bearing surface shall not be less than ¾ inches per ASTM C840-96.

B. Wood framing members to which gypsum board is to be attached shall be straight and true. The attachment surface of any framing member shall not vary more than 1/8 inch from the plane of the face of the adjacent members. Framing members shall be of proper grade for the intended use and shall conform to DOC Voluntary Product Standard PS 20 American Softwood Lumber Standard. Framing members shall be as required to meet design or building code loading requirements. Deflection at design load of horizontal (ceiling) framing members supporting gypsum board shall not be more than L/240 of the span. Additional supports shall be provided for the support of fixtures per Gypsum Association GA-216-96.

C. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:

1. WCLIB - West Coast Lumber Inspection Bureau.

2. WWPA - Western Wood Products Association.

D. All composite wood materials for use on the interior of the building shall be free of added urea formaldehyde resin.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.

B. If, despite protection, rough carpentry becomes wet, review conditions with Consultant. Do not install wood products that have visible microbial growth or staining.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

A. Materials shall be new and of the quality and grade specified. No seconds, off grades or materials not meeting tolerance specifications will be accepted in the finished work.

B. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.

C. Refer to Structural Drawings for standards, sheathing, lumber, sawn lumber, strapping, preservative-treated lumber, and exterior exposed fasteners.

D. Dimensions and thicknesses of material shall be shown on Drawings, unless otherwise required.

2.2 DIMENSIONED LUMBER, PLYWOOD, AND ENGINEERED WOOD PRODUCTS

A. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.

1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.

B. Provide dry dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated. See General Notes on Structural Sheet S1.03 for required moisture content.

1. Provide grade and species as required by the structural engineer.

2. Provide treated lumber for exterior framing and as required by local codes.

C. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

1. Provide dressed lumber, S4S, unless otherwise indicated.

D. Roof Sheathing: Provide minimum thickness plywood as noted, APA rated for exterior use. Oriented Strand Board (OSB) is not acceptable.

E. Wall Sheathing:

1. Plywood: APA rated for exterior exposure, minimum thickness as noted.

2. See also Division 09 Gypsum Board Assemblies for GWB wall sheathing.

2.3 ACCESSORIES AND FASTENERS

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

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.

B. Accessories and Fasteners:

ITEMS	MATERIAL	GRADE AND DESCRIPTION
Powder activated	Steel	Hilti or Ramset fasteners
Miscellaneous anchors, rough hardware and fasteners	Galvanized Steel conforming to ASTM A 153	Anchor bolts, triple grips, straps, nails
Nails, wire, brads and staples		FS FF-N-105
Power-driven fasteners		CABO NER-272
Wood screws		ASME B18.6.1
Lag bolts		ASME B18.2.1. (ASME 18.2.3.8M)
Bolts	Steel bolts to ASTM A307	Grade A (ASTM F568, property class 4.6) with ASTM A563/563M hex nuts and where indicated flat washers.
Sill Sealer Gaskets	Glass-fiber resilient insulation fabricated in strip form.	1 inch nominal thickness, compressible to 1/32 inch selected from manufacturer's standard widths to suit width of sill member indicated.
Fungicide Treatment	Bor-A-Care with mold core. Boric Acid, Boraxo, Gylcol composition	See 02 Demolition Section.
Adhesives for field gluing panels to framing	Formulation complying with APA AFG-01	Approved for use with type of construction panel indicated by both adhesive and panel manufacturers.
Insect Screen		Stainless steel or nylon screen/mesh.

2.4 WOOD-PRESERVATIVE-TREATED MATERIALS

A. General: Where lumber or plywood is indicated as preservative-treated or is specified to be treated, comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no copper, arsenic or chromium. Coordinate galvanized and stainless steel fastener requirements with pressure-treated options.

2. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

B. Pressure-treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, furring, battens, and similar members in connection with roofing, flashing, vapor retarders, and waterproofing.

2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing members less than 18 inches above grade.

4. Wood floor plates installed over concrete slabs directly in contact with earth.

5. Rainscreen wood strapping.

C. Pressure-treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft.

D. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

E. Wood preservative system at structural glued laminated construction exposed to exterior:

1. Proprietary system of IBPC and Permethrin, applied by vacuum pressure process, “HI Clear II” by Permapost Pressure Treating Co., Hillsboro, OR, (503) 648-4156, info@permapost.com. AWPA Use Category as indicated on drawings for location of use.

2.5 METAL FRAMING ANCHORS

A. General: Provide galvanized steel framing anchors of structural capacity, type, and size indicated and as follows:

1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.

2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values

shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.

3. Refer to Engineering Drawings and requirements.

B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G90 coating designation. Structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated. Use increased level of galvanized coating or stainless steel where indicated on Drawings or where in contact with ACQ treated wood.

2.6 FIRE STOPPING

A. Provide fire-stopping throughout, in accordance with the IBC, City Fire Department, City Standards, Regulations and other applicable standards.

B. Provide fire-stopping in double stud walls and concealed wall spaces; vertically at ceiling floor levels; horizontally at intervals not to exceed 10 feet; and connections between horizontal and vertical spaces.

C. Provide fire caulk at all plumbing and electrical penetrations of intersections or vertical and horizontal fire rated wall/floor and ceiling intersections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions on which the successful Work of the Section depends.

B. Correct unsatisfactory conditions.

C. Start of Work shall imply acceptance of conditions.

3.2 INSTALLATION - GENERAL

A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Securely and properly support and anchor all work to accurate fit, lines, level, and plumb without distortion.

C. Install fire-retardant treated materials in environments and with proper ventilation to prevent degradation of wood materials.

D. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

E. Fit rough carpentry to other construction. Scribe and cope as required for accurate fit. Correlate location of battens, furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

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

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

1. CABO NER-272 for power-driven staples, P-nails, and allied fasteners.

2. Published requirements of metal framing anchor manufacturer.

3. "Recommended Nailing Schedule" of referenced framing standard and with AFPA's "National Design Specifications for Wood Construction."

4. "Table 2309.1 Nailing Schedule" of the International Building Code.

H. Use common wire nails, unless otherwise indicated on Structural Drawings. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Pre-drill as required.

I. Use hot-dip galvanized or stainless steel nails where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity. See Structural Drawings for additional requirements

J. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

K. Insulation, vapor retarder, finishes and WRB not to be installed unless moisture content of framing is less than 19%.

3.3 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other Work. Form to shapes shown and cut as required for true line and level of attached Work. Coordinate locations with other Work involved.

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

C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Interior window sill, standing and running trim.

1.2 SUBMITTALS

A. Product Data: Include manufacturer's product brochures, specifications, characteristics, and limitations as necessary to show conformance with specified items.

B. Operation and Maintenance Data.

C. Warranty: Submit warranty as described below for inclusion in Operation and Maintenance Manuals in accordance with Division 01 Section Closeout Procedures.

1.3 QUALITY ASSURANCE

A. Items shall meet the requirements of the Architectural Woodwork Institute Quality Standards Seventh Edition for Custom Grade.

B. Lumber grading shall conform to WCLIB No. 16 Standard Grading Rules for West Coast Lumber, Latest Edition.

C. Plywood, particleboard, and hardboard shall be graded in accordance with PSI-95 Construction and Industrial Plywood (With Typical APA Trademarks), Office of Standards Services, National Institute of Standards and Technology.

D. Installer Qualifications: A qualified installer with a minimum five (5) years of experience.

E. Pre-Installation Conference: Conduct in accordance with Division 01 Project Meetings. A representative of the Interior Designer and Consultant shall be in attendance.

F. Mock-up: Prior to installation, provide mock-up of each finish carpentry area to demonstrate aesthetic effects and set quality standards for materials and execution for interior and exterior carpentry Work.

1. Apply final finish coatings or sealers, if required, prior to review of mock-up.

2. Mock-up may be incorporated into the finish Work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect materials against weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings. Twisted or disfigured fabrications will be rejected.

B. Deliver interior finish carpentry only when environmental conditions meet requirements specified for installation areas. If finish carpentry must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas. Materials shall not be delivered or stored on site until immediately prior to commencement of installation.

C. Do not deliver or install interior finish carpentry until building is enclosed and weatherproof, wet Work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.5 WARRANTY

A. Supply a written warranty dated for one (1) year from the date of Final Acceptance by the Owner or notice of completion, whichever occurs later. The warranty shall state that Work executed under this Section is free from defects of material and workmanship and that the Contractor, at his own expense, shall repair and replace defective Work, or Work that becomes defective, during the term of the warranty.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. General: All materials used in this Contract shall be manufactured by nationally-recognized manufacturers and of the type indicated on the Drawings and in these Specifications. Lumber shall be smooth 4 sides unless noted otherwise.

1. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.

B. Materials:

	ITEM	MATERIAL	DESCRIPTION
1.	Interior Wood Sills and Trim		Finish Paint as approved.
2.	Running Trim	James Hardie Fiber Cement Trim Boards – Dimensions as Noted in Details and Plans	Finish Paint as approved.

2.2 MATERIALS (ACCESSORIES)

A. Fasteners: All fasteners shall be adequately sized to fasten millwork and carry imposed loads. Fasten millwork items as required to resist seismic loading. Refer to details and confirm types and sizes of all typical fasteners on shop drawings.

B. Fasteners for Exterior Finish Carpentry: Provide nails or screws of the following materials, in sufficient length to penetrate minimum of 1-1/2 inches into substrate, unless otherwise recommended by manufacturer: Stainless steel, Hot-dip galvanized steel, Aluminum, Pre-finished aluminum in color to match stain, where face fastening of material to receive stain is unavoidable.

2.3 FABRICATION

A. Conform to AWI "Quality Standards," Section 300, Custom Grade requirements as applicable. Standard wood moldings shall conform to Western Wood Product Association WP Series, where applicable.

B. Stair Railing and Handrails: Fabricate as shown, and in as long lengths as practical. Miter joints, fit tight, flush, and clean. Countersink fasteners and fill or plug holes as appropriate.

2.4 ACCESSORIES

A. Fasteners: Shall be adequately sized to fasten millwork and carry imposed loads. Fasten millwork items as required to resist seismic loading. Refer to details and confirm types and sizes of typical fasteners on shop drawings.

B. Fasteners for Exterior Finish Carpentry: Provide nails or screws of the following materials, in sufficient length to penetrate minimum of 1-1/2 inches into substrate, unless otherwise recommended by manufacturer: Stainless steel, Hot-dip galvanized steel, Aluminum, prefinished aluminum in color to match stain, where face fastening of material to receive stain is unavoidable.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Correct unsatisfactory conditions. Commencement of Work shall imply acceptance of surfaces and conditions.

C. Verify frame dimensions, hardware, and clearance requirements for flooring materials and thresholds.

D. Adjust dimensions as necessary to make parts come together.

3.2 INSTALLATION - GENERAL

A. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation, for a minimum of 24 hours.

B. Prime and back-prime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Division 09 Section Paints and Coatings.

C. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment. Scribe and cut finish carpentry to fit adjoining Work. Refinish and seal cuts as recommended by manufacturer.

D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.

2. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

3.3 CLEANING

A. Clean finish carpentry on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

B. Clean abraded, scarred, and rusty areas. Replace units if repair is unsatisfactory or impractical.

3.4 PROTECTION

A. Protect adjacent Work from damage, staining, disfigurement caused by the Work of this section.

B. Promptly, as the Work proceeds, and on completion, keep the premises clean and free from rubbish, debris, surplus materials, and equipment accumulation.

END OF SECTION

SECTION 06 65 00
EXTERIOR SYNTHETIC TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Exterior synthetic (poly-ash) trim

1.2 REFERENCES

A. ASTM C 1185 – Standard Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards.

B. ASTM D 570 – Standard Test Method for Water Absorption of Plastics.

C. ASTM D 1761 – Standard Test Methods for Mechanical Fasteners in Wood.

D. ASTM D 6341 – Standard Test Method for Determination of the Linear Coefficient of Thermal Expansion of Plastic Lumber and Plastic Lumber Shapes Between -30 and 140°F (-34.4 and 60°C).

E. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

F. AWPA E1 – Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

G. AWPA E10 – Standard Method of Testing Wood Preservatives by Laboratory Soil-Block Cultures.

1.3 SUBMITTALS

A. Product Data: Manufacturer's technical data, installation instructions, standard detail drawings, and recommendations for materials and accessories showing compliance with specified requirements.

B. Samples:

1. Submit three (3) 12" pieces of trim in widths shown.

C. Certification: Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.

D. Operations and Maintenance Data.

E. Warranty.

1.4 WARRANTY

A. Supply a written warranty dated for one (1) year from the date of Final Acceptance by the Owner or notice of completion, whichever occurs later. The warranty shall state that Work executed under this Section is free from defects of material and workmanship and that the Contractor, at his own expense, shall repair and replace defective Work, or Work which becomes defective, during the term of the warranty.

B. Warranty Period for Exterior Synthetic Trim: 20-year limited warranty.

1. No decay due to rot.

2. No excess swelling from moisture.

3. Resist termite damage.

1.5 MOCK-UPS

A. Provide mock-up in conjunction with mock-ups of Weather Resistive Barrier, Windows and other Penetrations. Mock-up shall indicate the progression of the Work and shall represent the standard for the remainder of the Work, once it has been approved by the Owner and Consultant.

1.6 QUALITY ASSURANCE

A. Pre-Installation Conference: Arrange, in accordance with Division 01 Section Project Meetings, between Contractor, subcontractor, Owner, Consultant, manufacturer's representative, and any other concerned party two weeks prior to beginning siding Work of this Section.

B. Mockup contact consultant and owner for an in-place mockup prior to full scale installation

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle in accordance with manufacturer’s instructions.

B. Protect edges and corners from chipping. Store under cover and keep dry prior to installing. If sheets should become wet, allow to dry thoroughly before installing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with these Specifications, the following manufacturers are acceptable:

1. Boral Composites Inc., 200 Mansell Court East, Suite 305, Roswell, Georgia 30076. Toll Free 888-926-7259. www.BoralTruExterior.com. info@TruExterior.com.

2. Or Alternate approved prior to submission of bid.

2.2 MATERIALS

A. Exterior Synthetic (Poly-ash) Trim: Boral TruExterior® Trim.

B. Composition:

1. Post-Industrial Recycled Content: Minimum 70 percent, by weight.

2. Post-Consumer Recycled Content: Minimum 2 percent, by weight

3. Pigments and dyes.

C. Physical Properties:

1. Density, ASTM C 1185: 40 to 50 pcf.

2. Water Absorption, ASTM D 570: Less than 1.5 percent.

3. Fungi Rot, AWPA E10:

a. White Rot: Negligible loss.

b. Brown Rot: Negligible loss.

4. Termite Resistance, AWPA E1: Greater than 9.0, with 10 being impervious.

D. Mechanical Properties:

1. Flexural Strength, ASTM C 1185: Greater than 1,600 psi.

2. Nail Withdrawal, ASTM D 1761: Greater than 40 lbf/in.

E. Thermal Properties:

1. Coefficient of Linear Expansion, ASTM D 6341, Typical: 40E-05 in/in/degree F, tested at minus 30 to 140 degrees F.

2. Flame Spread, ASTM E 84: Between 25 and 29

3. Smoke Developed, ASTM E 84: Less than 450.

F. Trim Sizes

Nominal Size	Actual Size
1 by 4	3/4” by 3-1/2”
1 by 6	3/4” by 5-1/2”
1 by 8	3/4” by 7-1/4”
1 by 10	3/4” by 9-1/4”
1 by 12	3/4” by 11-1/4”
5/4 by 4	1” by 3-1/2”
5/4 by 6	1” by 5-1/2”
5/4 by 8	1” by 7-1/4”
5/4 by 10	1” by 9-1/4”
5/4 by 12	1” by 11-1/4”
5/8 by 6 Beadboard	5/8” x 5-1/4”

1. Manufacturing Tolerances:

a. Width: Plus or minus 1/16 inch.

b. Thickness: Plus or minus 1/16 inch.

c. Length: Plus 2 inches, minus 0 inch.

d. Edge Cut: Plus or minus 2 degrees.

2. Texture: Woodgrain or Smooth

2.3 FINISHES

A. Primer:

1. Acrylic based

2. Low VOC

3. Factory applied on all sides

B. Paint per Division 09 Section Paints and Coatings. Locations to be determined. Consultant shall provide exterior elevation paint finish location diagram for Contractor during Construction. Contractor shall request information prior to paint order.

2.4 ACCESSORIES

A. WRB and Rainscreen furring: refer to Section 07 27 00

2.5 FASTENERS

A. Provide stainless steel fasteners in accordance with panel manufacturer's printed instructions and NER 405, which are also compatible with type of pressure treated wood.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Work shall be carried out by skilled tradesmen familiar with the application of the product system specified.

3.2 EXAMINATION

A. Examine substrates, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Start of Work indicates acceptance of conditions.

3.3 INSTALLATION

A. Installation of trim shall be per manufacturer's installation instructions and specifications.

B. Do not install exterior synthetic trim in structural or load-bearing applications.

C. Install exterior synthetic trim plumb, level, and square.

D. Install exterior synthetic trim with flush, tight joints

E. Install Fasteners:

1. Maximum of 24 inches on center.

2. Within 2 inches of end of boards

F. Fill nail and screw holes with acrylic caulk, wood filler, or auto body filler.

G. Where trim meets with roof, soffits, windows, doors, foundations, penetrations, or other materials, joints shall be properly sealed, caulked, and flashed.

H. Install trim to form a continuous weatherproof protection system.

I. Painting

1. Apply top coat to exterior synthetic trim over factory-applied primer.

a. Within 150 days of installing trim.

b. As specified in Section 09 90 00.

J. Leave Work neat, free of defects, straight, level, and plumb and ready for application of final finish.

END OF SECTION

SECTION 07 14 16
COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold fluid-applied waterproofing, horizontal applications.
2. Protection course
3. Drainage panels

1.2 RELATED REQUIREMENTS

1. Section 03 300 Cast-in-Place Concrete
2. Section 07 920 Joint Sealants
3. Membrane Leak Detection System for requirements for EFVM leak detection system installation and membrane leak testing (spec not included).

1.3 REFERENCES

A. References, General: Versions of the following standards current as of the date of issue of the project apply to the Work of this Section.

B. ASTM International (ASTM): www.astm.org:

1. ASTM C1305 Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane
2. ASTM D638 Standard Test Method for Tensile Properties of Plastics
3. ASTM D1353 Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products
4. ASTM D1640 Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings
5. ASTM D2240 Standard Test Method for Rubber Property—Durometer Hardness

C. U.S. Environmental Protection Agency (EPA): www.epa.gov:

1. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Conference: Conduct conference at Project Site.

1. Review requirements for waterproofing products and installation, including surface preparation, substrate conditions, project and manufacturer's details, installation procedures, checklist of required tools and sundries, mockups, testing and inspection requirements, protection and repairs, and coordination and sequencing of waterproofing work with work of other Sections.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of waterproofing product specified, including:

1. Technical data indicating compliance with requirements.

2. Substrate preparation instructions and recommendations.

B. Shop Drawings: Show locations for waterproofing system components. Show details for each type of substrate, joints, corners, and edge conditions, including flashings, counterflashings, penetrations, transitions, and terminations.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer, (and waterproofing Inspector).

1. Certification of manufacturer's approval of Installer.

B. Low-Emitting Product Certificate: For waterproofing products specified to meet volatile organic emissions standards.

C. Product Test Reports: Test data for waterproofing products and waterproofing system, by qualified testing agency, indicating proposed waterproofing meets performance requirements, when requested by Architect.

D. Warranty: Sample of unexecuted manufacturer and installer special warranties. E.Field quality control reports.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A manufacturer-approved firm with minimum three years' experience in installation of specified or similar products in successful use on similar projects, employing workers trained by manufacturer, including a full-time on-site supervisor with a minimum of three years' experience installing similar work, and able to communicate verbally with Contractor, Consultant, and employees.

B. Manufacturer Qualifications: A qualified manufacturer with minimum three years' experience in manufacture of waterproofing as one of its principal products.

1. Manufacturer's product submitted has been in satisfactory operation on three similar installations for at least three years.

2. Approval of Manufacturers and Comparable Products: [Submit] [Prime bidder must submit] the following in accordance with project substitution requirements, within time allowed for substitution review:

a. Completed and signed Substitution Request form.

b. Product data, including certified independent test data indicating compliance with requirements.

c. Sample shop drawings from similar project.

d. Project references: Minimum of five installations of similar system not less than five years old, with Owner and Architect contact information.

e. Name and resume of proposed qualified Inspector.

f. Sample warranty.

C. Waterproofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified waterproofing system, qualified to perform observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Inspector shall be one of the following:

1. An authorized full-time technical employee of the manufacturer.

2. An independent party certified as a waterproofing inspector acceptable to Architect, retained by the Contractor.

D. Testing Agency Qualifications: Qualified independent agency experienced in the installation of the specified waterproofing system, and qualified to perform observation and inspection specified in Field Quality Control Article to determine Installer's compliance with the requirements of this Project, acceptable to Consultant, retained by the Contractor.

E. Mockups: Provide waterproofing mockup application within mockups required in other sections, or if not specified, in an area of not less than 90 sq. ft. of surface where directed by Architect for each type of substrate condition. Include examples of surface preparation, crack and joint treatment, waterproofing application, and flashing, transition, and termination conditions, to set quality standards for execution.

1. Include intersection of deck waterproofing with adjacent vertical waterproofing and moisture control system.

1.8 DELIVERY, STORAGE AND HANDLING

A. Accept materials on site in manufacturer's unopened original packaging.

B. Store products in weather protected environment, clear of ground and moisture, within temperature ranges recommended by waterproofing manufacturer.

C. Construction Waste: Store and dispose of packaging materials and construction waste in accordance with requirements of Division 01 Section ["Construction Waste Management"] ["Temporary Facilities and Controls."]

1.9 ENVIRONMENTAL REQUIREMENTS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by manufacturer.

1. Protect substrates from environmental conditions that affect membrane performance.

2. Do not apply waterproofing to a damp or wet substrate or during snow, rain, fog, or mist.

1.10 0SCHEDULING

A. Coordinate installation of waterproofing with completion and coordination of interfacing trades with waterproofing.

B. Schedule work so waterproofing applications may be inspected prior to concealment.

C. Ensure waterproofing materials are cured before covering with other materials.

1.11 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which waterproofing manufacturer agrees to furnish and install waterproofing material to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to remain watertight as specified under normal use within warranty period specified.

1. Access for Repair: Owner shall provide unimpeded access to the Project and the waterproofing system for purposes of testing, leak investigation, and repair, and shall reinstall removed cladding and overburden materials upon completion of repair.

2. Cost Limitation: Manufacturer's obligation for repair or replacement shall be limited to the original installed cost of the work.

3. Warranty Period: Twenty years date of Substantial Completion.

B. Applicator: Company specializing in performing the work of this section qualified by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:

1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as a qualified approved applicator for warranted installations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Products: Provide waterproofing products manufactured by Tremco, Inc., **Commercial Sealants and Waterproofing Division, An RPM Company**, Beachwood OH; (866)321-6357; email: techresources@tremcoinc.com; www.tremcosealants.com, [or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements].

B. Source Limitations: Provide waterproofing system materials and accessory products from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Waterproofing system shall be capable of performing as a continuous watertight installation and as a moisture drainage plane transitioned to adjacent flashings and discharging water to the building exterior. Waterproofing shall accommodate normal substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without resultant moisture deterioration.

B. VOC Content: Zero VOC's and compliant with authorities having jurisdiction.

C. Compatibility: Provide waterproofing system materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by waterproofing manufacturer based on testing and field experience.

2.3 WATERPROOFING MEMBRANE

A. Cold Fluid-Applied Waterproofing: Polyurethane-methacrylate (PUMA)-based membrane. A two-component methacrylate-based (PUMA) liquid membrane. Tremco TREMproof PUMA (horizontal waterproofing system).

1. Basis of Design Product: **Tremco, Inc., Tremco PUMA BC or BC LM.**

2. VOC Content: 0 g/L, all grades.

3. Elongation ASTM D-638 407%

4. Low Temperature ability and Crack Bridging, ASTM C 1305: Pass.

5. Tensile Strength D-638 at 75 degrees F 1680 PSI

2.4 ACCESSORY MATERIALS

A. General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete waterproofing system meeting performance requirements, and compatible with waterproofing material and adjacent materials.

B. Substrate Patching Material: Waterproofing manufacturer's standard trowel-grade filler material.

C. Primer: Tremco PUMA Primer.

D. Detailing Membrane: Tremco PUMA BC T thixotropic polyurethane methacrylate based membrane for use in detailing and field applied cant beads.

E. Flashing Membrane for Vertical and penetration applications: Tremco PUMA BC R

F. Crack filler and Patching material; Tremco PUMA WC and silica

G. Topcoat: Tremco PUMA TC to be utilized in areas exposed to pedestrian traffic and long-term UV exposure greater than 3 weeks

H. Initiator: Tremco PUMA Initiator, used to catalyze all EWS resins

I. Cleaner: Tremco PUMA Cleaner

J. Joint Sealant: ASTM C 920, approved by waterproofing manufacturer for adhesion and compatibility with waterproofing and accessories.

1. Basis of Design Product: Tremco, Dymonic 100.

2.5 PROTECTION COURSE

A. Protection Course: recommended for planter and vegetated roof applications. Verify with manufacture if protection course is required for a split slab application.

1. Basis of Design Product: Tremco, HDPE Protection/Barrier Courses- 20 Mil

2.6 DRAINAGE PANELS

A. Drainage Mat: Composite mat with drainage core, filter fabric, and protective polymeric film, recommended by waterproofing manufacturer for application. Provide the following:

1. Horizontal Surfaces Polystyrene core with woven polypropylene fabric face and polymeric film backing; flow rate 18 gpm per foot (224 lpm per m) per ASTM D 4716.

B. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, spun-bonded polypropylene facing laminated to one side of a studded, non-biodegradable, polystyrene drainage core[, with polymeric film attached to back of drainage core].

1. Basis of Design: Tremco, TREMDrain [1000] [1000 PF].

2. Flow Capacity, per unit width, ASTM D 4716: 18 gpm/ft.

3. Flow Rate, ASTM D 4491: 165 gpm/ft2 D

4. Apparent Opening Size: No. 70 sieve

5. Puncture Strength, ASTM D 4833: 65 lb

6. Core Compressive Strength, ASTM D 1621: 15,000 lb/ft2

7. Thickness: 0.437 inch

C. Woven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a woven polypropylene facing laminated to one side of a studded, non-biodegradable, polystyrene drainage core, with polymeric film attached to back of drainage core.

1. Basis of Design: Tremco, TREMDrain 2000.

2. Flow Capacity, per unit width, ASTM D 4716: 18 gpm/ft. (224 lpm/m) .

3. Flow Rate, ASTM D 4491: 100 gpm/ft2

4. Apparent Opening Size: No. 40 sieve

5. Puncture Strength, ASTM D 4833: 105 lb

6. Core Compressive Strength, ASTM D 1621: 21,000 lb/ft2

7. Thickness: 0.437 inch

D. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, spun-bonded polypropylene facing laminated to one side of a studded, non-biodegradable, polystyrene drainage core, with polymeric film attached to back of drainage core.

1. Basis of Design: Tremco, TREMDrain S.

2. Flow Capacity, per unit width, ASTM D 4716: 9 gpm/ft

3. Flow Rate, ASTM D 4491: 80 gpm/ft2

4. Apparent Opening Size: No. 80 sieve

5. Puncture Strength, ASTM D 4833: 50 lb

6. Core Compressive Strength, ASTM D 1621: 30,000 lb/ft2

7. Thickness: 0.25 inch

E. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, needle-punched polypropylene facing laminated to one side of a studded, non-biodegradable, polystyrene drainage core.

1. Basis of Design: Tremco, TREMDrain TotalDrain.

2. Flow Capacity, per unit width, ASTM D 4716: 18 gpm/ft.

3. Flow Rate, ASTM D 4491: 150 gpm/ft2

4. Apparent Opening Size: No. 70 sieve

5. Puncture Strength, ASTM D 4833: 70 lb

6. Core Compressive Strength, ASTM D 1621: 9,000 lb/ft2

7. Thickness: 0.437 inch

PART 3 - EXECUTION

3.1 EXAMINATION

A. Surface Condition: Before applying waterproofing materials, examine substrate and conditions to ensure substrates are fully cured, smooth, clean, dry, and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion, and conditions comply with manufacturer's written recommendations.

1. Verify concrete and masonry surfaces are visibly dry, have cured for time period recommended by waterproofing manufacturer, and are free from release agents, curing agents, laitance, and other contaminates. Test for capillary moisture by plastic sheet method according to ASTM D 4263 moisture level must be less than 6%. Test for waterproofing adhesion per manufacturer's recommended method. Notify Architect of unsatisfactory conditions.

2. Verify the concrete has a #3-4 ICRI CSP and a minimum compressive strength of 3000 psi

3. Verify masonry joints are filled with mortar and struck flush.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INTERFACE WITH OTHER WORK

A. Sequencing of Work: Coordinate sequencing of waterproofing work with work of other sections that form portions of building envelope moisture control to ensure that flashings and transition materials can be properly installed and inspected.

B. Subsequent Work: Coordinate waterproofing work with work of other sections installed subsequent to waterproofing to ensure complete inspection of installed waterproofing and sealing of waterproofing penetrations necessitated by subsequent work.

3.3 PREPARATION

A. Clean, prepare, and treat substrates in accordance with waterproofing manufacturer's written instructions.

1. Mask adjacent finished surfaces.

2. Remote contaminants and film-forming coatings from substrates.

3. Remove projections and excess materials and fill voids with substrate patching material.

4. Prepare and treat joints and cracks in substrate per ASTM D 4258 and waterproofing manufacturer's written instructions.

B. Detail Preparation: Prepare non-moving shrinkage cracks, large cracks, construction joints, expansion joints, projections and protrusions, penetrations, drains, and changes in plane in

accordance with waterproofing manufacturer's written instructions and details, using accessory materials specified.

3.4 WATERPROOFING INSTALLATION

A. Apply waterproofing material within manufacturer’s recommended application temperature ranges.

B. Primer: Apply primer to substrates at required rate, using a roller or brush. Allow to dry.

C. Start application with manufacturer's authorized representative present.

D. Cold Fluid-Applied Waterproofing: Apply waterproofing in total wet film thickness and with methods recommended in writing by waterproofing manufacturer’s application instructions.

E. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates and reapply waterproofing components.

3.5 PROTECTION INSTALLATION

A. Protection Course:

1. Apply Tremco PUMA TC to areas exposed to pedestrian traffic and long term UV exposure greater than 3 weeks. Planter applications require Tremco 20-mil or 40-mil polyethylene sheet root barrier or VR RootBloc 10, 20 or 40.

B. Drainage Panel: Place and secure drainage panels using methods that do not penetrate waterproofing. Face geotextile away from deck substrate. Lap edges and ends of geotextile.

3.6 FIELD QUALITY CONTROL

A. Contractor's Inspector: Contractor shall engage manufacturer's qualified representative during the work to perform tests, including documenting of waterproofing prior to concealment.

1. Contractor's Inspector shall measure membrane thickness with mil gauge at least once for every 100 sq. ft. (10 sq. m).

2. Provide written report of tests and inspections.

B. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, waterproofing application, protection, and drainage components, and to furnish reports to Architect.

1. Testing includes EFVM inspection prior to concealing deck waterproof membrane. Testing protocol to be pre-approved by Consultant.

C. Coordination of Inspection: Cooperate with testing agency. Allow access to work areas and staging. Notify testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection.

1. Do not cover Work until testing and inspection is completed and accepted.

D. Reporting: Forward written inspection reports to the Consultant within 10 working days of the inspection and test being performed.

E. Correction of Work: Correct deficient applications not passing tests and inspections, make necessary repairs, and retest as required to demonstrate compliance with requirements.

3.7 CLEANING AND PROTECTING

A. Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.

B. Protect waterproofing from damage from subsequent work. Protect waterproofing materials from exposure to UV light for period in excess of that acceptable to waterproofing manufacturer; replace overexposed materials and retest.

END OF SECTION

SECTION 07 19 00
MASONRY WATER REPELLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes penetrating water-repellent coatings for the following vertical and horizontal surfaces:

1. Stone Veneer
2. Brick
3. Exposed CMU

B. This Section includes silicone elastomeric coatings for masonry.

1.2 SUBMITTALS

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

B. Product test reports.

C. Submit manufacturer's instructions for methods and application procedures.

D. Submit manufacturer's certification indicating water repellent treatment conforms to or exceeds requirements stated herein.

1.3 APPLICABLE STANDARDS

A. American Society for Testing Materials

1. ASTM D6578 Standard Practice for Determination of Graffiti Resistance.
2. ASTM D6904-03 (2013): Standard Practice for Resistance to Wind-Driven Rain for Exterior Coatings Applied on Masonry.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Prepare mockup installation for Consultant review and approval.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and Applicator agree to repair or replace materials that fail to maintain water repellency specified in Part 1 "Performance Requirements" Article within Five years from date of Substantial Completion.

1.6 PROJECT CONDITIONS

A. Protection:

1. Contractor shall provide, at all times, covered access to premises and necessary utilities, space for storage of material and equipment, etc.

2. All activities shall be in compliance with local and governmental regulations and codes.

3. The surface and atmospheric temperature should be at least 40 degrees F. and rising during application and for eight hours following. Surface and air temperatures should not exceed 90 degrees F.

4. Surfaces should be dry.

5. Apply only in well-ventilated areas.

6. All caulking (sealants) should be applied a minimum of 24 hours prior to application, or as required by sealant manufacturer, whichever is greater, before application of water repellent treatment.

B. The Contractor shall require applicators to observe safety precautions as outlined on containers and labels. It is the responsibility of the Contractor to provide well ventilated areas for all workmen as well as to observe safety precautions as stipulated on labels and instructions of all materials used, and as required by governing authorities during application and drying

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 PENETRATING WATER REPELLENTS

A. Silane/Siloxane-Blend, or Silicone Penetrating Water Repellent: Clear, silane and siloxane blends with 3.3 lb/gal. or less of VOCs.

1. Available Products:

   a. Prosoco Sure Klean Weather Seal

   b. Prosoco Saltguard (for Saltwater Regions Only)

      1) Saltwater regions are within ten miles of a saltwater or brackish body of water.

   c. Or Consultant Approved Equal.

2.3 SILICONE ELASTOMERIC COATING

A. For walls with cracks less than 1/32-inch: One-component, elastomeric, silicone, high-solids, UV resistant, coating.

1. Color: Translucent

2. Available Products:

   a. GE Optic 3101 Translucent Silicone Coating manufactured by Momentive Performance Materials www.siliconeforbuilding.com

      1) Related primers and accessories recommended by manufacturer for surface conditions.

   b. Or Consultant Approved Equal.

B. For walls with cracks less than 1/16-inch: One-component, pigmented, water-based silicone elastomer.

1. Color: To be selected by Owner.

2. Available Products:

   a. DOWSIL AllGuard Silicone Elastomeric Coating manufactured by Dow Chemical Company. (800) 331-6451

      1) Related sealant for crack filling: DOWSIL 795 Silicone Building Sealant

      2) Related primers and accessories recommended by manufacturer for surface conditions.

   b. Or Consultant Approved Equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to water-repellent manufacturer's written instructions, to ensure that surface is dry enough.

1. Cast-in-Place Concrete: Remove oil, curing compounds, laitance, and other substances that could prevent adhesion or penetration of water repellents.

2. Clay Brick Masonry: Clean clay brick masonry per ASTM D 5703.

B. Test for pH level, according to water-repellent manufacturer's written instructions, to ensure chemical bond to silicate minerals.

C. If efflorescence is present, the surface may need to be treated prior to coating.

D. Allow surfaces to dry prior to application.

E. Fill cracks or voids per manufacturer recommendation.

F. Allow concrete and mortar to cure for a minimum of 30 days before application.

G. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live plants and grass.

H. Verify all windows, exterior intakes and air conditioning vents are covered and air handling equipment is shut down during application and until vapors have dissipated.

I. Repair cracks greater than 1/32-inch, per manufacturer recommendations.

J. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.

1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

K. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 WATER REPELLANT APPLICATION

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.

B. Test each surface and/or material to be treated to ensure compatibility and water repellent treatment results. The surface to be treated must be clean and free of all foreign matter and as dry as possible to ensure proper penetration of water repellent treatment.

C. Spray or roll product onto desired area. Refer to manufacturer instructions for application requirements, material thickness requirements and required coats.

3.3 WATER REPELLANT VERTICAL APPLICATION

A. Test each surface and/or material to be treated to ensure compatibility and water repellent treatment results. The surface to be treated must be clean and free of all foreign matter and as dry as possible to ensure proper penetration of water repellent treatment.

B. Do NOT dilute water repellent treatment.

C. Proceed with application of water repellent treatment in an orderly manner once application rate has been tested; work from bottom to top of each scaffold width and from one end of each elevation to the other.

D. Apply water repellent treatment wet-on-wet to vertical visibly dry and absorbent surfaces and comply with manufacturer's written instructions; use brush or spray application methods, at Contractor's option.

3.4 SILICONE COATING APPLICATION

A. Manufacturer's Ensure surfaces to receive coating are clean, dry, structurally sound, and free of frost and frozen materials. As temperatures drop towards freezing, application should proceed with caution due to the possibility of moisture (dew, frost) on surfaces to be coated as well as longer curing times relative to application of a second or touchup coat (recoat).

B. Use primers and accessories as recommended by manufacturer for surface conditions.

C. Apply uniform, pinhole-free coating in two (2) separate coats at spreading rate required to achieve a total minimum dry film thickness of 0.010 inch (10 mils/254 microns). Apply coating in accordance with manufacturer's instructions.

1. Each application should be applied at a wet thickness recommended by manufacturer. Wet coating thickness may be estimated by using a wet film thickness gauge. A mockup must be applied to determine the actual coverage rate per gallon needed to provide a pinhole free film at the minimum required dry film thickness.

2. The second coat may be applied when the first coat is tack free to the touch or as recommended by manufacturer.

3. Apply coating from top to bottom of substrate. Work down the vertical surface and cover any rundown in the process. Avoid excessive overlapping.

4. Apply architectural coating as closely as possible to a consistent film thickness free of cloudiness, spotting, laps, brush marks, roller tracks, and other surface imperfections. Cut in breaks and terminations with sharp lines.

5. Apply additional coats as required to provide cured film with uniform coverage, finish, and appearance.

D. Do not dilute coating without consulting with manufactuerer and Consultant.

E. Keep containers closed when not in use to avoid contamination.

F. Apply primer, if required, in accordance with manufacturer's instructions. Allow primer to dry before applying coating.

G. Avoid over spray of coating. Over spray and misapplied coating should be removed immediately in accordance with manufacturer's instructions while it is still uncured. Repair or replace surfaces damaged by overspray or misapplied coating as determined by the Consultant.

3.5 FIELD QUALITY CONTROL

A. Verify total dry film thickness of applied coating in accordance with specified requirements using a dry film gauge. Coating thickness may be verified by measuring the thickness of the cured coating piece with a micrometer.

B. Visually assess coating for film characteristics or defects that would adversely affect performance or appearance.

C. Verify coating adhesion to substrate following full cure.

1. After substrate preparation, apply one coat at 6-8 wet mils in an unobtrusive area.

2. While the coating is still wet, embed a 1” x 6” length of mesh screen / piece of gauze into the coating leaving an approximate 2” tab accessible for hand pull. Allow product to become tack-free.

3. Once the first coat is tack-free, apply a second coat at 6-8 wet mils over the mesh screen / gauze. Allow product to cure for 72 hours before performing adhesion testing.

4. Grasp the mesh screen / gauze tab and pull it away from the surface at a 90-degree angle. Pull until it tears cohesively (or releases from the surface) and photograph / document results. Good adhesion will be evidenced by breaking of coating film. Touch up adhesion test area with more coating.

D. Correct nonconforming work.

3.6 CLEANING

A. Protect adjacent surfaces not scheduled to receive water repellent treatment. If applied on unscheduled surfaces, remove immediately, by manufacturer approved method.

B. Protect treated surfaces from rain for 6 hours

C. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Repair damage caused by water-repellent application. Comply with manufacturer's written cleaning instructions.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide thermal and acoustic fiberglass batt insulation replacement at exterior wall assemblies where required as part of work. NOTE: Not all of items in this specification apply to this project.

1.2 REFERENCES

1.3 SUBMITTALS

A. Product Data: Published "R" value for thicknesses of insulation, product characteristics, performance criteria, and limitations.

B. Manufacturer's Instructions: Indicate installation requirements, special procedures, and information regarding conditions requiring special attention.

C. Warranty: Provide warranty as described below for inclusion into Operation and Maintenance Manuals in accordance with Division 01 Section Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in Work of this Section, with minimum three (3) years documented experience.

B. Regulatory Requirements:

1. Comply with provisions of Division 01 Section Quality Requirements.

2. Oregon State Energy Code.

3. Comply with provisions of IBC, Section 719.

C. Source Limitations: Obtain each type of building insulation through one source.

D. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.

2. Fire-Resistance Ratings: ASTM E 119.

3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver in manufacturer's original labeled package indicating R-value, thickness, and density.

B. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

1.6 WARRANTY

A. Supply a written warranty dated for one (1) year from the date of Final Acceptance by the Owner or notice of completion, whichever occurs later. The warranty shall state that Work executed under this Section is free from defects of material and workmanship and that the Contractor, at his own expense, shall repair and replace defective Work, or Work which becomes defective, during the term of the warranty.

PART 2 - PRODUCTS

2.1 GENERAL

A. Thermal Resistance Values: Comply with ASTM C 518. Thermal resistance values are shown on Drawings. Where not shown, comply with Energy Code for minimum R-Values.

B. Dimensional Stability: Linear shrinkage less than 0.1%.

2.2 GLASS FIBER BATT INSULATION

A. Unfaced Batt Insulation: ASTM C 665, Type I.

1. Surface Burning Characteristics: ASTM E 84.
2. Flame spread: Maximum 25.
3. Smoke Developed: Maximum 50.
4. Combustion Characteristics: Passes ASTM E 136, non-combustible.
5. Insulation to be Formaldehyde-free.

B. Faced Batt Insulation: ASTM C 665, Type III, Class A.

1. Flame Spread 25, Foil Reinforced Kraft (FRK).
2. Surface Burning Characteristics: ASTM E 84.
3. Flame spread: Maximum 25.
4. Smoke Developed: Maximum 50.
5. Combustion Characteristics: Passes ASTM E 136, non-combustible.
6. Perm Rating: Maximum 1.0, ASTM E 9
7. Insulation to be Formaldehyde-free.

C. Acceptable Manufacturers: Johns-Manville, or approved equal.

2.3 RIGID INSULATION

A. Extruded-Polystyrene Board Insulation: ASTM C 578, Type IV (1.6 lb/cu ft), with an R value of 5.0 per inch, and a maximum flame-spread and smoke-developed indexes of 75 and 450 respectively. Locations indicated on Drawings.

1. Product: DOW: un-faced STYROFOAM Square Edge Extruded Polystyrene Insulation, or approved alternative.

B. Molded-Polystyrene Insulation: ASTM C 578, Type I (.90 lb/cu ft), with a maximum flame-spread and smoke-developed indexes of 75 and 450 respectively. Locations indicated on Drawings.

1. Product: DiversiFoam Products or approved alternative.

2.4 SLAG-WOOL-FIBER/ROCK-WOOL-FIBER SEMI-RIGID BLANKET INSULATION (MINERAL WOOL)

A. Unfaced, Slag-Wool-Fiber/Rock-Wool-Fiber (Mineral Wool) Blanket Insulation: ASTM C 665, Type 1 (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

B. Where slag-wool-fiber/rock-wool-fiber (mineral wool) blanket insulation is indicated, provide blankets in batt form with thermal resistances and dimensions indicated on drawings.

C. Acceptable Manufacturers: Johns-Manville, Fibrex, Roxul, or approved alternative.

2.5 SPRAY FOAM INSULATION

A. Use at rim joists and wall intersections as indicated: High density closed cell polyurethane foam (SPF) complying with ASTM C1029.

B. Doors and windows: Acceptable products are Hilti CF 812 minimal expanding spray foam and OSI Wintech.

C. Comply with ASTM E-84.

2.6 DENSE PACK INSULATION

A. Basis of design: Cel-Pack by National Fiber.

2.7 ACCESSORIES

A. Sealing tape: Ideal, No 375, or approved equal.

B. Vapor Retarder: Kraft paper, or similar, with a perm rating of 1.0

C. Insulation Hangers: Galvanized steel, hexagonal wire mesh, or approved equal.

D. Insulation Holder Assembly: T-Foil, UL tested FS 25, Class I. Use as option to specified insulation hanger. Provide polypropylene facing on exposed side. Approved in lieu of insulation hangers as complete assembly with insulation to obtain fire-resistive requirements.

E. Nails and Staples: Electroplated steel wire of type and size to suit installation.

F. Miscellaneous: Accessory materials, methods, fasteners, adhesives, tools, and equipment required for completion of insulation Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify installation conditions as satisfactory to receive Work of this Section. Do not install until unsatisfactory conditions are corrected. Beginning Work constitutes acceptance of conditions as satisfactory.

B. Verify that substrate, adjacent materials are dry and ready to receive insulation.

3.2 INSTALLATION

A. Install insulation and vapor retarder in accordance with Contract Documents and insulation manufacturer's instructions.

B. Install insulation in all locations without gaps or voids and as indicated on Drawings.

C. Batt Insulation:

1. Do not compress insulation.

2. Completely fill small spaces leaving no uninsulated space and providing continuity of insulating layer. Install tightly around electrical outlets, switches, and other wall penetrations. Seal joints.

3. Where kraft paper-faced and standard foil-faced batt insulation are approved for use, install with facing in contact with final fire-resistant finish material. Do not leave facing exposed or subject to heat sources.

D. Roof/Ceiling - Open Framing: Flame spread 25, foil-reinforced kraft paper-faced batt insulation. Install at roof/ceiling installations where framing systems and insulation facing will be left exposed to view above suspended ceiling systems.

E. Roof/Ceiling - Protected Framing: Unfaced insulation. Install between roof/ceiling framing members where gypsum board finish systems are installed directly to underside of framing. Include attic areas where top side of framing is exposed.

F. Insulation Hangers:

1. Provide wire mesh support between roof/ceiling framing members where applicable to hold insulation in place.

2. Install between floor framing members in crawl spaces to hold insulation permanently in place.

G. Exterior Walls - Thermal Insulation: Unfaced batt insulation. Friction fit between stud framing.

H. Interior Walls - Acoustical Insulation: Unfaced batt insulation. Install in lieu of acoustical sound rated batt insulation. Friction fit to completely fill width of stud and furring system space, except as otherwise indicated by Wall Assembly Schedule.

I. Supplementary Supports: When installed at walls in heights over 8', or when recommended by manufacturer, provide supplementary support to hold unfaced friction fit insulation in place.

J. Firestopping: Coordinate with Work of Division 07 Section Penetration Firestopping, for mineral fiber fire safing.

K. Roof Ventilation: Provide insulation baffles and other means as necessary to prevent blocking of fresh air ventilation into enclosed spaces at insulated attic and roof framing spaces.

L. Spray Foam Insulation: Apply self-supported, spray-applied cellulosic insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make it flush with face of studs by using methods recommended by insulation manufacturer.

3.3 SCHEDULE

A. Refer to Wall and Floor/Ceiling Assembly Schedule for R-values and insulation thicknesses.

END OF SECTION

SECTION 07 27 00
AIR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide an air and water barrier.

1.2 REFERENCES

A. Reference Standards: Current edition at date of the Bid unless noted otherwise.

B. International Building Code, 2009, Section 1403, Weather Protection of Exterior Walls

C. American Architectural Manufacturers Association (AAMA)

1. AAMA 711-13 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products

2. AAMA 2400-02 - Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction

D. National Fire and Protection Agency (NFPA):

1. NFPA 285 - Standard Fire Test Method for Evaluation Of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

E. American Society of Testing and Materials

1. ASTM C 920; Standard Specification for Elastomeric Joint Sealants
2. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
3. ASTM C 1193; Standard Guide for Use of Joint Sealants
4. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen
5. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference
6. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
7. ASTM D 882; Test Method for Tensile Properties of Thin Plastic Sheeting
8. ASTM D 1117; Standard Guide for Evaluating Non-woven Fabrics
9. ASTM E 84; Test Method for Surface Burning Characteristics of Building Materials
10. ASTM E 96; Test Method for Water Vapor Transmission of Materials
11. ASTM E 1677; Specification for Air Retarder Material or System for Framed Building Walls
12. ASTM E2178; Test Method for Air Permeability of Building Materials
13. ASTM E2357; Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

14. ASTM E283-91 (1999) - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
15. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's literature for each type of element in the barrier system, accessory components, and rain-screen furring systems.

B. Warranty: As described below for inclusion into Operations and Maintenance Manuals in accordance with Division 01 Section Closeout Procedures.

C. Shop Drawings for Air Barrier Assemblies:

1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

2. Include details of interfaces with other materials that form part of air barrier.

D. Qualification Data: For Installer

E. Product Certificates: Product certification confirming assembly components are supplied and warranted by a single source Air Barrier Manufacturer

F. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

1.4 QUALITY ASSURANCE

A. Single Source Responsibility:

1. Obtain air barrier and auxiliary materials including adhesive/primer, air barrier, flashings, and sealants from a single Air Barrier Manufacturer regularly engaged in the manufacturing and supply of the specified products.

2. Verify product compliance with federal, state, and local regulations.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
1. Verification that installer has been trained by and is approved to perform work as herein specified by water and air barrier system manufacturer.
2. List of at least three (3) projects completed of similar scope and complexity to this project carried out by the firm and site supervisor.
3. A minimum of 5 years' experience installing similar products.

C. Manufacturer Qualifications:

1. Water and air barrier systems shall be manufactured and marketed by a firm with an Air Barrier Association of America membership for at least five 5 years. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified and include certification of ABAA membership for a least five 5 years.

D. Pre-installation Conference: See also Division 01 Section Project Meetings:

1. Owner will notify all involved parties in advance in order to conduct a pre-installation conference prior to commencement of any weather resistive barrier, rain-screen furring, and flashing installation.
2. Attendees shall include the Owner, Installer, Product Manufacturer's Representative and Consultant.
3. At the conference, attendees shall:
   a. Inspect the substrate(s);
   b. review products;
   c. discuss installation methods and details, including special details and flashing;
   d. coordinate this work with related and adjacent work;
   e. and discuss weather conditions related to application.
   f. Discuss any other installation related questions or issues.

E. Inspection and testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover installed products or assemblies until they have been inspected, tested and approved.

F. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

G. Mock-ups:

1. The purposes of the mock-ups are to demonstrate aesthetic effects and set quality standard for materials and execution.
2. Four weeks before installation, provide mock-ups of at least 100 sq. ft. in surface. These mock-ups will form part of the finish work. The mock-ups shall be completed and accepted prior to work proceeding.
3. Provide a sequential mock-up indicating integration with the work of related sections. Mock-ups shall review all detail conditions: incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly
4. Complete Mock-up prior to commencing with the full-scale installation.
5. Certain Mock-up's may be incorporated into finished work upon the Consultant's approval.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or package wrapping with labels intact and legible.

B. Store weather barrier materials as recommended by weather barrier manufacturer.

C. Protect water and air barrier components from freezing and extreme heat. Store materials at temperatures per manufacturer's recommendations.

1.6 SCHEDULING

A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.

B. Schedule installation of exterior cladding within 90 days of weather barrier assembly installation.

1.7 PROJECT CONDITIONS

A. Environmental limitations:

1. Comply with manufacturer's written instructions for substrate temperature and moisture content and other conditions affecting performance requirements.

B. Weather conditions:

1. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.
2. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive the membrane system.
3. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.

C. Protection:

1. It is the responsibility of the installing Subcontractor to protect all surfaces not included in scope of Work from overspray including, but not limited to, windows, doors, adjacent areas, and vehicles.

2. Cap and protect exposed back-up walls against wet weather conditions during and after application of air barrier assembly.

1.8 WARRANTY

A. Warrant material to be free of defects and replace any found to be defective at no cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Air Barrier and auxiliary materials shall comply with the following system requirements:

1. Obtain air barrier and auxiliary materials as a single-source from the Air Barrier Manufacturer to ensure total system compatibility and integrity.

2. Air leakage:

   a. ASTM E2357: Pass

   b. CAN/ULC-S742-11: Classification A1

   c. CAN/ULC S741-08

3. Water resistance:

   a. AATCC TM127: Pass

   b. ASTM E331: Pass

4. Nail Sealability:

a. AAMA 711-13, ASTM D1970: Pass

B. Acceptable Manufacturer:

1. Henry® Company, 999 N. Sepulveda Blvd. Suite 800, El Segundo, CA 90245
(800) 486-1278 www.henry.com

2.2 MATERIALS, GENERAL

A. Primary Sheet-Applied, Vapor Permeable Water Resistive Air Barrier (Basis of Design):

1. Self-adhered vapor permeable, water resistive air barrier consisting of a reinforced, modified polyolefin tri-laminate film surface and patented permeable adhesive technology with split-back poly-release film; having the following typical physical properties:

a. Basis of design: Henry® Blueskin® VP100 Self-Adhered Water Resistive Air Barrier

b. Color: Blue

c. Drainage efficiency >95% (ASTM E2273): Pass

d. Water Vapor Permeance (ASTM E96): 33 perms

e. Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass

f. Air Permeance (ASTM E2178): Pass

g. Nail Sealability (ASTM D1970): Pass

h. Dry Tensile Strength (ASTM D882):

1) 41 lbf /182N MD

2) 29 lbf /129N CD

i. Surface Burning Characteristics (ASTM E84):

1) Flame Spread: Class A

2) Smoke Development: Class A

j. Low Application Temperature: 20 degrees F (-7 degrees C)

2.3 ADHESIVES/PRIMERS:

A. Standard VOC adhesive:

1. Synthetic rubber based quick setting adhesive; having the following typical physical properties:

a. Basis of design: Henry® Blueskin® Adhesive

b. Color: Blue

c. Maximum VOC: 450 g/L

d. Drying time (initial set): 30 minutes

e. Low Application Temperature: 10 degrees F (-12 degrees C)

B. Low VOC adhesive:

1. Synthetic rubber based quick setting adhesive with low VOC content; having the following typical physical properties:

a. Basis of design: Henry® Blueskin® LVC Adhesive

b. Color: Blue

c. Maximum VOC: <240 g/L

d. Drying time (initial set): 30 minutes

e. Low Application Temperature: 10 degrees F (-12 degrees C)

2. Polymer emulsion water based quick setting adhesive with low VOC content; having the following typical physical properties:

a. Basis of design: Henry® Aquatac™ Primer

b. Color: Aqua

c. Maximum VOC: 50 g/L

d. Drying time (initial set): 30 minutes

e. Low Application Temperature: 25 degrees F (-4 degrees C)

C. Aerosol spray adhesive:

1. Quick drying spray adhesive used to prepare construction surfaces for the application of flashings; having the following typical physical properties:

a. Basis of design: Henry® Blueskin® Spray Prep Adhesive

b. Color: Clear amber

c. Solids by weight: 35%

d. Drying time (initial set): 3 minutes

e. Low Application Temperature: -10 degrees F (-23 degrees C)

D. Quick setting primers:

1. Synthetic rubber based quick setting adhesive with low VOC content; having the following typical physical properties:

a. Basis of design: Henry® Aquatac® Primer

b. Color: Blue

c. Maximum VOC: 250 g/L

d. Dry time: 1-3 minutes

e. Low Application Temperature: 40 degrees F (4.4 degrees C)

2.4 LIQUID APPLIED FLASHING

A. Moisture-curing single component elastomeric liquid-applied flashing using a highly advanced Silyl-Terminated Polyether (STPE) polymer curing to a monolithic membrane; having the following typical physical properties:

1. Basis of design: Henry® Air-Bloc® LF Liquid-Applied Flashing
2. Color: Blue
3. Air Permeance (ASTM E2178): Pass
4. Water Vapor Permeance (ASTM E96): 21.8 perms @ 25 mils
5. Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass
6. Water Resistance (AC212/ASTM D2247): Pass
7. Nail Sealability (AAMA 711): Pass
8. Surface Burning Characteristics (ASTM E84):
   a. Flame Spread: Class A
   b. Smoke Development: Class A
9. Elongation (D412): 264%
10. Low Application Temperature: 20 degrees F (-7 degrees C)

2.5 SELF ADHERED FLASHING

A. For maximum adhesion of adjacent products Henry® recommends the use of Henry® Blueskin® Butyl Flash or Henry® Metal Clad® Self-Adhered Water Resistive Air Barrier for self-adhered non-vapor permeable flashings in lieu of Henry® Blueskin® SA Self-Adhered Water Resistive Air Barrier

B. Non-Vapor Permeable Flashing:

1. Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of a synthetic butyl compound integrally laminated to a white engineered polypropylene film surface; having the following typical physical properties:
   a. Basis of design: Henry® FortiFlash® Butyl Flash
   b. Color: White
   c. Thickness: 14 mils (0.36 mm)
   d. Water Vapor Permeance (ASTM E96): 0.14 perms
   e. Nail Sealability (ASTM D1970): Pass
   f. Elongation (ASTM D412): 825% minimum

g. Low Application Temperature: 25 degrees F (-4 degrees C)

2. Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a high strength polyethylene with surface layer of metallic aluminum film; having the following typical physical properties:

   a. Basis of design: Henry® Metal Clad® Self-Adhered Water Resistive Air Barrier

   b. Color: Metallic Aluminum

   c. Thickness: 45 mils (1.14 mm)

   d. Water Vapor Permeance (ASTM E96): 0.014 perms

   e. Nail Sealability (ASTM D1970): Pass

   f. Elongation (ASTM D412): 85%

   g. Low Application Temperature: 20 degrees F (-7 degrees C)

3. Non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a blue engineered thermoplastic film surface; having the following typical physical properties:

   a. Basis of design: Henry® Blueskin® SA Self-Adhered Water Resistive Air Barrier

   b. Color: Blue

   c. Thickness: 40 mils (1 mm)

   d. Water Vapor Permeance (ASTM E96): 0.86 perms

   e. Nail Sealability (ASTM D1970): Pass

   f. Elongation (ASTM D412-modified): 200% minimum

   g. Low Application Temperature: 41 degrees F (5 degrees C)

4. Low temperature non-vapor permeable, self-adhered water resistive air and vapor barrier consisting of an SBS rubberized asphalt compound integrally laminated to a blue engineered thermoplastic film surface; having the following typical physical properties:

   a. Basis of Design: Henry® Blueskin® SALT Low Temp Self-Adhered Water Resistive Air Barrier

   b. Color: Blue

   c. Thickness: 40 mils (1 mm)

   d. Water Vapor Permeance (ASTM E96): 0.86 perms

   e. Nail Sealability (ASTM D1970): Pass

   f. Elongation (ASTM D412-modified): 200% minimum

   g. Low Application Temperature: 10 degrees F (-12 degrees C)

C. Vapor Permeable Flashing:

1. Self-adhered water resistive vapor permeable air barrier consisting of a reinforced modified polyolefin tri-laminate film surface and patented adhesive technology with split-back poly-release film; having the following typical physical properties:

   a. Basis of design: Henry® Blueskin® VP100 Self-Adhered Water Resistive Air Barrier

   b. Color: Blue

   c. Water Vapor Permeance (ASTM E96): 33 perms

   d. Nail Sealability (ASTM D1970): Pass

   e. Low Application Temperature: 20 degrees F (-7 degrees C)

2.6 SEALANTS:

A. Building Envelope Sealant:

1. Moisture cure, medium modulus polymer modified sealing compound; having the following typical physical properties:

   a. Basis of design: Henry® Moistop® Sealant

   b. Color: Varies

   c. Elongation: 450 – 550%.

B. Termination Sealant:

1. One-part high performance synthetic rubber sealant; having the following typical physical properties:

   a. Basis of design: Henry® 212 All Purpose Crystal Clear Sealant

   b. Color: Clear

   c. Elongation: 200% minimum

2.7 ADDITIONAL MATERIALS

A. Thru-Wall Flashing:

1. Non-vapor permeable self-adhered through-wall flashing consisting of an SBS rubberized asphalt compound integrally laminated to a yellow engineered thermoplastic film surface; having the following typical physical properties:

   a. Basis of design: Henry® Blueskin® TWF Thru-Wall Flashing

   b. Color: Yellow

   c. Thickness: 40 mils (1.0 mm)

   d. Water Vapor Permeance (ASTM E96): 0. 03 perms

   e. High Temperature Stability - Flow Resistance (ASTM D5147): Pass

f. Low Application Temperature: 40 degrees F (4 degrees C)

2.8 RAIN-SCREEN FURRING

A. Provide rain-screen furring and fasteners in exterior wall assemblies as indicated on drawings and herein. Final product selection and locations shall be determined after review and approval of mock-ups by Owner Consultant. Corrosion resistant fasteners as well as fastener capacity shall be reviewed and approved by Consultant prior to installation. Following is a list of relevant materials:

1. Fiber cement siding and wood product siding: Preservative treated plywood strips with dimensions to match siding manufacturer's specifications. Provide fasteners for ACQ compatibility. Attach temporarily until cladding is fully installed. Cladding fasteners shall penetrate through to building framing.

   a. Siding and furring attachment as per manufacturer's recommendations, which includes conforming to ESR-2202 and DRR 1303-04. Contractor to provide cladding attachment with product submittals.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verification of Conditions:

1. Verify substrates to receive Work and surrounding adjacent surfaces are in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section prior to installation of self-adhered air barrier assembly.

2. Continuous substrate:

   a. Existing substrate must be continuous and secured prior to application of air barrier.

   b. Securely fasten sheathing panels and install flush to ensure a continuous substrate in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.

   c. Fastener penetrations must be set flush with sheathing and fastened into solid backing.

   d. Refer to Air Barrier Manufacturer's details.

3. Strike masonry joints flush.

4. Concrete surfaces shall be smooth and without large voids, spalled areas or sharp protrusions. Refer to Air Barrier Manufacturer's details for substrate gap limitations.

5. Remove concrete forms and allow new concrete to cure for a minimum of fourteen (14) days.

6. Curing compounds or release agents used in concrete construction must be resin based without oil, wax or pigments.

7. Do not install air barrier over substrates that are wet to touch.

B. Notify Contractor in writing of any conditions that are not acceptable.

C. The installing contractor shall examine and determine that surfaces and conditions are ready to accept the Work of this Section in accordance with the Air Barrier Manufacturer's installation guide and as specified in this Section. Commencement of Work or any parts thereof shall mean installer's acceptance of the substrate.

D. Do not apply air barrier until substrate and environmental conditions are in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.

E. All surfaces must be sound, dry, clean, and free of oil, grease, dirt, excess mortar, frost, laitance, loose and flaking particles, or other contaminants.

F. Protect adjacent surfaces not included in scope of Work to prevent spillage and overspray.

G. Cap and protect exposed back-up walls against wet weather conditions during and after application of the air barrier assembly.

3.2 INSTALLATION

A. Ensure substrate is ready to receive air barrier in accordance with Air Barrier Manufacturer's installation guide and as specified in this Section.

B. Temperature limitation:

1. Primary air barrier:

a. Substrate temperature must be above 20 degrees F (-7 degrees C) and rising.

2. Auxiliary products:

a. Temperature limitations may vary. Refer to Air Barrier Manufacturer's product TDS for product specific temperature limitations.

C. Application of flashing:

1. Self-adhered flashing:

a. Where required install adhesive/primer recommended by Air Barrier Manufacturer continuously at rate recommended ensuring complete substrate coverage of anticipated flashing installation area.

1) Allow adhesive/primer to cure to a tacky film prior to application of flashing.

2) Primed areas not covered by end of day must be re-primed prior to installation of flashing.

b. Measure and cut self-adhered flashing to ensure adequate length to achieve continuous coverage of desired installation.

c. Peel protective film from self-adhered flashing and align top of membrane verifying proper positioning prior to complete film removal and flashing placement.

d. Press self-adhered flashing firmly into place by applying hand pressure to the middle of the membrane and working the pressure to the edges; eliminating wrinkles and air bubbles.

e. Install self-adhered flashings in shingle fashion to eliminate reverse laps.

f. Where required, prime laps at rate recommended by Air Barrier Manufacturer to ensure complete coverage of anticipated lap installation.

g. Lap adjoining edges a minimum of two (2) inches.

h. Roll flashing and laps with countertop roller to obtain thorough adhesion.

i. Seal reverse laps at self-adhered flashing with sealant. Sealant recommendations may vary due to product or sequence of construction. Refer to Air Barrier Manufacturer details for recommended sealant.

D. Liquid-applied flashing:

1. Apply a uniform film of aerosol spray adhesive to raw edges of gypsum sheathing at rate recommended by Air Barrier Manufacturer completely encapsulating loose gypsum core at the cut edge of gypsum sheathing.

2. Allow adhesive to cure to a tacky film prior to application of liquid-applied flashing.

3. Apply flashing in accordance with and at rate recommended by Air Barrier Manufacturer.

4. Spread flashing to achieve a monolithic membrane over substrate requiring flashing.

5. Allow flashing to cure prior to subsequent installations.

E. Detailing/Flashing:

1. Complete detailing and flashing installations per Air Barrier Manufacturer's installation guide, details, and this specification.

2. Refer to Air Barrier Manufacturer details for further clarification and installation procedures including, but not limited to, the following:

a. Inside corners

b. Outside corners

c. Pipe penetrations

d. Shelf angles

e. Wall to foundation transitions

f. Reverse laps

g. Construction joints

h. Rough openings:

1) Install rough opening details per Window Manufacturer's installation guide details and in accordance with ASTM E2112.

2) Wall assemblies containing a vapor retarder on the interior wall assembly:

a) Extend flashing into rough opening to ensure sufficient membrane for connection with vapor retarder and provide a continuous air barrier assembly.

F. Transitions:

1. Contact Air Barrier Manufacturer to coordinate transition of self-adhered air barrier to adjacent areas including, but not limited to, the following:

   a. Roof to air barrier

   b. Air barrier to vertical or horizontal waterproofing

   c. Fastener penetrations

G. Thru-wall flashing:

1. Coordinate with Section 07 62 00

2. Application of Primary Sheet-Applied Vapor Permeable Water Resistive Air Barrier:

   a. Where required, install adhesive/primer recommended by Air Barrier Manufacturer continuously and at rate recommended by Air Barrier Manufacturer to ensure complete substrate coverage of anticipated flashing installation area.

      1) Allow adhesive/primer to cure to a tacky film prior to application of air barrier.

      2) Primed areas not covered by end of day must be re-primed prior to installation of air barrier.

   b. Peel protective film from primary air barrier and align top of verifying proper positioning prior to complete film removal and placement.

   c. Press primary air barrier firmly into place by applying hand pressure to the middle of the membrane and working the pressure to the edges; eliminating wrinkles and air bubbles.

   d. Install primary air barrier in shingle fashion to eliminate reverse laps.

   e. For lap adhesion enhancements, install standard or low VOC adhesive continuously and at rate recommended by Air Barrier Manufacturer to ensure substrate coverage of anticipated flashing installation area.

      1) Allow adhesive/primer to cure to a tacky film prior to subsequent primary air barrier installation.

   f. Horizontal applications:

      1) Horizontal seams: two (2) inch minimum.

      2) Vertical seams: three (3) inch minimum.

   g. Roll primary air barrier and laps with countertop roller to obtain thorough adhesion.

   h. Seal permanent reverse laps of primary air barrier with termination sealant.

H. Special Considerations:

1. Contact Air Barrier Manufacturer to verify product and installation requirements.

2. Wall assemblies identified as special conditions and requiring supplemental detailing may include, but are not limited to, any of the following:

   a. Panelized wall assemblies.

   b. Sloped wall assemblies.

   c. Rainscreen cladding systems permitting permanent direct exposure to bulk water onto the primary air barrier within a completed wall assembly.

   d. Claddings impeding drainage and/or promoting hydrostatic pressure:

      1) Horizontal Z-girts or furring strips installed directly onto air barrier in a manner to encourage water collection.

I. Fastener Penetrations Through Primary Air Barrier:

1. Fastener Penetrations Through Primary Air Barrier:

   a. It is the responsibility of the installer penetrating the air barrier assembly to install fasteners and components in accordance with the Air Barrier Manufacturer's installation guide and as specified in this Section.

   b. Installation requirements:

      1) Drill fasteners and components with sufficient compression to maintain continuity in the air barrier assembly.

      2) Refer to "Self-tapping fasteners" and/or "Pre-drilled fasteners".

   c. Supplemental sealant:

      1) Penetrations that do not meet installation requirements require the addition of termination sealant at point of insertion through the air barrier to maintain continuity in the air barrier assembly.

   d. Self-tapping fasteners:

      1) Fastener head/assembly component must be larger in diameter than the fastener shank.

      2) Install fastener head/assembly component to provide a continuous compression firmly against the air barrier creating a gasketing seal without damaging the membrane.

      3) Do not install fastener components through the air barrier over unsupported areas of the substrate such as sheathing joints.

      4) Remove overdriven fasteners, improperly installed fasteners, defective/broken fasteners, or fasteners not properly fastened into the building structure beyond the air barrier membrane and seal the vacated hole with termination sealant prior to the installation of the exterior cladding.

e. Pre-drilled fastening assemblies:

1) Fastening head/assembly component must be larger in diameter than predrilled hole.

2) Install fastening head/assembly component to provide a continuous compression firmly against the air barrier creating a gasketing seal without damaging the membrane.

3) Do not install fastening components through air barrier over unsupported areas of the substrate such as sheathing joints.

4) Seal improperly drilled and/or vacated holes with termination sealant prior to the installation of the exterior cladding.

3.3 FIELD QUALITY CONTROL

A. Final Observation and Verification:

1. Owner's representative, General Contractor, or Air Barrier Manufacturer shall complete the final inspection of the air barrier assembly as required by warranty.

a. Contact Air Barrier Manufacturer for warranty issuance requirements.

2. Install cladding as soon as practical after application. Air barrier assembly not designed for permanent UV exposure. Refer to Air Barrier Manufacturer's product TDS for product limitations.

3.4 CLEANING

A. As the Work proceeds, and upon completion, promptly clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.

B. Clean soiled surfaces, spatters, and damage caused by Work of this Section.

C. Check area to ensure cleanliness and remove debris, equipment, and excess material from the site.

END OF SECTION

SECTION 07 46 46
FIBER CEMENT SIDING

PART 1 - GENERAL

1.1 SUMMARY

A. Fiber Reinforced Cement exterior siding and accessories.

1.2 SUBMITTALS

A. Product Data: Manufacturer's technical data, installation instructions, standard detail drawings, and recommendations for materials and accessories showing compliance with specified requirements.

1. Fastener types and locations. Include edges, terminations and penetrations.

2. Clearly indicate locations of field and factory applied sealant.

B. Samples:

1. Submit three (3) 12" pieces of fiber cement panels and lap strips in texture types and widths shown.

C. Certification: Manufacturer’s certification that products provide required ratings.

D. Operations and Maintenance Data.

E. Warranty.

1.3 WARRANTY

A. Supply a written warranty dated for one (1) year from the date of Final Acceptance by the Owner or notice of completion, whichever occurs later. The warranty shall state that Work executed under this Section is free from defects of material and workmanship and that the Contractor, at his own expense, shall repair and replace defective Work, or Work which becomes defective, during the term of the warranty.

1.4 MOCK-UPS

A. Provide mock-up in conjunction with mock-ups of Weather Resistive Barrier, Windows and other Penetrations. Mock-up shall indicate the progression of the Work and shall represent the standard for the remainder of the Work, once it has been approved by the Owner and Consultant.

1.5 QUALITY ASSURANCE

A. Pre-Installation Conference: Arrange, in accordance with Division 01 Section Project Meetings, between Contractor, subcontractor, Owner, Consultant, manufacturer's representative, and any other concerned party two weeks prior to beginning siding Work of this Section.

B. Mockup contact consultant and owner for an in-place mockup prior to full scale installation

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle in accordance with manufacturer’s instructions.

B. Stack fiber cement components on edge or lay flat on a smooth, level surface.

C. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing. If sheets should become wet, allow to dry thoroughly before installing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with these Specifications, the following manufacturers are acceptable:

1. James Hardie Building Products.

2. Or Alternate approved prior to submission of bid.

2.2 MATERIALS

A. Siding: Fiber-reinforced cement siding as noted on drawings. Comply with ASTM Standard Specification C1186 Grade II, Type See plans and scope of work for products and locations.

1. Hardie Cedarmill Select Lap Siding:

   a. 5.25” (4” exposure)

   b. 6.25” (5” exposure)

   c. 7.25” (6” exposure)

   d. 8.25” (7” exposure

   e. 9.25” (8” exposure)

   f. 12” (10.75” exposure)

2. Hardie Cedarmill Smooth Lap Siding:

   a. 5.25” (4” exposure)

   b. 6.25” (5” exposure)

   c. 7.25” (6” exposure)

   d. 8.25” (7” exposure

   e. 9.25” (8” exposure)

   f. 12” (10.75” exposure)

3. Hardie Beaded Cedarmill

   a. 8.25” (7” exposure)

4. Hardie Beaded Smooth

   a. 8.25” (7” exposure)

5. Hardie Textured Panels

a. Smooth Sand

b. Multi-Groove

c. Knockdown

d. Size:

1) 48.197” x 8ft, 10 ft or 12ft

6. Hardie Shingle Siding

a. Straight Edge Panel

b. Staggered Edge Panel

7. Hardie Vertical Siding

a. Select Cedar Mill

b. Smooth

c. Sierra 8

8. Hardie Soffit Panels

a. Non-vented Cedar Mill

b. Non-vented Smooth

9. Hardie Artisan V-Groove Siding

10. Hardie Artisan Shiplap Siding

11. Hardie Artisan Square Channel Siding

12. Hardie Artisan Bevel Channel Siding

13. Hardie Artisan Reveal Panel with Recess Trim

14. Hardie Artisan Reveal Panel with Surround Trim

B. Fiber cement siding to be non-combustible when tested in accordance with ASTM test method E136. Install per manufacturer's recommendations: typically galvanized trim nails.

C. Surface-burning characteristics when tested in accordance with ASTM E184:

1. Flame Spread: 0.

2. Fuel Contributed: 0.

3. Smoke Density: 5.

4. NFPA Class: A.

5. IBC Class: 1.

D. Finish: Paint per Division 09 Section Paints and Coatings. Locations to be determined. Consultant shall provide exterior elevation paint finish location diagram for Contractor during Construction. Contractor shall request information prior to paint order.

2.3 FIBER CEMENT ACCESSORIES

A. WRB and Rainscreen furring: refer to Section 07 27 00

B. Deck soffit venting - unrated:

1. Continuous Soffit Vents by Air Vent Inc, Aluminum, 9" NFVA per linear foot

2. Or Consultant approved equal.

C. Deck soffit venting – rated:

1. BrandGuard Vents Removeable Balcony Vents – 1 Hr rated

2. Or Consultant Approved Equal

D. Lap siding full wrap around corners: where specified on drawings, provide the from following

1. Simplicity 199 series (simplicitytools.com)

2. Tamlyn OC series (tamlyn.com)

3. Or Consultant Approved Equal

E. Inside corner metal trim at lap siding

1. Tamlyn XIC

2. Or Consultant Approved Equal

2.4 FASTENERS

A. Provide stainless steel fasteners in accordance with panel manufacturer's printed instructions and NER 405, which are also compatible with type of pressure treated wood.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Work shall be carried out by skilled tradesmen familiar with the application of the product system specified.

3.2 EXAMINATION

A. Examine substrates, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Start of Work indicates acceptance of conditions.

3.3 INSTALLATION

A. Installation of siding shall be per siding manufacturer's installation instructions and specifications.

B. Install blocking between studs where product joints occur. For specific framing and fastener requirements, refer to Tables II and III in the National Evaluation Service Report No. NER-405.

C. Place fasteners no closer than 3/8-inch from panel edges and no closer than 2 inches from sheet corners.

D. Where cladding meets with roof, soffits, windows, doors, foundations, penetrations, or other materials, joints shall be properly sealed, caulked, and flashed.

E. Install exterior cladding to form a continuous weatherproof protection system.

F. Leave Work neat, free of defects, straight, level, and plumb and ready for application of final finish.

3.4 SPECIAL MANUFACTURER NOTES:

A. James Hardie will provide specific installation instructions and the following equipment is required for installation of fiber cement siding:

1. Chop saws with special fiber cement blades

2. Finish nail guns (for trims)

3. Multiple saw blades for use on all fiber cements material (not for use on wood)

END OF SECTION

SECTION 07 52 00
SBS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Complete removal of existing roof membranes, flashings, and insulation is required before installation of new roofing.

B. Provide and install a Class A two-ply reinforced SBS modified membrane over cover board and tapered rigid insulation over the existing roof deck.

C. Installation shall be complete with related flashings, drains, cant strips, and performing such incidental or other work as may be necessitated by these operations.

1.2 RELATED SECTIONS

A. Division 07 Section Sheet Metal Flashing and Trim.

B. Division 07 Section Joint Sealants.

1.3 SUBMITTALS

A. Product Data:

1. Submit latest edition of manufacturer's roofing and flashing specification, including list of materials proposed for use, installation procedures, manufacturers' Product Data Sheets for products comprising the roof system assembly, and Material Safety Data Sheets for materials submitted.
2. Submit manufacturer's standard warranty. Sample copies shall be signed by authorized parties signifying acceptance of warranty terms and conditions. Warranty shall be dated from the date of Substantial Completion.

B. Shop Drawings:

1. Submit manufacturer's proposed installation details of roofing and flashing, including roof slopes, flashing details, penetration details, and accessories.
2. Submit shop drawings detailing roof configuration and sheet layout, perimeter details, and any special edge conditions.
3. Manufacturer's standard pre-printed details are not acceptable as shop drawings.
4. Submit Manufacturer's recommended tapered insulation layout plan.

C. Samples:

1. Submit 8 ½" x 11" samples of each sheet material to be installed.
2. Submit color samples from manufacturer's standard range for selection of cap sheet color.

D. Certifications: At completion of Work, the modified bitumen roof membrane manufacturer shall inspect the Work and submit a Certificate of Final Completion, a copy of which is annexed hereto.

E. Manufacturer's Reports:

1. Submit roof manufacturer's review and approval of Contract Documents, concurrent with shop drawing submittal.
2. Submit roof manufacturer's system assembly letter with fastening rates, wind uplift design basis, and related roof system components.
3. Submit manufacturer's acceptance of Project with warranty conditions concurrent with shop drawing submittal. Submittal shall include copies of the warranty documents

stamped “draft” and signed by an authorized signatory of the roof membrane manufacturer.

F. Maintenance Data: Submit manufacturer’s recommended maintenance procedures for roofing system, including precautions and warnings to prevent damage and deterioration to roofing system. Maintain copies of documentation on-site in the job Log. A bound copy shall be submitted independently to transfer to the Owner.

G. Warranty: Submit for inclusion into Operation and Maintenance Manuals in accordance with Division 01 Closeout Procedures.

H. Provide written documentation from roof manufacturer stating that roof installer is a manufacturer-approved or certified applicator for the proposed roofing system.

1.4 REFERENCES

A. ANSI/ASTM D41 - Asphalt Primer Used in Roofing, Damproofing, and Waterproofing.

B. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

C. Underwriters Laboratories (UL) - Fire Hazard Classifications and Roofing Materials Systems.

D. Sheet Metal and Air-Conditioning Contractors National Association, Inc. (SMACNA).

1.5 QUALITY ASSURANCE

A. Applicator’s Qualifications:

1. Installed not less than four (4) similar projects and 50,000 square feet of modified bitumen membrane roofing the last five years. Roofing contractor shall submit evidence of applications by providing a list of projects, including project names, contact names, addresses and telephone numbers.

2. Approved by the manufacturer prior to the bidding period and throughout the installation and be able to present a copy of his certification as a submittal to the Consultant and Owner.

B. Manufacturer’s Qualifications:

1. Must have a minimum of 10 years experience manufacturing SBS modified bitumen roofing membranes, minimum 5 years experience manufacturing torch grade systems such as the base system specified.

2. Provide a factory trained technician for final inspection of the roofing system.

3. Provide a warranty upon satisfactory installation of the roofing system.

C. Regulatory Requirements

1. Roof system shall be listed as an approved roof assembly by applicable regional Building Codes and shall be classified by Underwriters Laboratories, Inc. and listed in the current UL Roofing Materials Directory detailing compliance with the specified fire classification. Evidence of listing or approval shall be included as part of the product submittal.
2. Fabrication of sheet metal roofing accessories shall conform to applicable SMACNA, NRCA and membrane manufacturer’s published details and requirements.

D. Pre-Installation Conference:

1. Prior to roofing installation, conduct Pre-Installation Conference at Project site in accordance with Division 01 Project Meetings.

2. Attendance: Owner's Representative, General Contractor, Roofing Contractor, Job Superintendent, roof manufacturer's Technical Representative, roof insulation manufacturer's Representative, subcontractors, Exterior Envelope Consultant, Architect, and Safety Coordinator and Project Manager, if applicable.

E. Mock-up: Prior to Installation, provide mock-up of 100 square feet minimum for Architect and Exterior Envelope Consultant review. Include typical details in the mock-up, including intersection, edge and corner conditions. Mock-up review may be concurrent with Pre-Installation Conference. Mock-up may be incorporated into the finish Work.

1.6 JOB CONDITIONS

A. Environmental Requirements:

1. Work shall only begin when the Contractor has decided to his satisfaction that all Specifications are workable as specified, and that the Contractor can meet project and Code requirements.
2. Do not begin Work when inclement weather is forecast to occur prior to the anticipated time of completion of the Work item.
3. The Contractor shall be responsible for verifying the existing and forecasted weather conditions to determine when the conditions are acceptable for roof Work.
4. Roof application shall not proceed when there is moisture present in any form on the deck including but not limited to rain, dew, ice, frost or snow.
5. Do not apply roofing membrane to a frozen deck.
6. Roof application shall not proceed when using hot asphalt when the ambient air temperature is below 45°F (7.2°C).
7. The Contractor shall be prepared at all times to protect any uncompleted roof Work from the rapid changes in the weather. If Work continues during sudden rains to protect the interior of the building, then these areas shall be subsequently removed and replaced.
8. The Contractor shall observe the provisions regarding material storage and handling of the roofing products in cold weather.

B. Areas of the substrate where ponding water occurs shall be built up prior to the installation of the roof system.

C. Do not use lead flashings without prior approval from Owner.

D. Ensure that the roof deck is structurally sound to support the live and dead load requirements of the new roofing system and rigid enough to support construction traffic. Do not store or load the roof deck above its load capacity.

E. Slope: Roof shall have a finished slope at 1/4"/ft. minimum, achieved in the deck structure or by use of tapered insulation. Notify Consultant if finished slope minimums cannot be achieved.

1.7 PERFORMANCE REQUIREMENTS

A. Roof System shall be in compliance with the following regulatory agencies and with local codes:

1. Underwriter's Laboratories, Inc. (UL) Class A fire hazard classification.

1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer's Twenty (20) Year Commercial "No Dollar Limit" (NDL) type Roof Guarantee.

B. Contractor: The roofing contractor shall provide a two-year workmanship and watertight warranty independent of the membrane manufacturer's 20-year warranty, for roofing installation, including, flashings, sealants, fasteners, and accessories, to remain watertight and weatherproof.

1.9 MATERIAL, DELIVERY, STORAGE AND HANDLING

A. Unload and handle all roofing and construction materials with care.

B. Examine all materials as they are received. Do not use any materials that are damaged, unlabeled or otherwise unfit for use. Materials must display legible labels, which identify the materials and applicable reference standards.

C. Immediately notify carrier and manufacturer of damaged, wet, or defective materials.

D. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.

E. At the Project job site, no more material should be stored that will be used within two weeks. For periods longer than two weeks, the materials should be properly warehoused, i.e., dry, ventilated, on pallets, etc. No more material should be stored on the roof than can be used within five days. When prolonged inclement weather threatens, i.e., rainy seasons, no more roofing materials should be supplied to the rooftop than can be used within two days.

F. Store roll goods on end on pallets in a clean, dry, well-ventilated protected area. Take care to prevent damage to roll ends or edges. Do not double-stack modified bitumen products.

G. Remove manufacturer-supplied plastic covers from materials provided with such covers. Use “breathable” type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each day Work. Do not remove any protective tarpaulins until immediately before material will be installed.

H. Store all coatings and sealants/caulks to protect from freezing. Frozen material must be discarded and replaced. Properly seal all liquid material containers after use.

I. Materials shall be stored above 55°F a minimum of 24 hours prior to application.

PART 2 - PRODUCTS

2.1 GENERAL

A. All products (including insulation, fasteners, fastening plates, prefabricated accessories and edgings) must be manufactured and/or supplied by the roofing system manufacturer and covered by the warranty.

2.2 ROOFING MEMBRANE

A. The complete roofing membrane system assembly shall consist of an SBS surfacing ply over an SBS base ply, meeting the requirements of this section.

B. The complete roofing system assembly shall achieve a UL Class A fire rating.

C. Membrane base and to ply to meet criteria to achieve 20-year “No Dollar Limit” (NDL) type guarantee from roof manufacturer.

D. The base ply shall be self-adhering and compatible with a torch grade top ply.

E. Provide compatible inner and surface ply base flashings with membranes listed below.

F. The top ply shall be torch applied with a manufacturer applied granule surfacing.

1. Color as approved by Owner.

G. Acceptable Manufacturers:

1. Siplast

    a. Paradiene 20 SA (Base Ply)

b. Paradiene 30 FR TG (Top Ply)

2. Malarkey Roofing Products

a. 610 Paragon Ultra SA Base (Base Ply)

b. 630 Paragon Ultra TG Cap TG (Top Ply)

3. Soprema

a. Elastophene Flam Stick (Base Ply)

b. Elastophene Flam FR+ GR

H. General Material Requirements:

1. Products furnished for roofing membrane system shall be products of a single manufacturer or approved as part of a system by a single manufacturer.

2.3 SELF-ADHERING UNDERLAYMENT

A. For application to wood and concrete roof decking: SBS -modified bitumen self-adhering underlayment approved my membrane manufacturer.

1. Minimum thickness: 30 mils.

B. Approved for use by the roofing membrane manufacturer on existing deck, and as an underlayment for the application of polyisocyanurate insulation with low-rise urethane foam adhesive.

C. Capable of achieving the wind uplift requirements for the project location within the specified roof system assembly.

2.4 CANT STRIP

A. Cant Strip, made of rigid perlite insulation board, to provide a smooth transition from horizontal to vertical surfaces (e.g., roof-to-wall transitions) or for transitions from lower to higher elevations.

B. Cant strips from wood 4x4's at Contractor's option.

1. Wood products shall meet the requirements of Section 06 10 00 Rough Carpentry.

2.5 COVER BOARD

A. Cover Board: Provide a water resistant and silicone treated gypsum panel with embedded fiberglass facer on both sides.

1. Cover board to be installed over rigid tapered insulation where present.

2. Cover board to be acceptable by roofing manufacturer.

B. Basis of Design product: "Dens-Deck" Roof Board by GP Gypsum

1. Cover Board thickness: ½".

2. Cover Board size: 4' x 4' board.

3. Cover Board to be installed in manufacturer approved low rise foam adhesive.

4. Wood fiber board shall not be an acceptable cover board material.

2.6 INSULATION

A. Install insulation or membrane underlayment over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints horizontally and vertically if multiple layers are provided.

B. Secure insulation to the substrate with the required mechanical fasteners or insulation adhesive in accordance with the manufacturer's specifications to meet wind uplift requirements.

C. Do not install wet, damaged or warped insulation boards.

D. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joint or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.

E. Do not install any more insulation than can be waterproofed in one day.

F. Install temporary water cut-offs at the edges of insulation at the end of each workday.

G. Prior to installing the insulation, inspect the underside of the roof deck to determine if objects, such as sprinklers, lights, conduits, fans, or gas lines are attached to the deck. Exercise caution to ensure that insulation fasteners do not penetrate these objects.

H. Insulation fasteners:

1. For wood and steel decking: Mechanically attach base layer of insulation.

2. For mechanical attachment of polyisocyanurate insulation and/or cover board (where specified): Fluorocarbon coated or galvanized self-drilling screw and plate system; product type acceptable to the roofing manufacturer. Fastener length as necessary to penetrate through the cover board/insulation layer(s) and into the wood roof deck 1-inch, minimum.

   a. Minimum insulation plate diameter: 3-inches.

   b. Minimum fastener size: No. 14.

3. For wood and steel decks: Mechanically attach base layer of insulation to roof decking, adhere subsequent layers in manufacturer approved low-rise foam adhesive.

I. Insulation shall consist of rigid polyisocyanurate insulation with tapered portions designed to fit roof conditions and adhered with approved adhesives.

1. Polyisocyanurate roof insulation; ASTM C1289, Type II, Class 1, Grade 2 (20 psi); HCFC-Free and Zero Ozone Depletion Potential (ODP); product type acceptable to the roofing membrane manufacturer.

2. Long Term Thermal Resistance (LTTR) Value: 5.6 minimum per inch.

3. Board Size: Bottom and top layers: 4-feet by 4-feet.

4. Maximum thickness of base layer not to exceed 2-inches.

5. Insulation Adhesives:

a. Where specified, for adhering cover board, and bottom, intermediate, and top layer(s) of insulation, tapered insulation systems, and tapered insulation used in saddle and cricket construction where indicated in PART 3 of this Section: Low-rise urethane foam adhesive; product acceptable to the roofing manufacturer and is capable of meeting the specified wind uplift requirements.

6. For concrete decks: Adhere all layers of insulation in manufacturer approved low-rise foam adhesive.

J. Tapered Insulation above base layers:

1. The tapered insulation system shall have a minimum thickness at the tapered edge and an average R-value as shown or indicated on details.

a. Minimum Thickness: 1/2 inch.

2. The roof shall have a slope of not less than that indicated, and a minimum thickness as shown or indicated on details.

a. Minimum slope: 1/4-inch per foot, unless specified otherwise.

b. Maximum thickness of “fill” insulation boards shall be 2-inches.

3. The tapered boards shall be factory formed units of the specified insulation board.

K. Crickets:

1. Crickets shall be installed where shown on the drawings, sloping to valleys to prevent water accumulation.

2. Crickets shall be constructed from factory formed units of the specified insulation board.

2.7 BATT INSULATION INSTALLATION

A. At expansion joints: Install polyethylene sheeting at locations indicated on the project drawings. Drape sheeting down and into expansion joints to match elevation of existing structural deck. Secure sheeting with fasteners spaced 12-inches o.c., maximum. Install unfaced batt insulation into the space created.

1. For use at expansion joints and as indicated on Drawings.

2. Batt fiberglass insulation; R-Value of 3.1 per inch, minimum.

3. Polyethylene film: Fire-retardant, 12-mil thickness.

2.8 LIQUID-APPLIED FLASHING

A. Base and topcoats:

1. Single or dual component, moisture-cured. Product approved by the roofing membrane manufacturer for use in the specified configuration.

B. Reinforcing fabric:

1. Polyester-reinforced fabric. Product approved by the roofing membrane manufacturer for use in the specified configuration.

2.9 WOOD BLOCKING

A. Nailers and Blocking Material: Refer to Section 06 10 00 Rough Carpentry.

2.10 RELATED MATERIALS

A. Mechanical Fasteners: Per manufacturer's recommendations unless specified.

B. Cap Sheet Adhesive: Per manufacturer's recommendations.

C. Self-adhering Membrane Primer: Per manufacturer's recommendations.

D. Asphalt Primer: Per manufacturer's recommendations.

E. Walkpads: Product approved by the roofing manufacturer.

F. Splashblocks: Concrete; size as necessary to accommodate existing condition.

G. Pitch pan fill materials:

1. Non-shrink grout (for bottom fill): Quick-set, fast-drying grout; product acceptable to roofing manufacturer.

2. Pourable sealer (for top fill): Two-part pourable elastomeric sealer, product acceptable to roofing manufacturer.

H. Pre-fabricated plumbing vent pipe extensions:

1. For use where necessary to achieve the 8-inch minimum flashing height:

2. Pre-fabricated plumbing vent extensions, such as Tubos Pre-Fabricated Pipe Extension, by Tubos, Inc., Clearwater, FL.

3. Size and configuration of extension as necessary to match existing pipe diameter, providing the 8-inch minimum flashing height, and allowing for flashing as show on the drawings.

4. Or Consultant approved equal.

I. Conduit and pipe support:

1. Adjustable prefabricated support, approved by Owner.

2. Product capable of accommodating the weight of the supported pipe at intervals recommended by the pipe support manufacturer.

J. Rooftop unit support curbs: Product such as "Pate Equipment Supports" manufactured by The Pate Company, Lombard, IL, or approved equal.

1. Size and configuration as necessary to accommodate existing rooftop unit.

2. Fabricated from 18 ga. galvanized steel, minimum, with welded seams; and a nominal 2-inch-thick nailer affixed atop the curb support.

3. Fabricated to allow for a minimum flashing height of 8-inches, minimum.

4. Or Consultant approved equal.

K. Rooftop unit supports: Product such as "Mechanical Unit Support-HD" manufactured by Miro Industries, Inc., Heber City, UT, or approved equal.

1. Size and configuration as necessary to accommodate existing rooftop unit.

2. Polycarbonate bases and support pan.

3. Or Consultant approved equal.

L. Replacement roof hatch:

1. Roof hatch with insulated curb, such as “Type E” or “Type S”, manufactured by The Bilco Company, New Haven, CT, or approved equal.

2. Size and configuration as necessary to match existing roof hatch.

3. Or Consultant approved equal.

M. Extendable ladder-mounted safety post, such as “LadderUP Safety Post”, manufactured by The Bilco Company, New Haven, CT, or approved equal.

1. Size and configuration as necessary to accommodate existing ladder and new roof hatch.

N. Replacement roof drain components from Zurn, Josam, or JR Smith only.

1. Size and configuration to match existing.

2. Cast iron components.

3. Or Consultant approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that the surfaces and site conditions are ready to receive Work.

B. Verify that the deck is supported and secured.

C. Verify that the deck is cleaned and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.

D. Verify that the deck surfaces are dry and free of ice or snow.

E. Verify that all roof openings, curbs, pipes, sleeves, ducts, vents or other penetrations through the roof are solidly set, and that all flashings, tapered edges and cant strips, reglets, and treated wood nailers are secure and tight to the building as per this Specification.

F. The beginning of installation of the roof system signifies that the Contractor accepts the existing conditions as being in compliance with the requirements of this Specification.

G. Install only as much roofing as can be completed in a workday, including flashing and detail work. All installed field seams shall be sealed to a watertight condition prior to leaving the site daily.

H. Overnight tie-in: Care should be exercised to ensure that water does not flow beneath any existing or completed sections of the roof by temporarily sealing the loose edge of the membrane at the end of each workday and when the weather is threatening. The roofing membrane manufacturer’s requirements should be followed closely. Under no circumstance shall the roofing contractor leave an open, unsealed roof system upon completion of daily work. The Owner reserves the right to engage the services of a third-party service provider as needed to correct roofing left open or unsealed at the completion of daily work. The cost of such corrective work shall be the responsibility of the contractor.

1. At the Pre-Construction Meeting, provide the completed “Contractor Watertight Integrity Acknowledgement Letter”, included within this Section. The letter shall include the project name and address and shall be signed by the project foreman and by an authorized contractor representative. After-hours emergency contact phone numbers shall be provided for the project foreman and authorized contractor representative.

3.2 PROTECTION

A. Protect any adjacent building surfaces against damage from the installation of the roofing system.

B. The Contractor shall observe fire and safety precautions as recommended by Asphalt Roofing Manufacturer's Association and the National Roofing Contractors Association as well as all applicable local fire and safety codes.

C. All debris from the roofing operations shall be removed daily from the roof deck and jobsite and disposed at an approved, suitable disposal site.

D. The contractor is responsible for providing temporary repairs to existing roof systems scheduled for replacement, caused by excessive foot or vehicle traffic, equipment or material storage, or other contractor-related activities. Repairs shall be sufficient to provide a watertight condition until the damaged area is replaced.

3.3 SURFACE PREPARATION

A. Installation of conduits or piping between the deck and the membrane is not acceptable and will render any guarantee invalid. All openings in the deck, curbs, or projections through the deck shall be completed before starting the application of the roof system.

B. The surface to receive roof systems shall be smooth, dry, clean, and free of sharp projections and depressions.

C. Roof decks must provide positive drainage. Outlets must be placed and installed to remove water promptly and completely from the roof.

D. Expansion joints, roof vents, roof drains, etc., must be installed using acceptable industry standards.

3.4 CANT STRIPS

A. Perlite cant strips must be installed at the intersection of the roof and all walls, parapets, curbs, or transitions approaching 90°, to be flashed. They shall be approximately 4” in horizontal and 4” in vertical dimension. The face of the cant shall have an incline of not more than 45 degrees with the roof.

B. Wood cants shall be solid and comply with the requirements of Section 06 10 00. Fiberboard cants shall comply with Federal Specification LLL-1-535. Use solid wood cants when mechanical securement to cants is required or when solid wood cants will help stabilize the vertical wood nailers at projections or expansion joint openings.

C. Metal cant or metal curb strips are not approved.

D. Cants shall always be installed on top of the roof sheathing, or wood nailers.

E. Mechanically fasten cant where applicable. Otherwise, set in hot asphalt or roof manufacturer approved roof cement and install per manufacturer’s recommendations.

F. Neatly fit all joints and miters.

3.5 WOOD NAILERS

A. Wood nailers must be 3-1/2” minimum width or 1” wider than metal flange and minimum 1” thick and securely fastened to the deck.

B. Wood nailers must comply with the requirements of Section 06 10 00.

C. Wood nailers are required at all eaves, gable ends, perimeters, penetrations, or wherever metal flanges must be incorporated into the roof system.

D. Nailers must be mechanically fastened to the deck.

E. Wood nailers shall be the same thickness as tapered edge strip or insulation.

3.6 PRIMER APPLICATION

A. Prime all surfaces as recommended by membrane manufacturer.

3.7 BASE PLY APPLICATION

A. Unroll dry self-adhering base ply membrane for alignment. Each strip shall have 3-inch minimum side laps and six (6) inch minimum end laps. Allow membrane to relax a minimum of 20 minutes.

1. Begin at low point of roof.

2. Place membrane so edge lap will be centered on drain.

B. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

C. Run base ply tight up against any vertical surfaces such as curbs, parapets, and vents.

3.8 BASE FLASHING PLY INSTALLATION

A. Prime all base flashing substrates as recommended by membrane manufacturer.

B. Lay base flashing ply in strips three (3) feet wide to the vertical surfaces, extending onto the flat surface of the roof a minimum of four (4) inches. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches with the laps of the base ply.

C. Apply base flashing ply directly on its support from bottom to top.

D. After installation of base ply flashing, check all lap seams on the flashing by running a heated trowel along the edge of the seams.

1. THOROUGHLY SEAL ALL VOIDS IN THE CORNERS AND SEAMS.

3.9 TOP PLY INSTALLATION

A. Once the base ply and base flashing ply has been completed and do not show any defects, install the top ply.

B. Unroll top ply starting from the low point of the roof to run parallel to the run of the base ply. Care must be taken to insure good alignment of the first roll (parallel with the edge of the roof). A 45-degree cut shall be made on the selvage edge of underlying membrane prior to application to insure a good seal between the membranes.

1. First piece must have granules embedded 4-inches wide along the full length and 6-inches at end laps.

C. Stagger base ply and top ply seams a minimum of twelve (12) inches.

D. Top ply shall have side laps of three (3) inches and end laps of six (6) inches minimum. Prior to installation of following ply, embed surface granules on laps by torch heating the membrane surface and pressing the granules into the melted asphalt with a hot trowel. Heat weld all cap sheet seams.

E. Ensure the two membranes are perfectly welded, without air pockets, wrinkles, fishmouths or tears.

F. After installation of the top ply, check all lap seams on the top ply using the edge of a hot trowel. Correct any defect.

G. During installation, provide a minimum 1/8-inch asphalt seepage at seams.

H. During installation, avoid asphalt seepage greater than 1/4 inch at seams.

1. Cover any asphalt seepage with a sprinkling of loose granules, color to match membrane.

3.10 TOP PLY BASE FLASHING INSTALLATION

A. Lay top ply flashing in strips three (3) feet wide.

1. Side laps shall be three (3) inches and shall be staggered a minimum of four (4) inches from top ply laps in order to avoid excessive thickness.

B. Using a chalk line, lay-out a straight line on the top ply surface, parallel to the roof edge, six (6) inches inside the roof from the base of the cant strip or right angle to be flashed.

C. Extend top ply flashing down the vertical surface and onto the flat roof at a distance of six (6) inches, to the extent of the area of exposed bitumen. For ease of application, cut roll into required lengths and use width of roll three (3) feet down length of roof, maintaining specified three (3) inch laps.

1. Install top ply flashing in accordance with recommendations of the membrane manufacturer, directly on its base ply, proceeding from bottom to top followed by the torching of the roof tie-in.

2. Firmly press flashing into position using a damp sponge.

D. Thoroughly seal all voids in the corners and seams.

E. Application shall provide a smooth surface, free of air pockets, wrinkles, fishmouths or tears.

F. During installation, avoid asphalt seepage greater than 1/4 inch at seams.

1. Cover any asphalt seepage with a sprinkling of loose granules, color to match membrane.

3.11 WATER CUT-OFF

A. When precipitation is eminent, a water cut-off shall be constructed at all open edges. Construct the cut-off with the same membrane and asphalt as that used for the roofing system. Cut-off must be able to withstand extended periods of wet weather. The water cut-off shall be completely removed prior to resuming the installation of the roofing system.

3.12 FLASHING AND ACCESSORIES

A. Refer to the manufacturer's standard details, shop drawings, and construction drawings. Where standards are in conflict, the most restrictive standard shall apply.

B. Basic wood blocking anchorage recommendations are found in Factory Mutual data Sheet 1-49. These recommendations are required for Factory Mutual approved projects.

C. All penetrations should be at least 18" from the curbs, walls, and edges to provide adequate space for proper flashing.

D. Install flashing sheets starting at low points.

E. All sheet metal shall be primed with asphalt roof primer per manufacturer's recommendations and allowed to dry prior to being fully adhered to flashing sheets.

F. Do not use metal base flashing.

G. Base flashing shall extend a minimum of 8" and a maximum of 24" above the roofline.

H. It is recommended that the finished ply of base flashing be run vertically to provide a selvage edge that will aid in achieving proper adhesion at the 3" vertical laps. If the sheet is run horizontally, the vertical laps must be a minimum of 6" and the selvage edge must be removed from the sheet or fully covered by the counterflashing. The finished flashing ply shall extend out onto the field of the roof as shown in the applicable manufacturer's standard construction details, and must be extended a minimum of 4" beyond the edge of the prior flashing plies. The flashing must be soundly adhered to the parapet, cant area, and roof surface to result in a minimum void, non-bridging construction.

I. Corner membrane flashings, such as "bow ties" for outside corners and "footballs" for inside corners or other membrane reinforcements are required to ensure that base flashing corners are sealed at cant areas. Alternate method of corner reinforcing: Install a smooth MB membrane reinforcement piece on the prepared corner substrate prior to final surfacing membrane. Refer to manufacturer's standard flashing details.

J. Install metal or other membrane counterflashing so that the counterflashing extends a minimum of four (4) inches below the nails or termination bar at the top edge of the flashing.

K. At locations to receive liquid applied flashings, as indicated on the project drawings:

1. Follow the written instructions for application of liquid-applied flashing provided by the roofing membrane manufacturer.

2. Prepare the substrate in a manner that is acceptable to the roofing membrane manufacturer. Substrate preparation includes, but is not limited to, removal of dirt and debris, treatment of surface and priming (if required by the liquid-applied flashing manufacturer).

3. Apply the base coat of liquid applied flashing to the substrate.

4. Install required reinforcing mesh into the base coat.

L. Apply the topcoat of liquid applied flashing over the reinforcing mesh and base coat. Extend the topcoat over and beyond the reinforcing mesh.

M. Refer to Section 07 72 00 and 07 92 00 for additional requirements.

3.13 SHEET METAL

A. Metal should not be used as a component of base flashing.

B. Fabricate and install all sheet metal materials as shown in applicable construction details. Refer to SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc.) for guidance on sheet metal treatments not addressed.

C. Use fastener types compatible with the sheet metal type to prevent galvanic corrosion.

D. Metal counterflashings shall have a minimum 4" face with a drip lip. Metal counterflashings for stucco, metal siding, or similar materials should be designed to receive and set as a base for those materials.

E. Metal termination bars shall be a minimum of 1/10" thick x 1" wide with preformed sealant edge lap. Bar should have 1/4" x 3/8" slotted holes on 4" centers to facilitate mechanical anchorage. Caulk all lips and sealant edges with high-grade elastomeric caulking sealant.

F. Metal flanges shall be a minimum of 3-1/2" wide for gravel stops or eave strips and 4" wide for projections and extensions through the roof. Gravel stop lip should be at least 3/4" high. Eave strip lips shall be at least 3/8" high for smooth surface built-up roofing.

G. Refer to Section 07 62 00 "Sheet Metal & Trim" for additional requirements.

3.14 CLEANING

A. Remove bituminous markings from finished surfaces.

B. In areas where the finished surfaces are damaged or discolored by the Work of this Section, consult the manufacturer of the surface for cleaning advice and conform to their instructions.

C. Repair or replace defaced or disfigured finishes caused by Work of this Section.

3.15 CERTIFICATE OF FINAL COMPLETION

A sample of the Certificate of Final Completion for roofing installation shall be completed.

END OF SECTION

SECTION 07 53 23
ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide and install a fully adhered Ethylene-propylene diene-monomer (EPDM) roofing membrane system over cover board over tapered rigid insulation after tear-off of the existing roofing membranes to expose the existing roof deck surface.

B. Provide a fully adhered, (nominal 60-mil) EPDM roof system. After installation of specified insulation and cover board, self-adhere or install the EPDM roofing membrane in bonding adhesive. Provide a for a 20-Year, “No Dollar Limit” (NDL) or equivalent for the roof system.

C. The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.

D. The roofing contractor shall confirm all given information and inform the Consultant, prior to bid, of any conflicts that will affect their cost proposal.

1.2 SUBMITTALS

A. Product Data:

1. Submit latest edition of manufacturer’s roofing and flashing specification, including list of materials proposed for use, installation procedures, manufacturers’ Product Data Sheets for products comprising the roof system assembly, and Material Safety Data Sheets for materials submitted.

2. Submit manufacturer’s warranty. Sample copies shall be signed by authorized parties signifying acceptance of warranty terms and conditions. Warranty shall be dated from the date of Substantial Completion.

B. Shop Drawings:

1. Submit manufacturer’s assembly letter detailing, products, slope, wind uplift information, and fastening patterns.

2. Submit manufacturer’s proposed installation details of roofing and flashing, including roof slopes, flashing details, penetration details, and accessories.

3. Submit manufacturer’s tapered insulation plan.

4. Submit shop drawings detailing roof configuration and sheet layout, perimeter details, tapered rigid insulation layout and any special edge conditions.

C. Samples:

1. Submit 4”x 4” samples of each sheet material to be installed.

D. Certifications: At completion of Work, the manufacturer shall inspect the Work and submit a Certificate of Final Completion.

E. Manufacturer’s Reports:

1. Submit roof manufacturer's review and approval of Contract Documents, concurrent with shop drawing submittal.

2. Submit manufacturer's acceptance of Project with warranty conditions concurrent with shop drawing submittal. Submittal shall include copies of the warranty documents stamped "draft" and signed by an authorized signatory of the roof membrane manufacturer.

F. Maintenance Data: Submit manufacturer's recommended maintenance procedures for roofing system, including precautions and warnings to prevent damage and deterioration to roofing system. Maintain copies of documentation on-site in the job Log. A bound copy shall be submitted independently to transfer to the Owner.

G. Warranty: Submit for inclusion into Operation and Maintenance Manuals in accordance with Division 01 Closeout Procedures.

H. Provide written documentation from roof manufacturer stating that roof installer is a manufacturer-approved or certified applicator for the proposed roofing system.

1.3 PRODUCT DELIVERY AND STORAGE

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.

C. Store membrane in the original undisturbed plastic wrap in a cool, shaded area. Membrane that has been exposed to the elements for approximately 7 days must be prepared as required by the membrane manufacturer before installation.

D. Store curable materials (adhesives and sealants) between 60°F and 80°F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60°F minimum temperature before using.

E. Store materials containing solvents in dry, well ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

F. Insulation must be on pallets, off the ground and tightly covered with breathable waterproof materials.

G. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.4 WORK SEQUENCE

A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

B. Do not disrupt activities in occupied spaces.

1.5 REFERENCES

A. Referenced Standards: These standards form part of this specification only to the extent they are referenced as specification requirements.

B. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2006.

C. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2013.

D. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.

E. ASTM D 4637 - Standard Specification for EPDM Sheet used in Single-Ply Roof Membrane; 2004.

F. ASTM D 4811 - Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing; 2004.

G. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.

H. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2012.

I. FM 1-28 - Design Wind Loads; Factory Mutual System; 2007.

J. FM 1-29 - Roof Deck Securement and Above Deck Roof Components; Factory Mutual System; 2006.

K. FM 4470 - Approval Standard - Class I Roof Covers; current version.

L. PS 1 - Construction and Industrial Plywood; 2009.

M. PS 20 - American Softwood Lumber Standard; 2010.

N. National Roofing Contractors Association (NRCA) – Low Slope Roofing and Waterproofing Manual, Current Edition.

O. Underwriters Laboratories (UL)

1. TGFU R1306 –“Roofing Systems and Material Guide”

2. UL-790 – Standard Test Method for Fire Tests of Roof Coverings.

P. Sheet Metal and Air-Conditioning Contractors National Association, Inc. (SMACNA).

1.6 DESIGN CRITERIA

A. Wind uplift performance:

1. Roof system is designed to withstand wind uplift forces as calculated using the current revision of ASCE-7.

B. Fire Resistance performance:

1. Roof system will achieve a UL Class A rating when testing in accordance with UL-790.

C. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.

1. Consultant has right to reject any new roofing with areas of ponding.

D. Building Codes:

1. Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

1.7 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installed not less than four (4) similar projects and 50,000 square feet of this roofing over the last five years. Roofing contractor shall submit evidence of applications by providing a list of projects, including project names, contact names, addresses and telephone numbers.

2. Approved by the manufacturer prior to the bidding period and throughout the installation and be able to present a copy of his certification upon request by the Consultant or Owner.

B. Manufacturer's Qualifications:

1. Must have a minimum of 20 year's experience manufacturing the roofing membranes specified.

2. Provide a factory trained technician for final inspection of the roofing system.

3. Provide a warranty upon satisfactory installation of the roofing system.

4. The installer shall not also act as the roof system manufacturer.

C. Pre-Installation Conference:

1. Prior to roofing installation, conduct Pre-Installation Conference at Project site in accordance with Division 01 Project Meetings.

2. Attendance: Owner's Representative, Roofing Contractor, Job Superintendent, roof manufacturer's Technical Representative, roof insulation manufacturer's Representative, subcontractors, Consultant, Safety Coordinator and Project Manager, if applicable.

D. Mock-up: Prior to Installation, provide mock-up of 100 square feet minimum for Consultant to review. Include typical details in the mock-up, including intersection, edge and corner conditions. Mock-up review may be concurrent with Pre-Installation Conference. Mock-up may be incorporated into the finish Work.

1.8 JOB CONDITIONS

A. Environmental Requirements:

1. Work shall only begin when the Contractor has decided to his satisfaction that all Specifications are workable as specified, and that the Contractor can meet project and Code requirements.

2. Do not begin Work when inclement weather is forecast to occur prior to the anticipated time of completion of the Work item.

3. The Contractor shall be responsible for verifying the existing and forecasted weather conditions to determine when the conditions are acceptable for roof Work.

4. Roof application shall not proceed when there is moisture present in any form on the deck including but not limited to rain, dew, ice, frost or snow.

5. Do not apply roofing membrane to a frozen deck.

6. The Contractor shall be prepared at all times to protect any uncompleted roof Work from the rapid changes in the weather. If Work continues during sudden rains to protect the interior of the building, then these areas shall be subsequently removed and replaced.

7. The Contractor shall observe the provisions regarding material storage and handling of the roofing products in cold weather.

B. Areas of the substrate where ponding water occurs shall be built up prior to the installation of the roof system.

C. Ensure that the roof deck is structurally sound to support the live and dead load requirements of the new roofing system and rigid enough to support construction traffic. Do not store or load the roof deck above its load capacity.

D. Slope: Roof shall slope at 1/4”/Ft. minimum, achieved in the deck structure as shown in the Drawings.

1.9 WARRANTY

A. Contractor: The roofing contractor shall provide a two-year workmanship and watertight warranty for roofing installation, including, flashings, sealants, fasteners, sheet metal, and accessories, to remain watertight and weatherproof. At a minimum, the contractor guarantee shall include the following:

1. Contractor name, address, phone number and project contact name.

2. The project completion date, and date of guarantee expiration.

3. The contractor guarantee shall include, in writing, all project work, workmanship, and/or all materials installed by the contractor or subcontractors to be of a quality that will comply with all project specific requirements of the Construction Documents and other documents governing the specified work and workmanship through the guarantee period.

4. The contractor shall investigate roof leaks during the guarantee period within a reasonable time period, but in no instance greater than 24-hours after notification of a leak. The contractor shall repair leaks determined to be the cause of the specified work at no cost to the Owner.

B. Provide a manufacturer 20-Year Total System, Non-Pro-Rated Warranty (including roofing membrane, insulation, underlayment and flashings) covering materials and labor. The warranty shall include the following additional items:

1. Roofing inspection by a technical representative of the roofing membrane manufacturer 12 months after date of Final Acceptance. The technical representative shall provide a report of the inspection to the Owner no later than 60 days after the inspection.

2. Roofing manufacturer shall provide unlimited repairs during the warranty period with no cost limitation.

3. Temporary emergency repairs may be made by the Owner without voiding warranty provisions. Permanent repairs shall be made in accordance with the requirements of the roofing membrane manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

A. All products (including insulation, fasteners, fastening plates, prefabricated accessories and edgings) must be manufactured and/or supplied by the roofing system manufacturer and covered by the warranty.

2.2 INSULATION / UNDERLAYMENT

A. Insulation shall consist of rigid polyisocyanurate insulation with tapered portions designed to fit roof conditions and adhered with approved adhesives.

1. Polyisocyanurate roof insulation; ASTM C1289, Type II, Class 1, Grade 2 (20 psi); HCFC-Free and Zero Ozone Depletion Potential (ODP); product type acceptable to the roofing membrane manufacturer.

2. Long Term Thermal Resistance (LTTR) Value: 5.6 minimum per inch.

3. Board Size: Bottom and top layers: 4-feet by 4-feet.

4. Tapered insulation: Refer to manufacturer tapered plan design.

   a. Minimum slope: 1/4-inch per foot.

   b. Maximum thickness of “fill” insulation boards shall be 2-inches.

5. Insulation Adhesives:

   a. Where specified, for adhering cover board, and bottom, intermediate, and top layer(s) of insulation, tapered insulation systems, and tapered insulation used in saddle and cricket construction where indicated in PART 3 of this Section: Low-rise urethane foam adhesive; product acceptable to the roofing manufacturer and is capable of meeting the specified wind uplift requirements.

B. Cover Board: Provide a water resistant and silicone treated gypsum panel with embedded fiberglass facer on both sides, and pre-primed on one side.

1. Cover Board thickness: ½-inch.

C. Underlayment: Self-adhering modified bitumen base sheet; product type acceptable to roofing manufacturer, and meeting or exceeding the following requirements:

1. The completed underlayment system shall have a minimum thickness of 40 mils. The underlayment system may consist of a single underlayment sheet with a minimum thickness of 40 mils.

2. Approved for use by the roofing membrane manufacturer on existing deck, and as an underlayment for the application of polyisocyanurate insulation with low-rise urethane foam adhesive.

3. Capable of achieving the wind uplift requirements for the project location within the specified roof system assembly.

D. Insulation fasteners:

1. For use were underlayment can not meet wind uplift requirements.

2. For mechanical attachment of polyisocyanurate insulation and/or cover board (where specified): Fluorocarbon coated or galvanized self-drilling screw and plate system; product type acceptable to the roofing manufacturer. Fastener length as necessary to penetrate through the cover board/insulation layer(s) and into the wood roof deck 1-inch, minimum.

a. Minimum insulation plate diameter: 3-inches.

b. Minimum fastener size: No. 14.

E. Batt Insulation and polyethylene:

1. For use at expansion joints and as indicated on Drawings.

2. Batt fiberglass insulation; R-Value of 3.1 per inch, minimum.

3. Polyethylene film: Fire-retardant, 12-mil thickness.

2.3 MEMBRANE

A. Provide a non-reinforced EPDM roofing membrane; fire resistant, cured, non-reinforced, nominal 60-mil thickness, black color; in compliance with ASTM D4637.

B. Acceptable Manufacturers:

1. Elevate (Firestone) “RubberGard” membrane by Holcim Elevate. www.holcimelevate.com

2. Carlisle “Sure-Seal” membrane by Carlisle Syntec Systems. www.carlislesyntec.com

3. Consultant approved equal.

2.4 FLASHING ACCESSORIES

A. Cleaner/primer: Product approved by roofing membrane manufacturer.

B. EPDM membrane splice system:

1. In-seam splice tape: Splice tape; minimum 6-inch width, product approved by the roofing membrane manufacturer.

2. Outer seam flashing stripping: EPDM pressure-sensitive flashing product, as indicated on the project drawings.

a. Minimum 4-inch width.

C. Perimeter reinforcement system:

1. Cleaner/primer: Product approved by roofing membrane manufacturer.

2. Reinforced perimeter fastening strip: Product approved by the roofing membrane manufacturer.

3. Fasteners and plates: Product approved by the roofing membrane manufacturer; 2-inch diameter plates and minimum #14 fasteners.

D. Perimeter EPDM membrane stripping:

1. For use at locations where perimeter edge fascia metal stripping is required:

a. Bottom stripping: EPDM pressure-sensitive flashing product, minimum 5-inch width. Top stripping: EPDM pressure-sensitive flashing product, minimum 9-inch width.

E. Related EPDM products:

1. Adhesives, cements, sealants, water cut-off mastics, prefabricated accessories, and other related items: Unless otherwise indicated, products manufactured by, or approved by the roofing membrane manufacturer.

F. Fasteners:

1. Roofing membrane and flashing fasteners: Unless otherwise indicated, types as required for project completion, and as recommended by the roofing membrane manufacturer and NRCA for the substrate condition encountered.

2.5 WALKWAY PADS

A. Walkway pads: Product approved by the roofing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that the surfaces and site conditions are ready to receive Work.

B. Verify that the deck is supported and secured.

C. Verify that the deck is cleaned and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.

D. Verify that the deck surfaces are dry and free of ice or snow.

E. Verify that all roof openings, curbs, pipes, sleeves, ducts, vents or other penetrations through the roof are solidly set, and that all flashings, tapered edges and cant strips, reglets, and treated wood nailers are secure and tight to the building as per this Specification.

F. The beginning of installation of the roof system signifies that the Contractor accepts the existing conditions as being in compliance with the requirements of this Specification.

3.2 PROTECTION

A. Protect any adjacent building surfaces against damage from the installation of the roofing system.

B. The Contractor shall observe fire and safety precautions as recommended by Asphalt Roofing Manufacturer's Association and the National Roofing Contractors Association as well as all applicable local fire and safety codes.

C. All debris from the roofing operations shall be removed daily from the roof deck and jobsite and disposed at an approved, suitable disposal site.

3.3 SURFACE PREPARATION

A. Installation of conduits or piping between the deck and the membrane is not acceptable and will render any guarantee invalid. All openings in the deck, curbs, or projections through the deck shall be completed before starting the application of the roof system.

B. The surface to receive roof systems shall be smooth, dry, clean, and free of sharp projections and depressions.

C. Roof decks must provide positive drainage. Outlets must be placed and installed to remove water promptly and completely from the roof.

D. Expansion joints, roof vents, roof drains, etc., must be installed using acceptable industry standards.

3.4 INSULATION PLACEMENT AND ATTACHMENT

A. Install insulation or membrane underlayment over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch. Stagger joints horizontally and vertically if multiple layers are provided.

B. Secure insulation to the substrate with the required mechanical fasteners or insulation adhesive in accordance with the manufacturer’s specifications to meet wind uplift requirements.

C. Do not install wet, damaged or warped insulation boards.

D. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joint or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.

E. Do not install any more insulation than can be waterproofed in one day.

F. Install temporary water cut-offs at the edges of insulation at the end of each workday.

G. Prior to installing the insulation, inspect the underside of the roof deck to determine if objects, such as sprinklers, lights, conduits, fans, or gas lines are attached to the deck. Exercise caution to ensure that insulation fasteners do not penetrate these objects.

3.5 BATT INSULATION INSTALLATION

A. Install polyethylene sheeting at locations indicated on the project drawings. Drape sheeting down and into expansion joints to match elevation of existing structural deck. Secure sheeting with fasteners spaced 12-inches o.c., maximum. Install unfaced batt insulation into the space created.

3.6 MEMBRANE PLACEMENT AND ATTACHMENT

A. Except as may be modified by the technical specifications and project drawings, install roofing membrane in accordance with the requirements and recommendations of the roofing membrane manufacturer, using the manufacturer's current printed instructions.

B. Do not use bituminous products in conjunction with EPDM materials. Petroleum-based products, grease, oil and solvents should not come in contact with the EPDM roof membrane system.

C. All membrane splicing and bonding surfaces must be clean and dry.

D. Install only as much roofing as can be completed in a workday, including flashing and detail work. All installed field seams shall be sealed to a watertight condition prior to leaving the site daily.

E. Sequence roofing work to eliminate the use of installed roofing as a walkway, or as a storage platform for materials.

F. Overnight tie-in: Care should be exercised to ensure that water does not flow beneath any existing or completed sections of the roof by temporarily sealing the loose edge of the membrane at the end of each workday and when the weather is threatening. The roofing membrane manufacturer's requirements should be followed closely. Under no circumstance shall the roofing contractor leave an open, unsealed roof system upon completion of daily work. The Owner reserves the right to engage the services of a third-party service provider as needed to correct roofing left open or unsealed at the completion of daily work. The cost of such corrective work shall be the responsibility of the contractor.

1. At the Pre-Construction Meeting, provide after-hours emergency contact phone numbers shall be provided for the project foreman and authorized contractor representative.

G. The contractor is responsible for providing temporary repairs to existing roof systems scheduled for replacement, caused by excessive foot or vehicle traffic, equipment or material storage, or other contractor-related activities. Repairs shall be sufficient to provide a watertight condition until the damaged area is replaced.

H. Remove debris from the roof daily prior to leaving the site. Inspect the site at ground level. Remove any roof replacement related debris from the ground.

I. Do not use open flame to dry the roof membrane or to heat the flashing materials.

J. Apply Bonding Adhesive in accordance with the manufacturer's published instructions, to the exposed underside of the membrane and the corresponding substrate area. Do not apply Bonding Adhesive along the splice edge of the membrane to be adhered over the adjoining sheet. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.

1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded section of the membrane sheet immediately after rolling the membrane into the adhesive with a soft bristle push broom to achieve maximum contact.

2. Fold back the unbonded half of the sheet and repeat the bonding procedures.

K. Position adjoining sheets to allow a minimum overlap of 4-inches.

3.7 PERIMETER REINFORCEMENT SYSTEM INSTALLATION

A. Install perimeter reinforcement strips at the base of walls, curbs, hatches, area transitions, elevation changes, where indicated on the project drawings, and other locations recommended by the roofing membrane manufacturer.

B. Prior to installation of roofing membrane, position the reinforcing cover strip adjacent to the wall/curb transition. Spot-adhere the strip to the underlying cover board as necessary to hold in place.

C. Secure the strip with specified fasteners and 2-inch plates 12-inches o.c. Position the plates in a manner that allows the reinforcing perimeter strip to extend 1/2-inch, minimum out beyond the plate toward the wall//curb transition.

D. At locations where horizontal placement of the reinforcing perimeter strip and securement into the underlying structural deck is not possible or desirable, contact the roofing membrane manufacturer for instructions related to alternate placement and securement methods.

E. Install the fully adhered membrane over the perimeter reinforcing strip, following the recommendations and requirements of the roofing membrane manufacturer for adhesion.

3.8 EPDM MEMBRANE SPLICE SYSTEM INSTALLATION

A. Ensure splice area is clean, dry and free of foreign material or contaminants.

B. Apply primer to the splice area as recommended by the roofing membrane manufacturer.

C. Install specified in-seam splice tape at field-spliced seams. Install in-seam splice system in accordance with roofing membrane manufacturer requirements. Position in-seam splice tape in a manner that allows a consistent 1/8-inch “bleed out” from overlying membrane sheet.

D. Set overlying EPDM roofing membrane sheet.

E. Complete an acceptable membrane seal in accordance with the manufacturer's requirements.

F. Membranes with manufacturer applied seaming tapes are acceptable.

G. Provide a manufacturer approved pressure sensitive cover strip over all membrane seams.

1. Minimum width: 4-inches.

3.9 FLASHINGS AND STRIPPINGS

A. Complete all flashings on a daily basis as the roof system work progresses.

B. Wall flashings: Install flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.

1. Follow manufacturer-generated details for flashing requirements at inside (90-degree) and outside (270-degree) corners of curbs and walls.

C. Roof curb and hatch flashings: Install flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.

1. Follow manufacturer-generated details for flashing requirements at inside (90-degree) and outside (270-degree) corners of curbs and walls.

2. Install pressure-sensitive flashing at the base seam(s) of curbs and roof hatches:

   a. Ensure seam area is clean, dry and free of foreign material or contaminants.

   b. Apply primer to the outerseam flashing area as recommended by the roofing membrane manufacturer.

   c. Where indicated, install specified outerseam flashing at seams. Position the outerseam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

D. Tubular penetration flashings: Install tubular penetration flashings as indicated on the project drawings and in accordance with the requirements and recommendations of the roofing membrane manufacturer.

1. Finished tubular penetration flashings shall be a minimum of 8-inches above the finished roof membrane elevation.

2. Install pressure-sensitive flashing at the base seam(s) of tubular penetrations:

   a. Ensure seam area is clean, dry and free of foreign material or contaminants.

   b. Apply primer to the outerseam flashing area as recommended by the roofing membrane manufacturer.

   c. Where indicated, install specified outerseam flashing at seams. Position the outerseam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

E. Pitch pan flashings:

1. Install pressure-sensitive flashing at pitch pan penetrations. Refer to Section 076205 for pitch pan fabrication requirements. Install flashings as indicated on the project drawings.

2. Install pressure-sensitive flashing at the base seam(s) of pitch pans:

   a. Ensure seam area is clean, dry and free of foreign material or contaminants.

   b. Apply primer to the outer seam flashing area as recommended by the roofing membrane manufacturer.

   c. Where indicated, install specified outer seam flashing at seams. Position the outer seam flashing over the center of the seam and install in accordance with the requirements of the roofing membrane manufacturer.

F. Sheet metal flange strippings:

1. Install pressure-sensitive flashing at perimeter edge metal flanges. Refer to Section 076205 for perimeter edge metal fabrication requirements.

   a. Install strippings as indicated on the project drawings.

G. Follow the additional requirements and recommendations of the roofing membrane manufacturer regarding flashing product installation.

3.10 MISCELLANEOUS INSTALLATIONS AND TREATMENTS

A. Return mechanical ventilator units to their original positions and secure to the existing curbs with EPDM-gasketed screws. Provide fasteners 12-inches, o.c., minimum, and within 2-inches of each end. Provide a minimum of two fasteners on each side of the curb.

B. Reconnect all electrical, plumbing, gas line and ventilation connections required to return mechanical units to their original operating condition. Retain a qualified, licensed electrical subcontractor to reconnect electrical equipment. Retain a qualified, licensed mechanical subcontractor to reconnect gas lines and ventilation connections. Coordinate required disconnections and reconnections with the Owner.

C. Walkpads: Install walkpads at locations indicated on the project drawings. Install in accordance with the requirements and recommendations of the roofing manufacturer.

D. Install splashblocks set on walkpads at locations indicated on the drawings.

E. Pitch pan fill materials: At locations indicated on the project drawings, provide pitch pans.

1. After completion of pitch pan flashing/stripping installation, fill bottom of pitch pan with specified non-shrink grout, as shown on the project drawings.

2. Complete pitch pan fill with pourable sealer. Install pourable sealer in a manner that does not allow for ponding water to collect on top of the completed pitch pan. If possible, tool or crown the sealer to create this condition.

F. Prefabricated plumbing vent pipe extensions:

1. Refer to manufacturer requirements and recommendations for installation.

2. Prior to flashing installation, seal intersection of pipe extension and existing plumbing vent.

3.11 CLEAN UP

A. Perform daily clean up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

3.12 FIELD QUALITY CONTROL

A. Consultants shall periodically inspect the project and observe the roof installation.

B. Roof manufacturer's technical personnel shall inspect the roof installation to verify compliance with manufacturer’s instructions and validate warranty. Submit copies of this report to the consultant.

C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

3.13 3CERTIFICATE OF FINAL COMPLETION

A. Provide a Certificate of Final Completion for roofing installation as a Closeout Submittal as noted in Section 01 77 00 “Closeout Procedures”.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Provide and install metal counter flashing, base of wall flashing, saddle flashing, door sill flashing, through wall flashing, electrical panel hoods, exterior HVAC units, ledger and beam flashing, chimney chase, crown and cap flashing as indicated on drawings and description of work.

B. Provide and install sheet metal downspouts and rainwater leaders and scuppers as indicated.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. ASTM A480/A480M, - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.

2. ASTM B32-03 - Standard Specification for Solder Metal.

3. ASTM D2247-99 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

4. ASTM D2905-97 - Standard Practice for Statements on Number of Specimens for Textiles.

B. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA): Architectural Sheet Metal Manual, Sixth Edition, 2003.

C. National Roofing Contractors Association: NRCA Roofing and Waterproofing Manual, 4th Edition.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data sheets for each product.

B. Shop Drawings:

1. On detailed shop drawings, indicate joints, types and locations of fasteners, shapes, sizes, expansion joints, special conditions, and installation procedure for each flashing condition.

2. Note critical dimensions, gauge and finish of sheet metal for each flashing condition.

C. Product Data: Provide for gutters and downspouts.

D. Samples: Submit samples of flashing shapes for Consultant’s approval prior to fabrication.

E. Warrantee.

1.4 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally-induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movement resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat-gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

C. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section Project Meetings.

C. Mock-Up: Prior to installation, provide mock-up for Consultant and Exterior Compliance Observer to review. Include typical details in the mock-up, including intersection, edge, and corner conditions. Mock-up review may be concurrent with Pre-Installation Conference. Mock-up may be incorporated into finish Work. Provide additional mock-ups of conditions for review as conditions arise during construction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leak proof, secure, and non-corrosive installation.

1.8 WARRANTY

A. Supply a written warranty dated for one (1) year from the date of Final Acceptance by the Owner or notice of completion, whichever occurs later. The warranty shall state that Work executed under this Section is free from defects of material and workmanship and that the

Contractor, at his own expense, shall repair and replace defective Work, or Work that becomes defective, during the term of the warranty.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Miscellaneous Sheet Metal Flashing: 2B finish cold rolled stainless steel 316 sheets 24 gauge.

B. Downspouts:

1. Reynold Building Product; Aluminum Raincarrier Systems, or Custom-Bilt Metals; Steel Rainware, or equal.

   a. Downspout: 2”x3” with applicable and necessary accessories.

   b. Colors: to match existing.

C. Gutters:

1. Gutter to match existing

2.2 FASTENERS

A. Nails: Stainless steel compatible with material fastened, slaters head annular ring shank, approximately 20 rings per inch. For washers use neoprene or EPDM, minimum 3/16” in thickness.

B. Screws:

1. Hex or Truss head stainless steel sheet metal screws with thread and point configuration for intended use, minimum #12 diameter.

2. Self-sealing, minimum 5/8” diameter, .060” EPDM Stainless steel sealing washer on all exposed fasteners.

C. Rivets: Stainless steel type, closed end, and size as required and as noted in the Contract Documents.

D. Concrete and Masonry Fasteners: Truss head, #304 Stainless steel, Type A sheet metal screw with minimum 5/8” diameter, .060” EPDM stainless steel sealing washer with zinc expansion anchor, FS FF-S-325, Group IV, Type II, as manufactured The Rawlplug Company.

2.3 ACCESSORIES

A. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed, non-corrosive, size and gauge required for performance, or as detailed in the Contract Documents.

1. 2B finish cold rolled stainless steel 316 sheets 24 gauge.

B. Sealant: Refer to Division 07 Joint Sealers for exterior sealant for nonporous and nonporous to porous materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrates are smooth and clean to extent needed for sheet metal installation.

B. Verify that reglets, nails, cants and blocking to receive sheet metal are installed and free of concrete and soil.

C. Do not start sheet metal Work until weather and site conditions are satisfactory.

D. Correct unsatisfactory conditions prior to start of Work.

3.2 FABRICATION - GENERAL

A. Fabricate Work in accordance with the Contract Documents. If a specific detail or portion thereof is not provided in the Contract Documents, fabricate in accordance with the SMACNA Architectural Sheet Metal Manual.

B. Shop-fabricate metal Work to the greatest extent possible.

C. Fabricate for waterproofing and weather-resistant performance, with expansion provisions for running Work, sufficient to permanently prevent leakage, damage, or deterioration of the Work. Form Work to fit substrates.

D. Make angle bends and folds for interlocking metal with full regard for expansion and contraction to avoid buckling or fullness in metal after installation.

E. Form materials with straight lines, sharp angles, smooth curves and true levels.

F. Avoid tool marks, buckling and oil canning. Do not damage paint finishes.

G. Fold back edges on concealed side of exposed edge to form hem.

H. Weld, solder, or seal and rivet joints on parts that are to be permanently and rigidly assembled.

I. Fabricate metal wall panels to accept drive cleats at vertical joints. Cross break to reduce oil canning.

J. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

3.3 INSTALLATION - GENERAL

A. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

B. Install fabricated sheet metal items in accordance with Contract Documents. If no detail is provided, submit detail to Consultant in accordance with the SMACNA Architectural Sheet Metal Manual for approval.

C. Install sheet metal with lines, rises, and angles sharp and true, and plane surfaces free from objectionable wave, warp, or buckle. Fold exposed edges of sheet metal back to form a "Q" hem on the concealed side from view.

D. Finished Work shall be free from water retention and leakage under all weather conditions.

E. The use of prefabricated corners or transitions is required at all changes in direction, elevation or plane and at all intersections.

F. Field joints shall be located not less than 12", or more than 3', from actual corner.

G. Anchor units of Work securely in place so as to prevent damage or distortion from wind or buckling.

H. Secure metal components with fasteners of a type and density detailed in the Contract Documents. Provide for thermal expansion of metal units, conceal fasteners where possible, and set units true to line and level as indicated.

I. Install Work with laps, joints, and seams which will be permanently watertight and weatherproof. Joints to be standing seam, S-pocket or flat-lock with sealant applied to the underside of the joint at pinholes.

J. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces with zinc chromate at locations of contact, or with other permanent separation as recommended in ASTM G 82. Do not use materials incompatible with roofing system.

K. Roof Penetration Flashing Pipes: Install at multiple pipes or conduit penetrating roof. Fully solder connections and seams.

L. Pan Flashings: Fully solder all connections and seams. Use folded end dams and end closures at flashing terminations; e.g., window heads and sills, flashing terminations and similar locations.

M. Counterflashing: Install where noted on Contract Documents. Fully solder connections and seams.

N. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant.

O. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

P. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates, with bituminous coating or other permanent separation.

3.4 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide ridge vents, attic vents, bathroom vents, dryer vents, kitchen exhaust vents, plumbing vents and other terminations through roof.

B. Section includes access hatches, roof access ladders, related fall protection, drain components, conduit and pipe supports, fire rated attic access doors and rooftop unit supports.

C. Not all products specified in this section will be required to complete work.

1. Refer to Consultant related to product inquiries.

1.2 SUBMITTALS

A. Product Data for each type of product specified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND MATERIALS

A. Refer to plans for ventilation types and locations. Not all products may be used.

B. Dryer, Bathroom, Kitchen metal stem vents Basis of Design products:

1. “Bath and Dryer Vent Shingle Roofs: by Lifetime Tool & Building Products, LLC. www.lifetimetool.com (877-904-1002

2. Norwesco, metal to match size of existing duct. All ducts to be tight-lined to exterior. No screens on dryer ducts.

3. Or Consultant approved equal.

C. Conduit and pipe support:

1. Adjustable prefabricated support, approved by Owner.

2. Product capable of accommodating the weight of the supported pipe at intervals recommended by the pipe support manufacturer.

D. Replacement roof drain components from Zurn, Josam, or JR Smith only.

1. Type and size per Sheet A0.2

2. Cast iron components.

3. Or Consultant approved equal.

E. Gutter Guards:

1. “K” and “A” Style Gutters:

a. Aluminum, factory notched edges
b. Painted or mill finish; refer to Owner for guard finish.

c. No roof penetration style
d. 4-foot lengths

2. For 6-inch Gutters:

a. “K Style Aluminum Gutter Guard” by Guttersupply.com (888) 909-7246 www.guttersupply.com

3. For 8-inch “A” (Box) Style Gutters:

a. “8-inch Commercial Gutter Guard” by Gutterbrush.com (888)-397-9433 www.gutterbrush.com

b. Lay-in brush style gutter guard

4. Or Consultant approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide sealed connections to duct work.

B. Comply with manufacturer's instructions and recommendations.

C. Coordinate with installation of roof deck and other substrates to receive accessory units.

D. Coordinate with vapor retarders, roof insulation, roofing, and flashing installation to ensure that combined elements are waterproof and weathertight.

E. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses, as well as inward and outward loading pressures.

F. Except as otherwise indicated, install roof accessory items according to construction details of NRCA "Roofing and Waterproofing Manual,” most current edition at Date of Bid.

G. Install wall anchors to comply with manufacturer's instructions and recommendations.

3.2 FIRE RATED ATTIC ACCESS DOORS:

A. Install at location shown on Drawings.

B. Install at recommended by manufacturer.

1. Integrate flange into existing drywall ceiling or attic wall.

3.3 CLEANING

A. Clean exposed surfaces according to manufacturer's instructions. Touch-up damaged coatings.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Joint sealants

1.2 SUBMITTALS

A. Product Data: For each joint-sealant product.

1.3 MOCK UPS

A. At start of project, perform mock-up of required sealant work at one area of building. Perform minimum of one mock-up for each different combination of substrates to be sealed. Coordinate mock-up areas with architect/engineer.

B. Install mock-ups and test in presence of sealant manufacturer's authorized representative and architect/engineer to ensure application procedures are consistent with warranty requirements.

C. After sealant has achieved sufficient cure as coordinated with manufacturer's representative, conduct adhesion pull-tests or non-destructive testing, at discretion of architect/engineer. Conduct tests in accordance with ASTM C1521.

1. Confirm results of adhesion tests as acceptable to architect/engineer and sealant manufacturer before starting work.

a. Leave approved mock-ups in place to establish standards and guidelines for acceptable application of sealant work and acceptable appearance.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Colors of Exposed Joint Sealants: As selected by Consultant from manufacturer's full range.

2.2 JOINT SEALANTS

A. Vertical surfaces – Joints and cracks to receive paint coating, including Window Air/Water Barrier Sealants: Elastomeric silyl-terminated polyether (hybrid) sealants. ASTM C 920, Type S, Grade S, Class 50, Verify compatibility with coating system.

1. Duralink

2. Dymonic 100

3. Masterseal 150

4. QuadMax

B. Horizontal Joints with Flashing in Concrete Joints: Elastomeric silyl-terminated polyether (hybrid) sealants. ASTM C 920, Type S, Grade NS, Class 35, Verify compatibility with coating system.

1. MasterSeal NP 2 or Similar.

C. Flashing in kerf cut of concrete:

1. Masterseal SL 2 or Similar

2.3 JOINT-SEALANT BACKING

A. Provide Cylindrical Sealant backings as recommended by the sealant manufacturer for intended application and with consideration to the adjacent components:

1. Closed Cell Backer Rod: ASTM C 1330, Type C (closed-cell material with a surface skin) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

   a. Manufactured by Nomaco or approved substitute.

2. Open Cell Backer Rod: ASTM C 1330, Type O. (cylindrical, flexible sealant backings composed of open cell material) and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

   a. Manufactured by Nomaco or approved substitute.

3. Bi-Cellular Backer Rod: TYPE: B - Per ASTM C 1330. Cylindrical, flexible sealant backings composed predominantly of bi-cellular material. Also reference ASTM C 717 for use as gasket or sealing material. TYPE: 3 -Per ASTM D 5249. Round rods of various diameters for use with non-sag and self leveling cold-applied joint sealants.

   a. Manufactured by Nomaco or approved substitute.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer:

1. 3M Bond Breaker Tape 8891 or Similar

2. Size appropriately for joint width

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints. Sealant application in backer rod joints or pre-finished surfaces are to be limited to the joint cavity by use of masking tape or other sealant manufacturer approved means.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove laitance and form-release agents from concrete.

2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated

END OF SECTION

SECTION 08 53 01
VINYL WINDOWS AND DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide replacement fixed or operable argon-filled vinyl windows with Low-E glazing and accessories for a complete installation.

B. Provide vinyl windows and sliding glass doors.

C. Provide insect screens for operable windows and sliding glass doors.

D. Provide mock-up of window and door flashing installed in-place for required reviews and water testing.

1.2 REFERENCES

A. References: Current edition at Date of Bid.

B. American National Standards Institute (ANSI):

1. ANSI Z97.1 Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

C. American Society for Testing and Materials (ASTM):

1. ASTM A36/A36M Standard Specification for Carbon Structural Steel.

2. ASTM C1036 Standard Specification for Flat Glass.

3. ASTM C1048 Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

4. ASTM D4216 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly (Vinyl Chloride) (CPVC) Building Products Compounds.

5. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

6. ASTM E283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

7. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

8. ASTM E413 Standard Classification for Rating Sound Insulation.

9. ASTM E547 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.

10. ASTM E773 Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.

11. ASTM E774 Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

12. ASTM F588 Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.

13. ASTM E1105- Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference

D. Consumer Product Safety Commission (CPSC):

1. CPSC 16CFR-1201 Safety Standard for Architectural Glazing Materials.

E. National Fenestration Rating Council (NFRC):

1. NFRC 100-91 Procedure for Determining Fenestration Product Thermal Properties.

2. NFRC 200 Procedure for Determining Solar Heat Gain Coefficient.

F. American Architectural Manufacturers Association (AAMA):

1. AAMA 1503.1 Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections.

2. AAMA 1504 Thermal Performance of Residential Windows and Sliding Glass Doors.

1.3 SYSTEM DESCRIPTION

A. System Performance Requirements: Provide window units that comply with requirements specified, as demonstrated by certified testing.

B. Design Requirements (for windows only; sliding glass doors under cover may have different requirements):

1. Comply with structural performance, air infiltration, and water penetration requirements indicated in AAMA/NWWDA 101/I.S. (latest edition) for product type, and performance class, and performance grade required.

a. Design Pressure Calculations and Testing Requirements.

1) Verify that Design Pressure is = or < 45psf (see Structural Sheet S0.1 for actual loads)

2) Performance Grade: 45

3) Performance Class: LC

4) Minimum Structural Pressure: 67.5 psf.

5) Water infiltration tests:

a) MANUFACTURER'S LAB TEST: No water ingress when tested in accordance to ASTM E 547 at a pressure differential of 6.75 psf.

b) FIELD TEST: No water ingress when tested in accordance to ASTM E1105 at a pressure differential of 4.5 psf.

6) Air infiltration: Air infiltration rate shall not exceed 0.3cfm / sq. ft., when tested in accordance with ASTM E283 at a pressure differential of 1.57 psf.

7) Mullion and Frame Deflection: As per NCTL test data report NS2010-367 dated 6/01/10

C. Testing: Provide testing and reports as per ASTM 1105 test procedures that demonstrate compliance with the above design requirements.

1. Re-Tests: Contractor to pay/reimburse for re-testing due to window unit or installation failures. Re-tests include testing the unit again and testing one additional unit.

D. Forced Entry Resistance: Window units to comply with requirements for Performance Level 10 when tested in accordance with ASTM F 588.

1.4 SUBMITTALS

A. Product Data:

1. Submit manufacturer's product literature for all products and accessories furnished and window performance testing results.

2. Installation Instructions: Submit manufacturer's installation instruction sheets for all products and accessories furnished.

B. Shop Drawings:

1. Submit detail drawings indicating direction of operating sash, location and type of glazing material, typical jamb, head, and sill details and special mullion reinforcement details.

2. Submit window schedule showing dimensions, style, and location of window units.

C. Samples: Submit color samples of vinyl finish.

D. Quality Control Submittals: Submit installer’s qualifications and reference list as specified under Quality Assurance article below.

E. Closeout Submittals:

1. Operation and Maintenance Manual: Submit bound manual clearly identified with Project name, location, and completion date. Identify type and size of window units installed. Provide recommendations for periodic inspections, care and maintenance. Identify common causes of damage with instructions for temporary patching until permanent repair can be made.

2. Warranty: Submit for inclusion in Operation and Maintenance Manuals.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company having at least 10 years of experience in the manufacture of vinyl window products. Manufacturer must provide appropriate test reports certifying compliance with water penetration and other AAMA hallmark 101 certifications.

B. Installer Qualifications: Company experienced in the installation of vinyl window products. Installer to provide a reference list of at least three projects of similar scale and complexity successfully completed during the past three years. Provide project names, locations,

completion dates, names and telephone numbers of General Contractor's and Owner's contact person.

C. Safety Glazing:

1. Comply with safety glazing requirements of CPSC 16CFR 1201 (where required by Code).

2. Refer to Drawings for locations of safety glazing, including but not limited to glazing locations within 24” arc of either vertical edge of a door where the exposed edge of the glazing is less than 60” above the walking surface and hazardous locations identified in section 2406 of the IBC.

3. Prior to fabrication, notify Owner and Consultant of locations where safety glazing is required but may not be shown on Drawings.

4. It is the responsibility of the window manufacturer to determine whether tempered glass is required at each location.

D. Insulating Glass Units: Provide insulating glass units permanently marked with certification label of Insulating Glass Certification Council (IGCC) indicating compliance with Class CBA.

E. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Project Meetings. Review methods and procedures related to vinyl windows including, but not limited to, the following:

1. Inspect and discuss condition of substrate and other preparatory Work performed by other trades.

2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review required testing and inspecting procedures.

F. Mock-up: Prior to Installation, provide mock-up for Consultant review. Include typical details in the mock-up including intersection, edge, and corner conditions. Mock-up review may be concurrent with Pre-Installation Conference. Mock-up may be incorporated into the finish Work.

1. Coordinate with Related Sections.

a. Division 07 Section Thermal Insulation.

b. Division 07 Section Weather Resistive Barrier.

c. Division 07 Section Sheet Metal Flashing and Trim.

d. Division 07 Section Joint Sealants.

G. Testing Requirements: The Owner will retain a qualified testing agency

H. Field Demonstration: In conjunction with mock-up and pre-installation conference, perform a field demonstration to confirm trades’ ability to execute the enclosure details.

1. Consultant will identify a location for a field demonstration of the window/door installation procedure.

2. The window/door manufacturer is to be present during the Field Demonstration.

3. The window/door installation will be tested by the Owner for water penetration. See Section 6 below.

4. The window/door manufacturer will review the field demonstration and confirm in writing within three (3) days that the warranty remains intact and has not been voided by improper installation methods or procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. In addition to general delivery, storage, and handling requirements of the manufacturer, comply with the following:

1. Deliver materials to job site in sealed, unopened cartons. Protect uncartoned set-up multiple units from rubbing.

2. Identify each carton with material name, date of manufacture, and lot number.

3. Store windows and accessories off ground, under cover, protected from weather and construction activities.

4. Support during storage and handling to prevent damage to nail fin.

1.7 PROJECT CONDITIONS

A. Install windows in strict accordance with safety and weather conditions specified by manufacturer's product literature.

B. Use extra caution when temperature drops below 32 degrees F., and extreme care below 0 degrees F.

C. Field Measurements: Verify window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 WARRANTY

A. Warranty: Provide manufacturer’s lifetime warranty to the original Owner. Provide manufacturer’s 10-year warranty to any subsequent Owner for glass. Provide manufacturer’s 15-year warranty to any subsequent Owner for hardware. Warranty shall include coverage of materials and labor in full by the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Window Manufacturers:

1. VPI Endurance windows and Bellevue SGD’s

2. Prime Window Systems (Series varies depending on window operation)

3. Alternates must be approved by Consultant and Owner.

B. Energy Values: Subject to compliance with energy calculations, provide products with the following, or approved equal:

1. Weighted U-value: 0.30 maximum.

C. Finishes:

1. Manufacturer's standard finish as approved by Owner and Consultant.

2. Color: Refer to sheet A0.

2.2 MATERIALS

A. Vinyl Extrusions: Continuous tubular vinyl extrusions. All main frame and sash corners mitered and heat-welded.

B. Fasteners: Manufacturer's standard and/or other materials warranted to be non-corrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Provide manufacturer's standard fasteners where required.

2. Except for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

3. Provide metal backing for all hardware attachments.

4. Provide details for any locations where hardware and/or fasteners penetrate weep channels.

C. Anchors, Clips, Reinforcing Bars and Window Accessories: Manufacturer's standard with sufficient strength to withstand design pressures indicated.

2.3 ACCESSORIES

A. Weather-stripping: Manufacturer's standard EPDM or santoprene glazing gaskets at each edge of each operable sash or ventilator. Special note: All glazing shall be accomplished from the inside of the window.

B. Insect Screens: Provide manufacturer’s standard at operable openings.

a. Compliance: ASTM D 3656 and SMA 1201.

b. Screen Cloth: Black Vinyl-coated fiberglass, 18/16 mesh

c. Set in aluminum frame.

d. Complete with necessary hardware.

e. Screen Frame Finish: Baked enamel.

1) Color: TBD by Owner.

C. Hardware: Manufacturer's standard sash lock. Manufacturer’s standard restraining hardware to limit openings.

D. Groove Fillers: At jambs and sills, to provide smooth surface to receive joint sealant.

E. Trickle Vents: Provide factory supplied “trickle vents” in all windows in sleeping rooms and at least one window in common areas.

2.4 GLAZING

A. General: Insulating glass units certified through the Insulating Glass Certification Council as conforming to the requirements of IGCC Class CBA when tested in accordance with ASTM E 773 and E 774. Provide dual-sealed units consisting of polyisobutylene primary seal and silicone secondary seal. Metal spacers to have bent or soldered corners.

B. Pre-glazed Fabrication: Pre-glaze windows where possible and practical for applications indicated. Comply with Division 08 Section Glazing, and AAMA 101.

C. Tempered Glass: ASTM C 1048

D. Breather Tubes: For glazing units that are fabricated over 2,500' in elevation difference than the site elevation, glazing units shall have breather tubes or other measures, as recommended by the manufacturer.

2.5 HARDWARE

A. Hardware to manufacturer's standard. Type and finish to be selected by Consultant from manufacturer's full range.

B. Projects in close proximity to coastal environments shall have all 316 Stainless Steel hardware and/or manufactures "coastal package" to reduce the risk of corrosion.

2.6 FABRICATION

A. Fabrication: Fabricate windows to comply with indicated standards. Include complete system for assembly of components and anchorage of windows. Provide units that are re-glazable without dismantling sash or ventilator framing.

B. Weep holes: Provide weep holes and internal passages to conduct and direct infiltrating water to the exterior. Weep glazing pockets, horizontal mullions and sill frame components directly to the exterior without directing water across intermediate joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspect opening before installation is commenced.

1. Verify concrete surfaces are dry and free of excess mortar, aggregate, sand and other construction debris.

2. Verify rough opening or masonry opening is square and dimensions are correct. Verify sill plate is level.

3. Verify metal frame and wood frame walls are dry, clean, sound and well-fastened, and/or glued, free of voids and/or without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of rough opening.

B. Correct unsatisfactory conditions. Start of Work indicates acceptance of conditions as satisfactory.

3.2 PREPARATION

A. Open carton and remove window and all parts. Inspect window. Verify that window is not damaged and all parts are included before disposing of carton.

B. Close and lock operating sash.

C. Coordinate mock-ups with related Sections.

3.3 INSTALLATION

A. Install window units, hardware, operators, accessories and other window components according to window manufacturer's installation instruction sheets.

B. Set units in general accordance with ASTM 2112 and manufacturer's installation instructions. Install all units plumb, level true to line, without warp or rack in frames or sash. Anchor securely in place per manufacturer's written instructions.

C. Set sill members in a bed of compound or with joint fillers or gaskets to provide weather tight construction. Coordinate installation with wall flashings and other components of the work. See Drawings for wall and window flashing details and Window Flashing Construction Sequence prior to window installation.

D. Proceed with window installation only after mock-up of window and flashing integration has been approved by Consultant.

E. Adjust sash and hardware to provide tight fit at contact points and weather-stripping, for smooth operation and weathertight closure.

3.4 EXTERIOR FINISHING

A. Hold back exterior siding or other finish materials from edge of window to allow for expansion and contraction and the installation of a proper sealant joint with backing materials.

B. Seal perimeter of window after exterior finish is applied in accordance with the requirements of Division 07 Joint Sealants.

3.5 ACCESSORIES

A. Insect Screens: Install screens according to window manufacturer's instructions.

B. Extension Jambs: Install extension jambs according to window manufacturer's instructions.

3.6 FIELD QUALITY CONTROL

A. Window Site Test(s): Four to six windows will be selected based on operation, elevation and phases of project completion:

1. Field Test: Provide field testing of window and installation within a mock-up of the surrounding assembly in accordance with ASTM E1105 to pressure noted in Section 4 B above.

2. Testing protocol for window testing: 4 cycles of 5 minutes with 1-minute break between each cycle. Total of 24 minutes.

3. The Consultant and Window Testing Agency shall select the window(s) to be tested. If unit(s) fail to meet requirements, the reason for failure shall be determined and agreed-upon repairs shall be made to the window unit(s). Repairs to windows or installed window assemblies due to failure to meet test requirements will be paid for by the Contractor.

4. The Owner will employ a qualified firm for window testing. The agency will be selected by Owner and window manufacturer and subject to the Owner's agreement.

5. The Owner will pay costs for initial test(s). Any subsequent re-testing due to failure of initial test(s) will be paid for by Contractor.

6. Field test of windows shall be provided on a Contractor built wall mock up installation of a single operable window. Mock up shall simulate the rain-screen siding installation. Testing of remaining windows shall be accomplished at 25-30% of project completion - well prior to installation of remainder of windows and siding to assess suitability of window and window installation.

3.7 CLEANING

A. Clean vinyl surfaces promptly after installation to remove dirt. Avoid damage to finishes. Use cleaning materials specifically recommended by window manufacturer. Leave window units in closed and locked position.

B. Remove excess glazing and sealant compounds, dirt and other substances.

C. Remove debris from work site.

D. Protect interior and exterior of window units until structure is sealed from the weather.

E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

END OF SECTION

SECTION 08 61 00
EXTERIOR DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Fiberglass framed glass doors with painted exterior and interior finish:

1.2 SUBMITTALS

A. Reference Section 01 33 00 – Submittal Procedures; submit following items:

1. Product Data.

2. Shop Drawings: Include door schedule, door elevations, sections and details, and multiple unit assembly details.

3. Quality Assurance/Control Submittals:

   a. Qualifications: Proof of manufacturer's qualifications.

   b. U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.

   c. Manufacturer's Installation Instructions.

1.3 QUALITY ASSURANCE

A. Overall Standards: Comply with ANSI/AAMA/101/I.S.2, except as otherwise noted herein.

B. Qualifications:

1. Manufacturer Qualifications:

   a. Minimum five years' experience in producing fiberglass doors.

   b. Member AAMA, NFRC.

C. Regulatory Requirements:

D. Certifications for insulated glass doors:

1. AAMA: Doors shall be Silver Label certified with label attached to frame per AAMA requirements.

2. NFRC: Doors shall be NFRC certified with temporary U-factor label applied to glass and an NFRC tab added to permanent AAMA frame label.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Reference Section 01 330 Submit manufacturer's product literature for all products and accessories furnished and window performance testing results.

B. Follow manufacturer's instructions on label applied to doors.

1.5 WARRANTY

A. Residential Special Warranty:

1. Full Lifetime Warranty including glass breakage to original homeowner.

2. Transferability:

   a. Permit unlimited transfer of ownership in first ten years.

   b. Upon first transfer of ownership, warranty period shall become ten years from date of original purchase.

3. Guarantee windows against defects in materials and workmanship including costs for parts and labor. Wood veneer surfaces are required to be finish coated per manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Thermu-Tru Smooth-Star or Fiber-Classic

B. Codel Textured or Smooth Fiberglass Collection

C. Consultant approved alternate

2.2 GENERAL PERFORMANCE REQUIREMENTS

A. Thermal Performance: Comply with NFRC 100. U =0.30

B. Air Leakage, Water Resistance, Structural Test: Comply with ANSI/AAMA/101/I.S.2.

C. Fiberglass: AAMA 305 glass fiber reinforced thermoset profile.

D. Forced-Entry Resistance: Comply with ASTM F 842-04.

E. STC Rating = High

2.3 DOOR TYPES

A. Entry Doors

1. Door Style: Refer to Scope of Work and Component Replacement Schedule Sheet A0.2

   a. Match existing door swing unless noted otherwise.

2. Frames:

   a. Provide rot resistant jambs typical.

3. Hardware:

   a. Lock: Standard dead bolt and locked knob. Provide Accessible levers at all required Accessible units.

   b. Hinges: High performance commercial grade ball bearing hinges; finish to match handle set.

4. Weatherstripping:
    a. Foam filled bulb seal.
    b. Rubber dual-fin sill sweep.
5. Threshold:
    a. Meet all applicable code standards for threshold height and dimensions.
    b. Additional standards may apply to Accessible units.

2.4 GLAZING

A. Insulated Glass Units: ASTM E 774, Class A, minimum 7/8 inch (22 mm) thick overall:
    1. Glazing Type: Clear/SunCoat® Low-E

2.5 SOURCE QUALITY CONTROL

A. Inspect doors in accordance with manufacturer's Quality Control Program as required by AAMA Silver Label certification.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings in which doors will be installed. Openings shall be square, level, and plumb.
    1. Verify that fasteners in framed walls are fully driven and will not interfere with door installation.
    2. Verify that sill is flat and level.

3.2 INSTALLATION

A. Install doors in framed walls in accordance with manufacturer's installation instructions.
    1. Flash head and jambs in accordance with AAMA 2400-10.
    2. Install metal one piece soldered and sloped sill pans under thresholds integrated with deck waterproofing system where applicable. Do not penetrate pans with threshold fasteners. Shim threshold to allow drainage between threshold and pan.

B. Do not remove temporary labels.

3.3 ADJUSTING

A. Adjust operating panels and hardware for smooth operation and tight fit with weatherstripping.

3.4 CLEANING

A. Remove temporary labels and retain for Closeout Submittals.

B. Clean soiled surfaces and glass using a mild detergent and warm water solution with soft, clean cloths.

END OF SECTION

SECTION 08 90 00
LOUVERS AND VENTS

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

A. Provide new PVC through-wall caps and duct adapters, as necessary, to replace existing dryer, bathroom, and kitchen vents.

1.2 SUBMITTALS

A. Product Data.

1.3 QUALITY ASSURANCE

A. AMCA Test Standard: For louvers with specified air performance, water penetration, and air leakage ratings, provide units whose ratings have been determined in compliance with AMCA Standard 500.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND MATERIALS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equivalent:

1. Primex Manufacturing: 3888 Sound Way, PO Box 9754, Bellingham, WA 98227. Tel 360-332-3100.

    a. Wall Cap Provide WC series Exhaust Vent Caps. Vents are designed for “Rain-screen” wall applications. (NS = no screen; for use at dryer vent applications). Provide size as appropriate for duct size. Color to be selected from manufacturer’s full range.

    b. **If painting vents**, provide manufacturer recommended primer prior to field painting.

2. For through wall ports for portable AC units:

    a. Aldes – Airlet 200, Round Self-Regulating Fresh Air Inlet

    b. Or Consultant approved equal

3. Foundation/Crawlspace vents

    a. Fire Rated: BrandGuard Vents, FV2011-FF

    b. Non Fire Rated: AirVent Plastic Foundation Vent

    c. Or Consultant Approved equal.

B. Materials: As follows:

1. Primex: Injected Molded Plastic

2. Galvanized Steel Sheet: ASTM A 526 or A 527, G90, mill-phosphatized.

3. Fasteners: Of same basic metal and alloy as metal fastened, non-corrosive or compatible with vent product.

C. Finish: Provide manufacturer's full range of colors

1. Prime and paint to match adjacent siding color.

PART 3 - EXECUTION

3.1 PREPARATION

A. Field Measurements: Verify size, location and placement of louver units prior to fabrication.

B. Prepare existing duct for fitting to new vent shroud.

3.2 INSTALLATION

A. Seal with appropriate mechanical tape and/or sealant to provide a tight-fitting connection to existing duct work.

B. Locate and place louver units plumb, level, and in proper alignment with adjacent work.

C. Use concealed anchorages where possible.

D. Form closely fitted joints with exposed connections accurately located and secured.

E. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

END OF SECTION

SECTION 09 29 00
GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide gypsum wallboard, plain and fire-rated, exterior grade, water-resistant, backing board and cement board in thicknesses detailed, to walls, partitions, ceilings, and soffits, attached to wood and metal stud framing according to industry standards.

B. Provide tape, metal trim, reveal moldings, fasteners, sealants, accessories, and insulation Work as shown and specified.

C. Finishing of gypsum wallboard, taping, filling and sanding.

D. Fire-rated duct enclosures and shaft walls.

E. Fire Resistance Ratings: Provide gypsum drywall construction fire resistance ratings indicated, conforming to assemblies tested per ASTM E 119 by inspecting and testing organization acceptable to authorities having jurisdiction.

1.2 DEFINITIONS

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.3 SUBMITTALS

A. Product Data: Manufacturer's published descriptive literature for gypsum board types, trim accessories, and control joints pertinent to this Section.

B. Warranty: Submit in accordance with Division 01 Section Closeout Procedures, for incorporation into Operation and Maintenance Manuals.

1.4 QUALITY ASSURANCE

A. Fire-Resistance Rated Assemblies: Provide materials and construction identical to those tested in assembly indicated according to ASTM E 1219 by an independent testing agency.

B. STC-Rated Assemblies: Provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

C. Mock-ups: Before beginning gypsum board installation, install one mock-up for Consultant's review of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Apply or install final decoration indicated, including texture and painting, on exposed surfaces for review of mock-ups.

2. Simulate finished lighting conditions for review of mock-ups.

3. Approved mock-ups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Installer Qualifications: Company specializing in Work of this Section, with minimum five (5) years documented experience in commercial quality Work of comparable scope. Recommended as qualified installer by NWCB, or approved by Consultant prior to Bid

E. Regulatory Requirements:

1. Conform to requirements for tested fire-rated assemblies.

a. GA 600, Fire Resistance Design Directory.

b. UL, Fire Resistance Directory, or Warnok Hershey International (WH).

c. IBC, including Tables 7A, 7B, and 7C.

d. ICBO, Evaluation Reports and Standards.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide gypsum board and related products by one of the following:

1. Georgia Pacific Corp.

2. United States Gypsum Co.

3. Approved alternative in accordance with Division 01 Product Substitution Procedures and Division 01 Substitution Request Form.

2.2 MATERIALS

A. Gypsum Board (GWB): Provide gypsum board of types indicated, thickness 5/8” unless noted otherwise, in maximum lengths available to minimize end joints:

1. Regular and Type X, at rated assemblies, tapered edges, ASTM C 36, thickness as indicated, UL labeled, and ICBO approved for fire resistive systems, as required by Code.

2. Type C, at rated assemblies, tapered edges, ASTM C 36, thickness as indicated, UL labeled, and ICBO approved for fire resistive systems, as required by Code.

B. Gypsum Backing Board for Multi Layer Applications:

1. ASTM C 442 or A 36, thickness as indicated. Type X for fire resistance rated assemblies.

C. Exterior Glass Fiber Reinforced Gypsum Board (Densglass-Gold):

1. Densglas-Gold, or Dens-Glass Gold Fireguard by Georgia-Pacific, Fiberock by U.S. Gypsum, GlasRock by BPB America, Inc, or approved alternative, complying with ASTM C79, ASTM C-1177, ASTM C 931, and ASTM E 136 when tested in accordance with ASTM E 119.

2. Non-Rated and Fire Rated Assemblies: 5/8 inch, Type X, at rated assemblies, UL labeled and ICBO approved for fire resistive systems, as required by Code.

D. Cement Board (Green Board):

1. 5/8 inch, Durock Cement Board by U.S.G., Dens-Armor Plus by Georgia-Pacific, or approved equal. ICBO approved for moisture areas, with woven glass fiber mesh facing as indicated or required by Code.

2. Comply with ANSI A118.9.

3. Type X, UL labeled, and ICBO approved for fire resistive systems, as required by Code.

E. Exterior Gypsum Soffit Board: ASTM C 931, with manufacturer's standard edges, in thicknesses indicated.

Type: 5/8" DensGlass sheathing by Georgia-Pacific.

2.3 FASTENERS AND ACCESSORIES

A. Trim Accessories: ASTM C 840: manufacturer's standard trim accessories, including cornerbead and edge trim of beaded type with face flanges for concealment in joint compound except where semi finishing or exposed type is indicated.

1. Provide corner bead formed from zinc alloy.

2. Provide zinc alloy cornerbead and edge trim for exterior gypsum board.

3. Provide one piece control joints with 1/4 inch wide by 7/16 inch deep slot, covered with removable tape, of roll formed zinc or extruded vinyl as recommended by gypsum board manufacturer.

4. As recommended by manufacturer.

B. Gypsum Board Joint Treatment Materials:

1. ASTM C 475 and ASTM C 840, and as follows: Tape and compound shall be of one manufacturer.

2. Joint Tape: Paper reinforcing tape, unless otherwise indicated.

   a. Use open weave glass fiber tape where recommended by manufacturer with use of setting type joint compound.

3. Setting Type Joint Compound: Factory prepackaged, job mixed chemical hardening powder products formulated for uses indicated.

4. Drying Type Joint Compounds: Factory prepackaged vinyl based products complying with the following requirements:

   a. Ready Mix Formulation: Factory premixed.

   b. Job Mixed Formulation: Powder product, mixed with water at Project Site.

   c. Taping compound formulated for embedding tape and first coat over fasteners and flanges of corner beads and edge trim.

   d. Topping compound formulated for fill (2nd) and finish (3rd) coats.

   e. All purpose compound formulated for use as both taping and topping compound.

C. Miscellaneous Materials: As follows, recommended by gypsum board manufacturer:

1. Laminating Adhesives: Product recommended by gypsum board manufacturer.

2. Fastening Adhesive for Wood: ASTM C 557.

3. Gypsum Board Screws: ASTM C 1002.

4. Gypsum Board Nails: ASTM C 51

5. Concealed Acoustical Sealant: Comply with requirements specified in Section 07900 Joint Sealants.

6. Sound Attenuation Blankets: ASTM C 665, Type I, unfaced mineral fiber blanket insulation.

7. Resilient Metal Channels: Unimast “RC Deluxe” or approved alternative.

D. Fasteners: Screws, U.S. Gypsum, or approved, conforming to ASTM C1002. Bugle or pan head, and lengths as required to secure materials in place. Fasteners in high moisture areas to be stainless steel, hot dipped galvanized, or coated to provide corrosion resistance to 2,000 hour salt spray resistance test. High moisture areas are those areas noted as required for Green Board / Cement Board on plans. Execution

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that framing is accurately spaced and aligned. Correct framing members out of alignment, bowed or warped, to provide true, plumb, surfaces before applying gypsum board.

3.2 INSTALLATION - GENERAL

A. Install materials in accordance with ASTM C 840 and GA 216, manufac¬turer's instructions, requirements of regulatory agencies, and as shown.

B. Provide resilient channels and resilient isolation hangers in accordance with manufacturer’s recommendations, acoustical specifications, and as shown and specified.

3.3 INSTALLATION - WALLBOARD

A. Apply gypsum board first to ceilings and then to partitions. Apply vertically to partitions. Joints on opposite sides of same partition shall occur on different studs. Install gypsum board in moderate contact, not forced into place. Joints that do not fall over framing members shall be rejected.

B. Apply gypsum board as close as possible to floor surface to provide full backing for resilient base. If floor level is inconsistent creating voids greater than 1/4 inch, mud in voids to align flush with face of gypsum board.

C. Attach gypsum board to framed panel edges and interme¬diate supports with screws at 12 inches on center for ceilings, and 16 inches on center for partitions.

D. Accessories: Provide corner beads at vertical and horizontal external corners. Provide metal trim where gypsum board abuts partition or ceiling of dissimilar construction.

E. Form "floating" construction for gypsum boards at internal corners, except where special isolation or edge trim is indicated.

F. Isolate drywall construction from abutting structural and masonry Work; provide edge trim and acoustical sealant as recommended by manufacturer.

G. Install water resistant backing board where indicated to receive finishes at tubs, showers, and similar "wet" areas.

H. Install exterior gypsum board for exterior ceilings and soffits where indicated.

I. At roof gypsum ceilings, install a strip of Tyvek® Commercial Wrap at the interface between the weather resistive barrier and the gypsum ceiling to maintain continuity of air barrier. Seal all penetrations at roof gypsum ceiling to prevent air infiltration. Use foam gasket tape for airtight gypsum board application.

J. Screw gypsum board to wood and metal supports.

K. Screw both layers to supports where double layer Work is indicated or otherwise required.

L. Direct Bonding: Comply with manufacturer's recommendations where gypsum board is indicated to be directly bonded to substrate.

M. Do not bridge building expansion joints. Leave space of the width indicated between boards, and trim both edges for installation of sealant or gasket.

3.4 FINISHING - GENERAL

A. Finish gypsum wallboard in accordance with the Northwest Wall and Ceiling Bureau Manual and as follows:

1. Level 1 for areas totally concealed from view in the finished Work, including partitions above ceilings to underside of structure above.

2. Level 2 for substrate surfaces of other Work.

3. Level 3 for egress stairways and storage, mechanical, electrical, communications, and maintenance areas.

4. Level 4 for surfaces to receive interior finishes (refer to Division 09).

B. Prime paint gypsum board, with PVA vapor retarder specified in Division 09 Section Paints and Coatings, before and after application of texture coat.

3.5 FINISHING - JOINTS

A. Apply joint tape and joint compound at joints, fasteners and metal trim in accordance with GA 216, and NWCB requirements for Level 4 finish. Apply compounds indicated below at accessory flanges, penetrations, fastener heads and surface defects.

1. Install compound in three coats, and prefill of cracks where recommended by manufacturer, sand between coats.

a. Embedding and First Coat: Ready mix drying type all purpose or taping compound.

b. Fill (Second) Coat: Ready mix drying type all purpose or topping compound.

c. Texture Finish Coat: Apply high solids content, flat primer of type recommended by manufacturer of texture finish. Finish shall be non-asbestos type. Spray texture shall be light "orange peel" at all exposed surfaces.

d. Texture Finish Coat: Sand finish coat when dry to leave surface flush and ready for painting specified in Division 09 Section Paints and Coatings.

B. Treat water resistant gypsum backing board joints with tape and setting type joint compound to comply with gypsum board manufacturer's directions.

C. Finish exterior gypsum soffit board with tape and setting type joint compound to comply with gypsum board manufacturer's directions.

D. Provide taping and finishing using proper hand tools such as broad knives or trowels with straight and true edges or mechanical tools designed for this purpose.

E. Seal screw heads at water-resistant gypsum board ¬with waterproof sealer.

F. Reinforce joints, corner beads and metal trim with tape. Center tape on joint and seat in joint compound. Apply skim coat to cover tape. Allow tape to dry before second coat is applied.

G. Apply second coat of joint compound over embedding coat, cover tape and feather 2 inches beyond edges leaving joint flush.

H. When second coat is dry apply third thin coat of finishing compound, feathered 2 inches beyond second coat.

I. Finish nail, screw depressions, gouges, and scratches with three (3) coats of joint compound. Leave surface of gypsum board flush, smooth, and free of tool marks and ridges.

J. Fire tape only, gypsum board surfaces in ceil¬ing plenums. Finish other gypsum board sur¬faces in accordance with manufacturer's recommend¬ations.

K. With final application of joint compound and sand¬ing, leave gypsum board surfaces uniformly smooth to comply with NWCB Finish Level 4.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on exterior substrates.

1.2 SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

PART 2 - PRODUCTS

2.1 PAINT, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.

C. Colors: TBD by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Wood: 15 Percent

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 APPLICATION

A. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.3 CLEANING AND PROTECTION

A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.4 EXTERIOR PAINTING SCHEDULE

A. Wood Substrates: Glued-laminated construction.

1. Latex over Alkyd Primer System:

a. Prime Coat: Primer, alkyd for exterior wood.

1) Product: Exterior Oil-Based Wood Primer; Sherwin Williams.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen.

1) Product: SuperPaint Exterior Latex; Sherwin Williams.

B. Wood Substrates: Wood trim, previously painted wood trim.

1. Latex over Latex Primer System:

a. Prime Coat: Primer, latex for exterior wood.

1) Product: Exterior LatexWood Primer; Sherwin Williams.

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen.

1) Product: SuperPaint Exterior Latex; Sherwin Williams.

C. Pre-Primed Fiber Cement Products:

1. Latex System:

a. Prime Coat: Factory applied

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen.

1) Product: SuperPaint Exterior Latex; Sherwin Williams.

D. Polymer Resin Vent Hoods:

1. Latex System:

a. Prime Coat: Exterior latex primer for plastic

1) Product: Kem Aqua Bonding Primer for Plastics; Sherwin Williams

b. Intermediate Coat: Latex, exterior, matching topcoat.

c. Topcoat: Latex, exterior, low sheen.

1) Product: SuperPaint Exterior Latex; Sherwin Williams.

E. Miscellaneous Metal and Structural Steel:

1. Metal - (Structural Steel Columns, Joists, Trusses, Beams, Miscellaneous and Ornamental Iron, Structural Iron, Ferrous Metal).

    a. Urethane System; Solvent Base, Semi-Gloss Finish:

        1) 1st Coat: S-W Macropoxy 646-100 Fast Cure Epoxy, B58 Series (7.0-13.5 mils wet, 5.0-10.0 mils dry per coat). (Data Page)

        2) 2nd Coat: S-W Hi-Solids Polyurethane Semi-Gloss, B65-350 Series. (Data Page)

        3) 3rd Coat: S-W Hi-Solids Polyurethane Semi-Gloss, B65-350 Series. (4.5-8.0 mils wet, 3.0-5.0 mils dry per coat).

F. Brick/CMU or similar surfaces:
1. Elastomeric paint
    a. 1st coat: Sherwin Williams Loxon Conditioner
    b. 2nd Coat: Sherwin Williams Loxon XP 14.5-18.5 wet mills per coat.
    c. 3rd Coat: Sherwin Williams Loxon XP 14.5-18.5 wet mills per coat.

END OF SECTION