

PROJECT MANUAL  
including Specifications

(ROOF REPLACEMENT)

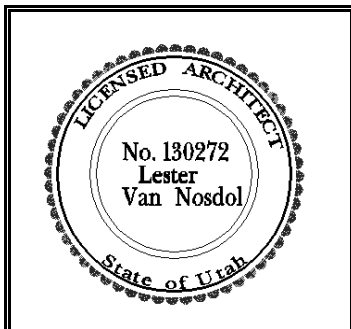
FOR

**BONNEVILLE 10, 11, 13**

1498 East 800 South  
Provo, UT 84601

Property No.  
529456815010101

March 2017



Prepared By:

**RVA ARCHITECTS, INC.**

32 West Center St. Suite #203  
Provo, Utah 84601  
(801) 374-2100



PROJECT DIRECTORY

Owner: Corporation of the Presiding Bishop  
of the Church of Jesus Christ of Latter-day Saints  
A Utah Corporation Sole  
50 East North Temple Street  
Salt Lake City, UT 84150

Project Manager: American Fork Project Management Office  
110 E. Main St.  
American Fork, UT 84003  
801-763-4520

Facilities Manager: Provo South FM Group  
1600 North 900 East  
Provo, UT 84603  
801-370-6890

Architects: RVA Architects, Inc.  
32 West Center St. #203  
Provo, UT 84601  
801-374-2100

Roofing: JSR Services  
475 E. Fort Union Blvd.  
Midvale, UT 84047  
801-748-1764

Structural: CKR Engineers  
1295 N. State. St.  
Orem, UT 84057  
801-222-0922

End of Project Directory



# TABLE of CONTENTS

## PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP

### INTRODUCTORY INFORMATION

PROJECT TITLE PAGE  
PROJECT DIRECTORY  
TABLE OF CONTENTS

### DIVISION 00: PROCUREMENT AND CONTRACTING REQUIREMENTS

#### PROCUREMENT REQUIREMENTS SUBGROUP

##### 00 1000 SOLICITATION

INVITATION TO BID

##### 00 2000 INSTRUCTIONS FOR PROCUREMENT

INSTRUCTIONS TO BIDDERS

##### 00 3000 AVAILABLE INFORMATION

INFORMATION AVAILABLE TO BIDDERS

##### 00 4000 PROCUREMENT FORMS AND SUPPLEMENTS

CONSTRUCTION MATERIAL ASBESTOS STATEMENT

#### CONTRACTING REQUIREMENTS SUBGROUP

##### 00 5000 CONTRACTING FORMS AND SUPPLEMENTST

CONTRACTOR BID PROPOSAL AND R&I PROJECT AGREEMENT (US)

##### 00 7000 CONDITIONS OF THE CONTRACT

SUPPLEMENTARY CONDITIONS FOR BID PROPOSAL AND R&I PROJECT AGREEMENT (US)

## SPECIFICATIONS GROUP

### GENERAL REQUIREMENTS SUBGROUP

### DIVISION 01: GENERAL REQUIREMENTS

#### 01 1000 SUMMARY

01 1000 SUMMARY  
01 1200 MULTIPLE CONTRACT SUMMARY  
01 1400 WORK RESTRICTIONS

#### 01 3000 ADMINISTRATIVE REQUIREMENTS

01 3000 ADMINISTRATIVE REQUIREMENTS  
01 3100 PROJECT MANAGEMENT AND COORDINATION



01 3300 SUBMITTAL PROCEDURES  
01 3500 SPECIAL PROCEDURES

**01 4000 QUALITY REQUIREMENTS**

01 4000 QUALITY REQUIREMENTS  
01 4301 QUALITY ASSURANCE - QUALIFICATIONS  
01 4523 TESTING AND INSPECTION SERVICES

**01 5000 TEMPORARY FACILITIES AND CONTROLS**

01 5000 TEMPORARY FACILITIES AND CONTROLS

**01 6000 PRODUCT REQUIREMENTS**

01 6100 COMMON PRODUCT REQUIREMENTS  
01 6200 PRODUCT OPTIONS  
01 6600 DELIVERY, STORAGE AND HANDLING REQUIREMENTS

**01 7000 EXECUTION AND CLOSEOUT REQUIREMENTS**

01 7000 EXECUTION REQUIREMENTS  
01 7400 CLEANING AND WASTE MANAGEMENT  
01 7700 CLOSEOUT PROCEDURES  
01 7800 CLOSEOUT SUBMITTALS

**FACILITY CONSTRUCTION SUBGROUP**

**DIVISION 02: EXISTING CONDITIONS: NOT USED**

**DIVISION 03: CONCRETE**

**03 4000 PRECAST CONCRETE**

03 4800 PRECAST CONCRETE SPECIALTIES

**DIVISION 04: MASONRY: NOT USED**

**DIVISION 05: METALS: NOT USED**

**DIVISION 06: WOOD, PLASTICS, AND COMPOSITES**

**06 1000 ROUGH CARPENTRY**

06 1011 WOOD FASTENINGS  
06 1100 WOOD FRAMING

**DIVISION 07: THERMAL AND MOISTURE PROTECTION**

**07 2000 THERMAL PROTECTION**

07 2123 LOOSE-FILL INSULATION

**07 3000 STEEP SLOPE ROOFING**

07 3113 ASPHALT SHINGLES

**07 6000 FLASHING AND SHEET METAL**

07 6210 GALVANIZED STEEL FLASHING AND TRIM





07 6310 STEEP SLOPE ROOF FLASHING: ASPHALT TILE  
07 6311 METAL SOFFIT PANELS  
07 6321 ALUMINUM FASCIA

**07 7000 ROOF AND WALL SPECIALTIES AND ACCESSORIES**

07 7123 MANUFACTURED GUTTERS & DOWNSPOUTS  
07 7226 RIDGE VENTS – WITH ATTACHMENT

**07 9000 JOINT PROTECTION**

07 9213 ELASTOMERIC JOINT SEALANTS

**DIVISION 08: OPENINGS: NOT USED**

**DIVISION 09: FINISHES**

**09 9000 PAINTS AND COATINGS**

09 9001 COMMON PAINTING AND COATING REQUIREMENTS – WITH ATTACHMENT  
09 9111 EXTERIOR PAINTED ALUMINUM  
09 9112 EXTERIOR PAINTED FERROUS METAL  
09 9113 EXTERIOR PAINTED GALVANIZED METAL

**DIVISIONS 10 THROUGH 19: NOT USED**

**FACILITY SERVICES SUBGROUP**

**DIVISIONS 20 THROUGH 29: NOT USED**

**SITE AND INFRASTRUCTURE SUBGROUP**

**DIVISION 30 THROUGH 39: NOT USED**

**PROCESS EQUIPMENT SUBGROUP**

**DIVISIONS 40 THROUGH 49: NOT USED**

END OF TABLE OF CONTENTS



# INVITATION TO BID (U.S.)

---

**1. CONTRACTORS INVITED TO BID THE PROJECT:**

<b>BC Builders</b>	<b>Majestic Builders</b>
<b>Broderick &amp; Henderson</b>	<b>SRFCO</b>
<b>Dynamic Construction</b>	<b>Warner Construction</b>
<b>Gines Construction</b>	

**2. PROJECT:****Bonneville 10, 11, 13 Roof Replacement****3. LOCATION:****1498 East 800 South  
Provo, UT****4. OWNER:****Corporation of the Presiding Bishop of  
The Church of Jesus Christ of Latter-day Saints,  
A Utah Corporation Sole  
50 East North Temple Street  
Salt Lake City, Utah 84150****5. CONSULTANT:****RVA Architects, Inc.  
32 W. Center St. #203  
Provo, UT 84601  
801-374-2100****6. DESCRIPTION OF PROJECT:**

A. Roof replacement to include cutting along ridge to install ridge venting. Removal of steeple to waterproof steeple platform and reinstall steeple. Replace soffit and fascia, verify attic ventilation. Draft stop wall to be extended to ridge line. Provide additional 6" of blown-in insulation. Structural repair on web bracing, truss and rafter connections, light cove and overbuild framing.

B. Products or systems may be provided under a Value Managed Relationship (VMR) the Owner has negotiated with the supplier. VMR products and systems are indicated as such in the specifications.

**7. PRE-BID CONFERENCE:** A pre-bid conference will be held on **Thursday, March 30, 2017** @ **9:00 am** at the site located at 1498 East 800 South Provo, UT.

**8. TYPE OF BID:** Bids will be on a lump-sum basis. Segregated bids will not be accepted.

**9. TIME OF SUBSTANTIAL COMPLETION:** The time limit for substantial completion of this work will be 60 calendar days and will be as noted in the Agreement.

**10. BID OPENING:** Sealed bids will be accepted until **2:00 pm, Thursday, April 13, 2017**. Bids will be publicly opened at that time at the American Fork PM office located at 110 East Main Street American Fork, UT.

**11. BIDDING DOCUMENTS:**

A. Bidding Documents may be examined at the following plan room locations:

- 1. Mountainlands Area Plan Room  
3560 South 583 West, Suite 4**



**Salt Lake City, UT 84115**

**801-288-1188**

[www.mapronline.com](http://www.mapronline.com)

2. **McGraw Hill/Dodge Area Plan Room**  
<http://dodgeprojects.construction.com>

12. **BIDDER'S QUALIFICATIONS:** Bidding by the Contractors will be by invitation only.
13. **OWNER'S RIGHT TO REJECT BIDS:** Owner reserves the right to reject any or all bids and to waive any irregularity therein.

END OF DOCUMENT



# **INSTRUCTIONS TO BIDDERS** (U.S.)

---

## **1. DOCUMENTS:**

- A. Bidding Documents include Bidding Requirements and proposed Contract Documents. Proposed Contract Documents consist of:
  - 1) Contractor Bid Proposal and Project Agreement (U.S.)
  - 2) Other documents included by reference
  - 3) Addenda.
- B. Bidding Requirements are those documents identified as such in proposed Project Manual.
- C. Addenda are written or graphic documents issued prior to execution of the Contract which modify or interpret the Bidding Documents. They become part of the Contract Documents as noted in the Contractor Bid Proposal and Project Agreement (U.S.) upon execution of the Agreement by Owner.

## **2. BIDDER'S REPRESENTATIONS:**

- A. By submitting a bid proposal, bidder represents that
  - 1) Bidder has carefully studied and compared Bidding Documents with each other. Bidder understands the Bidding Documents and the bid is fully in accordance with the requirements of those documents,
  - 2) Bidder has thoroughly examined the site and any building located thereon, has become familiar with local conditions which might directly or indirectly affect contract work, and has correlated its personal observations with requirements of proposed Contract Documents, and
  - 3) Bid is based on materials, equipment, and systems required by Bidding Documents without exception.

## **3. BIDDING DOCUMENTS:**

- A. Copies
  - 1) Owner will provide the Bidding Documents as set forth in the Invitation to Bid.
  - 2) Partial sets of Bidding Documents will not be issued.
- B. Interpretation or Correction of Bidding Documents
  - 1) Bidders will request interpretation or correction of any apparent errors, discrepancies, and omissions in the Bidding Documents.
  - 2) Corrections or changes to Bidding Documents will be made by written Addenda.
- C. Substitutions and Equal Products
  - 1) Equal products may be approved upon compliance with Contract Document requirements.
  - 2) Base bid only on materials, equipment, systems, suppliers or performance qualities specified in the Bidding documents.
  - 3) Where a specified product is identified as a "quality standard", products of other manufacturers that meet the performance, properties, and characteristics of the specified "quality standard" may be used without specific approval as a substitute.
- D. Addenda. Addenda will be sent to bidders and to locations where Bidding Documents are on file no later than one week prior to bid opening or by fax no later than 48 hours prior to bid opening.





**4. BIDDING PROCEDURES:**

- A. Form and Style of Bids
  - 1) Use Owner's Bid Form titled "Contractor Bid Proposal and Project Agreement (U.S.)".
  - 2) Bid will be complete and executed by authorized representative of Bidder.
  - 3) Do not delete from or add to the information requested on bid form.
  
- B. Submission of Bids
  - 1) Submit bid in sealed opaque envelope containing only bid form.
  - 2) It is bidder's sole responsibility to see that its bid is received at or before the specified time. Bids received after specified bid opening time may be returned to bidders unopened.
  - 3) No oral, facsimile transmitted, telegraphic, or telephonic bids, modifications, or cancellations will be considered.
  
- C. Modification or Withdrawal of Bid
  - 1) Bidder guarantees there will be no revisions or withdrawal of bid amount for 45 days after bid opening.
  - 2) Prior to bid opening, bidders may withdraw bid by written request or by reclaiming bid envelope.
  - 3) Prior to bid opening, bidder may mark and sign on the sealed envelope that bidder acknowledges any or all Addenda.

**5. CONSIDERATION OF BIDS:**

- A. Opening Of Bids - See Invitation to Bid.
  
- B. Acceptance Of Bid
  - 1) No bidder will consider itself under contract after opening and reading of bids until Owner accepts Contractor's Bid Proposal by executing same.
  - 2) Bidder's past performance, organization, subcontractor selection, equipment, and ability to perform and complete its contract in manner and within time specified, together with amount of bid, will be elements considered in award of contract.

**6. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:**

- A. Agreement form will be "Contractor Bid Proposal and Project Agreement (U.S.)" provided by Owner.

**7. MISCELLANEOUS:**

- A. Pre-Bid Conference. A pre-bid conference will be held Thursday, March 30, 2017 @ 9:00 am at the job site located at 1498 East 800 South Provo, UT.
  
- B. Examination Schedule for Existing Building and Site
  - 1) John Tolman 801-370-6890

END OF DOCUMENT



## **INFORMATION AVAILABLE TO BIDDERS** (U.S.)

---

### **1. ASBESTOS-CONTAINING MATERIAL (ACM)**

- A. The building upon which work is being performed has been examined for asbestos-containing material. There have been no materials identified as containing asbestos in the areas of the building being worked on as part of this Project.

END OF DOCUMENT



# CONSTRUCTION MATERIAL ASBESTOS STATEMENT (U.S.)

**PROJECTS FOR:  
CORPORATION OF THE PRESIDING BISHOP OF  
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS**

Building Name: Bonneville 10, 11, 13

Building Plan Roof Replacement

Type: \_\_\_\_\_

Building Address: 1498 East 800 South Provo, UT

Building Owner: Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole.

Project Number: 529456815010101

Completion Date: \_\_\_\_\_

As PROJECT CONSULTANT and principal in charge; based on my best knowledge, information, inspection, and belief; I certify that on the above referenced Project, no asbestos-containing building materials were specified in the construction documents or given approval in shop drawings or submittals.

\_\_\_\_\_  
Project Consultant and Principal in Charge (signature)                      Date

\_\_\_\_\_  
Company Name

As GENERAL CONTRACTOR in charge of construction; based on my best knowledge, information, inspection, and belief; I affirm that on the above-referenced Project, no asbestos-containing building materials were used in the construction.

\_\_\_\_\_  
General Contractor (signature)                      Date

\_\_\_\_\_  
Company Name



# CONTRACTOR BID PROPOSAL AND PROJECT AGREEMENT (U.S.)

Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole, ("Owner") and the undersigned Contractor ("Contractor") enter into this *Contractor Bid Proposal and Project Agreement (U.S.)* ("Agreement") and agree as follows:

1. **Property/Project.**

Property/Project Number: 529456815010101  
Property Address ("Project Site"): 1498 East 800 South Provo, UT  
Project Type: Roof Replacement  
Project Name ("Project"): Bonneville 10, 11, 13  
Stake Name: Provo UT Bonneville

2. **Scope of the Work.** Contractor will furnish all labor, materials, and equipment necessary to complete the Work in accordance with the Contract Documents. The Work is all labor, materials, equipment, construction, and services required by the Contract Documents.

3. **Contract Documents.** Contract Documents consist of:

- a. This Agreement;
- b. Supplementary Conditions for Bid Proposal and Project Agreement (U.S.);
- c. The Specifications (Division 01 and Divisions 03, 06, 07, 09);
- d. Drawings entitled and dated Reroof for Bonneville 10, 11, 13;
- e. Addendum No. with date(s) \_\_\_\_\_; and
- f. All written Field Changes, written Construction Change Directives and written Change Orders when prepared and signed by Owner and Contractor.

4. **Compensation.** Owner will pay Contractor for performance of Contractor's obligations under the Contract Documents the sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_). This is the Contractor's Bid Proposal Amount.

5. **Payment.**

- a. If the Contractor's Bid Proposal Amount is over \$100,000 or if otherwise requested by Owner, Contractor will submit to Owner a schedule of values which allocates the Contractor's Bid Proposal Amount to various portions of the Work. This schedule, when accepted by Owner will be used as a basis for reviewing Contractor's payment requests.
- b. Not more than once each month, Contractor will submit a payment request to Owner. Owner will pay Contractor for work completed within thirty (30) days after Owner receives:
  - 1) Contractor's payment request for work to date;
  - 2) a certification by Contractor that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the current payment request; and
  - 3) releases of all mechanics' liens and claims of subcontractors, laborers, or material suppliers who supplied labor and/or materials for the Work covered by the payment request.
  - 4) updated Construction Schedule.
- c. Owner may modify or reject the payment request if, in Owner's opinion, the Work for which payment is requested is not acceptable or is less complete than represented on the payment request.

6. **Extras and Change Orders.** Owner may order changes in the Work by altering, adding to, or deducting from the Work. In the event of such a change, Contractor's compensation and/or the time of completion will be adjusted to reflect the change. Contractor will not commence work on any change until either: (a) Contractor and Owner have agreed in writing to the amount of the adjustment resulting from the change; or (b) Owner has issued a written order for the change acknowledging that there is a dispute regarding the compensation adjustment relating to the change. If Contractor proceeds with a change in the Work without complying with the preceding sentence, Contractor agrees that it will not be entitled to any additional compensation for such change.





7. **Correction of Work.** Contractor will promptly correct, at its own expense,
  - a. any portion of the Work which
    - 1) fails to conform to the requirements of the Contract Documents, or
    - 2) is rejected by the Owner as defective or because it is damaged or rendered unsuitable during installation or resulting from failure to exercise proper protection.
  - b. any defects due to faulty materials, equipment, or workmanship which appear within a period of one year from the date of Substantial Completion or within such longer period of time as may be prescribed by law or the terms of any applicable special warranty required by the Contract Documents.
  
8. **Time of Completion.** Contractor will complete the Work and have it ready for Owner's inspection within Sixty (60) calendar days from Notice to Proceed issued by Owner. Time is of the essence. If Contractor is delayed at any time in the progress of the Work by any act or neglect of Owner, or by changes in the Work, or by strikes, lockouts, unusual delay in transportation, unavoidable casualties, or acts of nature beyond Contractor's control, then the time for completion will be extended by the time that completion of the Work is delayed. However, Contractor expressly waives any damages for any such delays other than those delays willfully caused by Owner.
  
9. **Permits, Surveys, and Taxes.** Contractor will obtain and pay for all permits and licenses, and also pay any applicable taxes. Contractor will also obtain and pay for any surveys it needs to perform the Work. Contractor will conform to all ordinances and covenants governing the Project Site and/or Work.
  
10. **Compliance with Laws.** Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public authorities relating to performance of the Work.
  
11. **Payment of Subcontractors and Materialmen.** Contractor will promptly pay for all labor, materials, and equipment used to perform the Work.
  
12. **Contractor's Insurance.** Prior to performing any work, Contractor will obtain and maintain during the term of this Agreement the following insurance:
  - a. Workers Compensation Insurance.
  - b. Employers Liability Insurance with minimum limits of the greater of \$500,000 E.L. each accident, \$500,000 E. L. disease-each employee, \$500,000 E.L. disease-policy limit or as required by the law of the state in which the Project is located.
  - c. Commercial General Liability Insurance – ISO Form CG 00 01 (12/07) or equivalent Occurrence policy which will provide primary coverage to the additional insureds (the Owner and the Architect) in the event of any Occurrence, Claim, or Suit with:
    - 1) Limits of the greater of: Contractor's actual coverage amounts or the following:
      - a) \$2,000,000 General Aggregate;
      - b) \$2,000,000 Products - Comp/Ops Aggregate;
      - c) \$1,000,000 Personal and Advertising Liability;
      - d) \$1,000,000 Each Occurrence; and
      - e) \$50,000 Fire Damage to Rented Premises (Each Occurrence)
    - 2) Endorsements attached to the General Liability policy including the following or their equivalent:
      - a) ISO Form CG-25-03 (05/09), Amendment of Limits of Insurance (Designated Project or Premises) describing the Agreement and specifying limits as shown above.
      - b) ISO Form CG 20 10 (07/04), Additional Insured – Owners, Lessees, Or Contractors (Form B), naming Owner and Architect as additional insureds.
  - d. Automobile Liability Insurance, with:
    - 1) Combined Single Limit each accident in the amount of \$500,000 or Contractor's actual coverage, whichever is greater; and
    - 2) Coverage applying to "Any Auto" or its equivalent.

Contractor will provide evidence of these insurance coverages to Owner by providing an ACORD 25 (2010/05) Form or its equivalent: (1) listing Owner as the Certificate Holder and Additional Insured on the general liability and any excess liability policies, (2) listing the insurance companies providing coverage (all companies listed must be rated in A.M. Best Company Key Rating Guide-Property-Casualty and each



company must have a rating of B+ Class VII or higher), (3) attaching the endorsements set forth above for the Certificate of Liability Insurance, and (4) bearing the name, address and telephone number of the producer and signed by an authorized representative of the producer. (The signature may be original, stamped, or electronic.) Notwithstanding the foregoing, Owner may, in writing and at its sole discretion, modify these insurance requirements.

13. **Independent Contractor Relationship.** The parties expressly agree that Contractor is not an agent or employee of Owner but is an independent contractor solely responsible for all expenses relating to Contractor's business.
14. **Comply with Intellectual Property Rights of Others.** Contractor represents and warrants that no Work (with its means, methods, goods, and services attendant thereto), provided to Owner will infringe or violate any right of any third party and that Owner may use and exploit such Work, means, methods, goods, and services without liability or obligation to any person or entity (specifically and without limitation, such Work, means, methods, goods, and services will not violate rights under any patent, copyright, trademark, or other intellectual property right or application for the same).
15. **Confidentiality / Property Rights.**
  - a. Owner will retain ownership and intellectual property rights in all plans, designs, drawings, documents, concepts, and materials provided by or on behalf of Owner to Contractor and to all work products of Contractor for or relative to Work performed under this Agreement, such products, services, and Work of Contractor constituting works made for hire. Contractor will not reuse any portions of such items provided by Owner or developed by Contractor for Owner pursuant to this Agreement, or disclose any such items to any third party without the prior written consent of Owner. Owner may withhold its consent in its' absolute discretion.
  - b. In addition, Contractor shall ensure that Contractor, Subcontractors, and the employees, agents and representatives of Contractor and its Subcontractors maintain in strict confidence, and shall use and disclose only as authorized by Owner all Confidential Information of Owner that Contractor receives in connection with the performance of this Agreement. Notwithstanding the foregoing, Contractor may use and disclose any information to the extent required by an order of any court or governmental authority, but only after it has notified Owner and Owner has had an opportunity to obtain reasonable protection for such information in connection with such disclosure. For purposes of this Agreement, "Confidential Information" means:
    - 1) The name or address of any affiliate, customer or contractor of Owner or any information concerning the transactions of any such person with Owner;
    - 2) Any information relating to contracts, agreements, business plans, budgets or other financial information of Owner to the extent such information has not been made available to the public by the Owner; and
    - 3) Any other information that is marked or noted as confidential by the Owner at the time of its disclosure.
16. **Ownership and Use of Renderings and Photographs.** Renderings representing the Work are the property of Owner. All photographs of the Work, whether taken during performance of the Work or at completion, are the property of the Owner. The Owner reserves all rights including copyrights to renderings and photographs of the Work. No renderings or photographs shall be used or distributed without written consent of the Owner.
17. **Public Statements Regarding Work or Property.** Contractor will not make any statements or provide any information to the media about the Work or Property without the prior written consent of Owner. If Contractor receives any requests for information from media, Contractor will refer such requests to Owner.
18. **No Commercial Use of Transaction or Relationship.**
  - a. Without the prior written consent of Owner, which Owner may grant or withhold in its sole discretion, neither Contractor nor Contractor's affiliates, officers, directors, agents, representatives, shareholders, members, Subcontractors, or employees shall make any private commercial use of their relationship to Owner or the Work or Property, including, without limitation:
    - 1) By referring to this Agreement, Owner, or the Work or Property verbally or in any sales, marketing or other literature, letters, client lists, press releases, brochures or other written materials except as may



- be necessary for Contractor to perform Contractor's obligations under the terms of this Agreement;
- 2) By using or allowing the use of any photographs of the Work or any part thereof, or of any service marks, trademarks or trade names or other intellectual property now or which may hereafter be associated with, owned by or licensed by Owner in connection with any service or product; or
  - 3) By contracting with or receiving money or anything of value from any person or commercial entity to facilitate such person or entity obtaining any type of commercial identification, advertising or visibility in connection with the Work or Property.

- b. Notwithstanding the foregoing, Contractor may include a reference to Owner and the services and equipment provided under this Agreement in a professional résumé or other similar listing of Contractor's references without seeking Owner's written consent in each instance; provided, that such reference to Owner, the services and equipment is included with at least several other similar references and is given no more prominence than such other references.

19. **Indemnity and Hold Harmless.**

- a. Contractor will indemnify and hold harmless Owner and Owner's representatives, employees, agents, architects, and consultants from and against any and all claims, damages, liability, demands, costs, judgments, awards, settlements, causes of action, losses and expenses (collectively "Claims" or "Claim"), including but not limited to attorney fees, consultant fees, expert fees, copy costs, and other costs and expenses, arising out of or resulting from performance of the Work, attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of real or personal property, including loss of use resulting therefrom, except to the extent that such liability arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity includes, without limitation, indemnification of Owner from all losses or injury to Owner's property, except to the extent that such loss or injury arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity applies, without limitation, to include Claims occurring both during performance of the Work and/or subsequent to completion of the Work. In the event that any Claim is caused in part by a party indemnified hereunder, that party will bear the cost of such Claim to the extent it was the cause thereof. In the event that a claimant asserts a Claim for recovery against any party indemnified hereunder, the party indemnified hereunder may tender the defense of such Claim to Contractor. If Contractor rejects such tender of defense and it is later determined that the negligence of the party indemnified hereunder did not cause all of the Claim, Contractor will reimburse the party indemnified hereunder for all costs and expenses incurred by that party in defending against the Claim. Contractor will not be liable hereunder to indemnify any party for damages resulting from the sole negligence of that party.
- b. In addition to the foregoing, Contractor will be liable to defend Owner in any lawsuit filed by any Subcontractor relating to the Project. Where liens have been filed against Owner's property, Contractor (and/or its bonding company which has issued bonds for the Project) will obtain lien releases and record them in the appropriate county and/or local jurisdiction and provide Owner with a title free and clear from any liens of Subcontractors. In the event that Contractor and/or its bonding company are unable to obtain a lien release, Owner in its absolute discretion may require Contractor to provide a bond around the lien or a bond to discharge the lien, at Contractor's sole expense.
- c. In addition to the foregoing, Contractor will indemnify and hold Owner harmless from any claim of any other contractor resulting from the performance, nonperformance or delay in performance of the Work by Contractor.
- d. The indemnification obligation herein will not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or a Subcontractor under worker's compensation acts, disability benefit acts, or other employee benefit acts.

20. **Resolution of Disputes.** In the event there is any dispute arising under the Contract Documents which cannot be resolved by agreement between the parties, either party may submit the dispute with all documentation upon which it relies to Director of Architecture, Engineering, and Construction, 50 East North Temple, Salt Lake City, Utah 84150, who will convene a dispute resolution conference within thirty (30) days. The dispute resolution conference will constitute settlement negotiations and any settlement proposal made pursuant to the conference will not be admissible as evidence of liability. In the event that the parties do not resolve their dispute pursuant to the dispute resolution conference, either party may commence legal action to resolve the dispute. Any such action must be commenced within six (6) months from the first day of the dispute resolution conference or be time barred. Submission of the dispute to the Director as outlined above



is a condition precedent to the right to commence legal action to resolve any dispute. In the event that either party commences legal action to adjudicate any dispute without first submitting the dispute to the Director, the other party will be entitled to obtain an order dismissing the litigation without prejudice and awarding such other party any costs and attorneys fees incurred by that party in obtaining the dismissal, including without limitation copy costs, and expert and consultant fees and expenses.

21. **Termination of Agreement by Contractor.** In the event Owner materially breaches any term of the Contract Documents, Contractor will promptly give Written Notice of the breach to Owner. If Owner fails to cure the breach within ten (10) days of the Written Notice, Contractor may terminate this Agreement by giving Written Notice to Owner and recover from Owner the percentage of the Contract Sum represented by the Work completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets. Contractor will not be entitled to unearned profits or any other compensation or damages as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
22. **Termination of Agreement by Owner for Cause.** Should Contractor make a general assignment for the benefit of its creditors, fail to apply enough properly skilled workmen or specified materials to properly prosecute the Work in accordance with Contractor's schedule, or otherwise materially breach any provision of the Contract Documents, then Owner may, without any prejudice to any other right or remedy, give Contractor Written Notice thereof. If Contractor fails to cure its default within ten (10) days, Owner may terminate this Agreement by giving Written Notice to Contractor, take possession of the premises and all materials, tools, and appliances thereon, and finish the Work by whatever method Owner deems expedient. In such case, Contractor will not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Sum exceeds the expense of finishing the Work, including compensation for additional administrative, architectural, consultant, and legal services (including without limitation attorneys fees, expert fees, copy costs, and other expenses), such excess will be paid to Contractor, less any offsets and recoupment. If such expense exceeds the unpaid balance, Contractor will pay the difference to Owner. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
23. **Termination of Agreement by Owner for Convenience.** Notwithstanding any other provision contained in the Contract Documents, Owner may, without cause and in its absolute discretion, terminate this Agreement at any time. In the event of such termination, Contractor will be entitled to recover from Owner the percentage of the Contract Sum equal to the percentage of the Work which Owner and/or its architect determines has been completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets and recoupment. Contractor will not be entitled to unearned profits or any other compensation as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Owner may, in Owner's sole discretion, take legal assignment of subcontracts and other contractual rights of Contractor. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
24. **Assignment of Contract.** The parties hereto will not assign any rights or obligations under this Agreement without the prior written consent of the other party.
25. **Integration Clause.** The Contract Documents reflect the full agreement of the parties with respect to the Project and the Work and supersede all prior discussions, agreements, and representations regarding the subject matter of the Contract Documents. The Contract Documents may be amended only in a written document signed by both parties hereto.





26. **Applicable Law.** The parties acknowledge that the Contract Documents have substantial connections to the State of Utah. The Contract Documents will be deemed to have been made, executed, and delivered in Salt Lake City, Utah. To the maximum extent permitted by law, (i) the Contract Documents and all matters related to their creation and performance will be governed by and enforced in accordance with the laws of the State of Utah, excluding conflicts of law rules, and (ii) all disputes arising from or related to the Contract Documents will be decided only in a state or federal court located in Salt Lake City, Utah and not in any other court or state. Toward that end, the parties hereby consent to the jurisdiction of the state and federal courts located in Salt Lake City, Utah and waive any other venue to which they might be entitled by virtue of domicile, habitual residence, place of business, or otherwise.
27. **Enforcement.** In the event either party commences legal action to enforce or rescind any term of the Contract Documents, the prevailing party will be entitled to recover its attorneys fees and costs, including without limitation all copy costs and expert and consultant fees and expenses, incurred in that action and on all appeals, from the other party.
28. **Bid Proposal/Agreement.** Contractor's submission to Owner of this agreement signed by Contractor will constitute Contractor's offer and bid proposal to perform the Work described in this agreement according to the terms thereof. Owner's signing of this agreement and delivery to Contractor of a signed copy will constitute acceptance of Contractor's offer and will convert this document to a binding agreement.
29. **Effective Date.** The effective date of this Agreement is the date indicated by the Owner's signature.



**OWNER:**

Corporation of the Presiding Bishop of  
The Church of Jesus Christ of Latter-day Saints,  
a Utah corporation sole.

**CONTRACTOR:**

(company)

Signature:

Signature:

Print Name:

Print Name:

Title:

Title:

Address:

Address:

Telephone No:

Telephone No:

Facsimile No:

Facsimile No:

Email:

Email:

Effective Date:

Fed. I.D. or SSN:

License No:

Reviewed By:

Date Signed:



# **S U P P L E M E N T A R Y   C O N D I T I O N S**

## **FOR CONTRACTOR BID PROPOSAL AND PROJECT AGREEMENT (U.S.)**

---

### **ITEM 1 - GENERAL**

1. Conditions of the Contract apply to each Division of the Specifications.
2. Provisions contained in Division 01 apply to all Divisions of the Specifications.

### **ITEM 2 - LIQUIDATED DAMAGES PAYABLE TO OWNER**

*This section may be included as a separate additional paragraph to the Bid Proposal and Project Agreement, at Owner's discretion:*

**Delay in Completion of the Work.** For each day after the expiration of the designated Time of Completion that Contractor has not completed the Work, Contractor will pay Owner the amount of Two Hundred Fifty dollars (\$250.00) per day as liquidated damages for Owner's loss of use and the added administrative expense to Owner to administer the Project during the period of delay. In addition, Contractor will reimburse Owner for any additional Architect's fees, attorneys' fees, expert fees, consultant fees, copy costs, and other expenses incurred by Owner as a result of the delay. Owner may deduct any liquidated damages or reimbursable expenses from any money due or to become due to Contractor. If the amount of liquidated damages and reimbursable expenses exceeds any amounts due to Contractor, Contractor will pay the difference to Owner within ten (10) days after receipt of a written request from Owner for payment.

### **ITEM 3 - STATE SPECIFIC SUPPLEMENTARY CONDITIONS**

#### **Utah**

#### **UTAH STATE SALES TAX:**

*Add the following to the Bid Proposal and Project Agreement:*

1. Contractors should be exempt on purchases of material installed or converted into real property to be used by the Owner. The Contractor will furnish each vendor with a completed Exemption Certificate Form TC-721. The certificate will be prepared by the Contractor for each vendor in order to obtain the exemption.
2. The Owner's tax exempt number is 11871701-002-STC.

#### **UTAH NOTICE OF INTENT TO OBTAIN FINAL COMPLETION:**

*Add the following to the Bid Proposal and Project Agreement:*

- A. Contractor shall file with the State Construction Registry, on its own behalf and/or on behalf of Owner, a notice of intent to obtain final completion at least 45 days before the day on which the Owner or Contractor files or could file a notice of completion under Utah Code Ann. Section 38-1a-506 if:
  1. The completion of performance time under the original contract for construction work is greater than 120 days;
  2. The total original construction contract price exceeds \$500,000; and
  3. The original contractor or owner has not obtained a payment bond in accordance with Utah Code Ann. Section 14-2-1.



**UTAH NOTICE OF COMPLETION:**

*Add the following to the Bid Proposal and Project Agreement:*

- A. Within five (5) calendar days of final completion of the Project and in compliance with Section 38-1a-507 Utah Code Annotated, Contractor shall file with the State Construction Registry, and copy to Owner, a notice of completion which shall include, without limitation, the following:
  1. The name, address, telephone number, and email address of the person filing the notice of completion;
  2. The name of the county in which the Project and/or Project site is located;
  3. The date on which final completion is alleged to have occurred;
  4. The method used to determine final completion; and
  5. One of the following:
    - a. The tax parcel identification number of each parcel included in the Project and/or Project site;
    - b. The entry number of a preliminary notice on the same project that includes the tax parcel identification number of each parcel included in the Project and/or Project site; or
    - c. The entry number of the building permit issued for the Project.
- B. Notwithstanding any other provision of the Contract Documents to the contrary, Contractor and Owner agree that any breach or failure to comply with this Section by the Contractor will constitute a breach of contract and the Contractor will be liable for any direct, indirect, or consequential damages to the Owner flowing from this breach.

**UTAH STATE PROGRESS PAYMENTS AND FINAL PAYMENT:**

*Replace paragraph 5 of the Bid Proposal and Project Agreement with the following:*

**5. Payment**

- a. If the Contractor's Bid Proposal Amount is over \$100,000.00, Contractor will submit to Owner a schedule of values which allocates the Contractor's Bid Proposal Amount to various portions of the Work. This schedule, when accepted by Owner, will be used as a basis for reviewing Contractor's payment requests.
- b. Progress Payments: Not more than once each month, Contractor will submit a payment request to Owner. Owner will pay Contractor progress payments for work completed within fifteen (15) days after Owner receives:
  1. Contractor's progress payment request for work to date;
  2. A certification by Contractor that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the current payment request; and
  3. Conditional Waiver and Release Upon Progress Payment documents submitted by Contractor (in content complying with Utah Code § 38-1a-802) executed by each of the subcontractors performing work and/or providing materials covered by the Contractor's progress payment request.
- c. Final Payment: Owner will make full and final payment of the Contract Sum due within thirty (30) days of the completion of all of the following requirements:
  1. Contractor has submitted its final payment request;
  2. Contractor has submitted a certification that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the final payment request; and
  3. Contractor has submitted Waiver and Release Upon Final Payment documents (in content complying with Utah Code § 38-1a-802) executed by each of the subcontractors performing work and/or providing materials covered by the Contractor's final payment request.

Acceptance of final payment by Contractor or any Subcontractor will constitute a waiver of





claims by the payee except for those claims previously made to Owner in writing and identified by Contractor in its affidavit as still pending.  
If the aggregate of previous payments made by Owner exceeds the amount due Contractor, Contractor will reimburse the difference to Owner.

- d. Owner may modify or reject any payment request if, in Owner's opinion, the Work for which payment is requested is not acceptable or is less complete than represented on the payment request.
- e. Upon receipt of any payment from Owner, Contractor will pay to each Subcontractor the amount paid to Contractor on account of such Subcontractor's portion of the Work.
- f. Contractor will maintain a copy of each payment request at the Project site for review by the Subcontractors.
- g. No payment made, either in whole or in part, by Owner will be construed to be an acceptance of defective or improper materials or workmanship.

END OF DOCUMENT



**DIVISION 01****SECTION 01 0000****GENERAL REQUIREMENTS: R&I PROJECT**

- 01 1000 SUMMARY**
- 01 1200 MULTIPLE CONTRACT SUMMARY**
- 01 1400 WORK RESTRICTIONS**
- 01 3000 ADMINISTRATIVE REQUIREMENTS**
- 01 3100 PROJECT MANAGEMENT AND COORDINATION**
- 01 3300 SUBMITTAL PROCEDURES**
- 01 3500 SPECIAL PROCEDURES**
- 01 4000 QUALITY REQUIREMENTS**
- 01 4301 QUALITY ASSURANCE – QUALIFICATIONS**
- 01 4523 TESTING AND INSPECTING SERVICES**
- 01 5000 TEMPORARY FACILITIES AND CONTROLS**
- 01 6100 PRODUCT REQUIREMENTS**
- 01 6200 PRODUCT OPTIONS**
- 01 6600 DELIVERY, STORAGE, AND HANDLING REQUIREMENTS**
- 01 7000 EXECUTION REQUIREMENTS**
- 01 7400 CLEANING AND WASTE MANAGEMENT**
- 01 7700 CLOSEOUT PROCEDURES**
- 01 7800 CLOSEOUT SUBMITTALS**

**SECTION 01 1000 SUMMARY**

- A. Provisions contained in Division 01 apply to all other sections and divisions of Specifications. All instructions contained in Specifications are directed to Contractor. Unless specifically provided otherwise, all obligations set forth in Specifications are obligations of Contractor.
- B. Comply with applicable laws and regulations.
- C. Owner may provide furnishings and/or equipment for Project. Contractor will receive, store, and protect such items on site until the date Owner accepts Project.
- D. Work by Owner: Owner will furnish and install some portions of the Work with its own forces. Complete the Work necessary to accommodate the Work to be performed by Owner before scheduled date for performance of such Work.

**SECTION 01 1200 MULTIPLE CONTRACT SUMMARY**

- A. Separate Contracts may be issued by Owner for performance of certain construction operations at Project site. Contractor will afford other contractors reasonable opportunity to place and store their materials and equipment on site and to perform their work and will properly connect and coordinate its work with theirs where applicable.

**SECTION 01 1400 WORK RESTRICTIONS**

- A. During construction period, Contractor will have use of premises for construction operations. Contractor will ensure that Contractor, its employees, subcontractors, and employees comply with following requirements:
  - 1. Confine operations to areas within Contract limits shown on Drawings. Do not disturb portions of site beyond Contract limits.
  - 2. Do not allow alcoholic beverages, illegal drugs, or persons under their influence on Project Site.
  - 3. Do not allow use of tobacco in any form on Project Site.
  - 4. Do not allow pornographic or other indecent materials on site.
  - 5. Do not allow work on Project Site on Sundays except for emergency work.
  - 6. Refrain from using profanity or being discourteous or uncivil to others on Project Site or while performing The Work.

7. Wear shirts with sleeves, wear shoes, and refrain from wearing immodest, offensive, or obnoxious clothing, while on Project Site.
8. Do not allow playing of obnoxious and loud music on Project Site. Do not allow playing of any music within existing facilities.
9. Do not build fires on Project Site.
10. Do not allow weapons on Project Site, except those carried by law enforcement officers and/or other uniformed security personnel who have been retained by Owner or Contractor to provide security services.

B. Existing Facilities:

1. If Owner will occupy existing building, reasonably accommodate use of existing facilities by Owner.

### **SECTION 01 3000 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate construction activities to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations that are dependent upon each other for proper installation, connection, and operation. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

### **SECTION 01 3100 PROJECT MANAGEMENT AND COORDINATION**

A. Multiple Contract Coordination:

1. Contractor shall be responsible for coordination of Temporary Facilities and Controls, Construction Waste Management and Disposal services, and Final Cleaning for entire Project unless directed otherwise by Owner's Representative for those who perform work on Project from Notice to Proceed to date of Substantial Completion.

B. Preconstruction Conference:

1. Attend preconstruction conference and organizational meeting scheduled by Architect or Owner Representative at Project site or other convenient location.
2. Be prepared to discuss items of significance that could affect progress, including such topics as:
  - a. Construction schedule, equipment deliveries, general inspection of tests, preparation of record documents and O&M manuals, project cleanup, security, shop drawings, samples, use of premises, work restrictions, and working hours.

### **SECTION 01 3300 SUBMITTAL PROCEDURES**

- A. Coordination preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently before performance of related construction activities to avoid delay.
- B. Allow sufficient review time so installation will not be delayed by time required to process submittals.
- C. Place permanent label or title block on each submittal for identification. Include name of entity that prepared each submittal on label or title block.
- D. Package each submittal appropriately for transmittal and handling.

### **SECTION 01 3500 SPECIAL PROCEDURES**

A. Hot Work Permit (Available from Owner's Representative):

1. Required for doing hot work involving open flames or producing heat or sparks such as:
  - a. Brazing.
  - b. Cutting.
  - c. Grinding.
  - d. Soldering.
  - e. Thawing pipe.
  - f. Torch applied roofing.
  - g. Welding.

**SECTION 01 4000 QUALITY REQUIREMENTS**

- A. Testing and inspecting services are used to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- B. Conflicting Requirements: If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement.
- C. Minimum Quantity or Quality Levels: Quantity or quality level shown or specified shall be the minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits.
- D. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to verify compliance and guard against defects and deficiencies and substantiate that proposed construction will comply with requirements. Owner or Owner's designated representative(s) will perform quality assurance to verify compliance with Contract Documents.
- E. Quality Control Services: Quality Control will be sole responsibility of Contractor. 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 performed by Contractor. They do not include inspections, tests or related actions performed by Architect or Owner Representative, governing authorities or independent agencies hired by Owner or Architect. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor:
1. Where services are indicated as Contractor's responsibility, engage qualified Testing Agency to perform these quality control services:
    - a. Contractor will not employ same testing entity engaged by Owner, without Owner's written approval.
- F. Notify Owner immediately if asbestos-containing materials or other hazardous materials are encountered while performing the Work.
- G. Submit to Owner permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records establishing compliance with standards and regulations bearing upon performance of the Work.
- H. Repair And Protection:
1. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  2. Protect construction exposed by or for Quality Assurance and Quality Control activities.
  3. Repair and protection are Contractor's responsibility, regardless of assignment of responsibility for Quality Assurance and Quality Control Services.

**SECTION 01 4301 QUALITY ASSURANCE - QUALIFICATIONS**

- A. Qualifications: Qualifications in this Section establish minimum qualification levels required; individual Specification Sections specify additional requirements:
1. Fabricator / Supplier / Installer Qualifications:
    - a. Firm experienced in producing products similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units:
      - 1) Where heading '*VMR (Value Managed Relationship) Suppliers / Installers*' is used to identify list of specified suppliers or installers, Owner has established relationships that extend beyond requirements of this Project. No other suppliers / installers will be acceptable. Follow specified procedures to preserve relationships between Owner and specified suppliers / installers and advantages that accrue to Owner from those relationships.
      - 2) Where heading '*Acceptable or Approved Suppliers / Installers / Fabricators*' is used to identify list of specified suppliers / installers / fabricators, use only one of listed suppliers / installers / fabricators. No others will be acceptable.

2. Factory-Authorized Service Representative Qualifications:
  - a. 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.
3. 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 record of successful in-service performance.
4. Manufacturer Qualifications:
  - a. Firm experienced in manufacturing products or systems similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units.
5. Manufacturer's Field Services Qualifications:
  - a. Experienced authorized representative of manufacturer to inspect field-assembled components and equipment installation, including service connections.
6. 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 kind indicated:
    - 1) Engineering services are defined as those performed for installations of system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
7. Specialists:
  - a. Certain sections of Specifications require that specific construction activities will be performed by entities who are recognized experts in those operations:
    - 1) Specialists will satisfy qualification requirements indicated and will be engaged for activities indicated.
    - 2) Requirement for special will not supersede building codes and regulations governing the Work.
8. Testing Agency Qualifications:
  - a. Independent Testing Agency with experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - b. Testing Laboratory:
    - 1) AASHTO Materials Reference Laboratory (AMRL) Accreditation Program.
    - 2) Cement and Concrete Reference Laboratory (CCRL).
    - 3) Nationally Recognized Testing Laboratory (NRTL): Nationally recognized testing laboratory according to 29 CFR 1910.7.
    - 4) National Voluntary Laboratory (NVLAP): Testing Agency accredited according to National Institute of Standards and Technology (NIST) Technology Administration, U. S. Department of Commerce Accreditation Program.

## **SECTION 01 4523 TESTING AND INSPECTION SERVICES**

- A. Submittals:
  1. Certificates: Testing Agency will submit certified written report of each inspection, test, or similar service.
  2. Tests and Evaluation Reports:
    - a. Testing Agency or Agencies will prepare logs, test reports, and certificates applicable to specific tests and inspections and deliver copies to Owner's Representative and to each of following if involved on project: Architect, Consulting Engineers (Engineer of Record), General Contractor, Authorities Having Jurisdiction (if required).
  3. Testing Agency:
    - a. Qualifications of Testing Agency management, personnel, inspector and technicians designated to project.
    - b. Provide procedures for non-destructive testing, equipment calibration records, personnel training records, welding inspection, bolting inspection, shear connector stud inspection, and seismic connection inspections.
- B. Quality Assurance:
  1. Owner or Owner's designated representative(s) will perform quality assurance. Owner's quality assurance procedures may include observations, inspections, testing, verification, monitoring and any other procedures deemed necessary by Owner to verify compliance with Contract Documents.

2. Owner will employ independent Testing Agencies to perform certain specified testing, as Owner deems necessary.
  3. Certification:
    - a. Product producers and associations, which have instituted approved systems of quality control and which have been approved by document approval agencies, are not required to have further testing.
    - b. Concrete mixing plants, plants producing fabricated concrete and wood or plywood products certified by agency, lumber, plywood grade marked by approved associates, and materials or equipment bearing underwriters' laboratory labels require no further testing and inspection.
  4. Written Practice for Quality Assurance:
    - a. Testing Agency will maintain written practice for selection and administration of inspection personnel, describing training, experience, and examination requirements for qualification and certification of inspection personnel.
    - b. Written practice will describe testing agency procedures for determining acceptability of structure in accordance with applicable codes, standards, and specifications.
    - c. Written practice will describe Testing Agency inspection procedures, including general inspection, material controls, visual welding inspection, and bolting inspection.
- C. Quality Control:
1. Quality Control will be sole responsibility of Contractor. Contractor will be responsible for testing, coordination, start-up, operational checkout, and commissioning of all items of the Work included in Project. All costs for these services will be included in Contractor's cost of the Work.
  2. Notify results of all Testing and Inspection performed by Contractor's independent Testing Agencies to Architect and/or Owner's Representative within 24 hours of test or inspection having been performed:
    - a. Testing and Inspection Reports will be distributed as follows:
      - 1) 1 copy to Owner's Representative.
      - 2) 1 copy to Architect.
      - 3) 1 copy to Consulting Engineer(s) (Engineer of Record).
      - 4) 1 copy to Authorities Having Jurisdiction (if required).
  3. Contractor's Responsibility:
    - a. Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents.
    - b. Tests and inspections that are not explicitly assigned to Owner are responsibility of Contractor.
    - c. Cooperate with Testing Agency(s) performing required inspections, tests, and similar services and provide reasonable auxiliary services as requested. Notify Testing Agency before operations to allow assignment of personnel. Auxiliary services required include but are not limited to:
      - 1) Providing access to the Work and furnishing incidental labor, equipment, and facilities deemed necessary by Testing Agency to facilitate inspections and tests at no additional cost to Owner.
      - 2) Taking adequate quantities of representative samples of materials that require testing or helping Testing Agency in taking samples.
      - 3) Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
      - 4) Providing Testing Agency with preliminary design mix proposed for use for materials mixes that require control by Testing Agency.
    - d. For any requested inspection, Contractor will complete prior inspections to ensure that items are ready for inspection.
    - e. All Work is subject to testing and inspection and verification of correct operation.
    - f. Comply:
      - 1) Upon completion of Testing Agency's inspection, testing, sample-taking, and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
      - 2) Comply with Contract Documents in making such repairs.
    - g. Data:
      - 1) Furnish records, drawings, certificates, and similar data as may be required by testing and inspection personnel to assure compliance with Contract Documents.
    - h. Defective Work (Non-Conforming Work): Non-conforming Work as covered in General Conditions applies, but is not limited to following requirements Protection:
      - 1) Where results of inspections, tests, or similar services show that the Work does not comply with Contract Document requirements, correct deficiencies in the Work promptly to avoid work delays.
      - 2) Where testing personnel take cores or cut-outs to verify compliance, repair prior to acceptance.

- 3) Contractor will be responsible for any and all costs incurred resulting from inspection that was scheduled prematurely or retesting due to failed tests.
  - 4) Remove and replace any Work found defective or not complying with contract document requirements at no additional cost to Owner.
  - 5) Should test return unacceptable results, Contractor will bear all costs of retesting and re-inspection as well as cost of all material consumed by testing, and replacement of unsatisfactory material and/or workmanship.
- i. Protection:
    - 1) Protect construction exposed by or for quality assurance and quality control service activities, and protect repaired construction.
  - j. Scheduling: Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities:
    - 1) Schedule testing and inspections in advance so as not to delay the Work and to eliminate any need to uncover the Work for testing or inspection.
    - 2) Notify Testing Agency and Architect or Owner as noted in Sections in Division 01 thru Division 50 prior to any time required for such services.
    - 3) Incorporate adequate time for performance of all inspections and correction of noted deficiencies.
    - 4) Schedule sequence of activities to accommodate required services with minimum of delay.
    - 5) Schedule sequence of activities to avoid necessity of removing and replacing construction to accommodate testing and inspections.
  - k. Test and Inspection Log:
    - 1) Provide system of tracking all field reports, describing items noted, and resolution of each item. Prepare record of tests and inspections. Include following requirements:
      - (a) Date test or inspection was conducted.
      - (b) Description of the Work tested or inspected.
      - (c) Date test or inspection results were transmitted to Architect or Owner Representative.
      - (d) Identification of Testing Agency or inspector conducting test or inspection.
    - 2) Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's or Owner's reference during normal working hours.
- D. Tests And Inspections - General:
1. Testing specifically identified to be conducted by Owner, will be performed by an independent entity and will be arranged and paid for by Owner.
  2. Individual Sections in Division 01 through Division 50 indicate if Owner will provide testing and inspection of the Work of that Section.
  3. Owner may engage additional consultants for testing, air balancing, commissioning, or other special services:
    - a. Activities of any such Owner consultants are in addition to Contractor testing of materials or systems necessary to prove that performance is in compliance with Contract requirements.
    - b. Contractor must cooperate with persons and firms engaged in these activities.
  4. Tests include but not limited to those described in detail in 'Field Quality Control' in Part 3 of Individual Sections in Divisions 01 through Division 50.
  5. Taking Specimens:
    - a. Only testing laboratory shall secure, handle, transport, or store any samples and specimens for testing.
  6. Scheduling Testing Agency:
    - a. Contractor will coordinate the Work and facilitate timeliness of such testing and inspecting services so as not to delay the Work.
    - b. Contractor will notify Testing Agency and Architect or Owner Representative to schedule tests and / or inspections.
- E. Testing Agency Services And Responsibility:
1. Testing Agency, including independent testing laboratories, will be licensed and authorized to operate in jurisdiction in which Project is located:
    - a. Approved Testing Agency Qualifications: Requirements of Section 01 4301 apply.
  2. Testing and Inspection Services:
    - a. Testing Agency will not release, revoke, alter, or increase Contract Document requirements or approve or accept any portion of the Work.
    - b. Testing Agency will not give direction or instruction to Contractor.
    - c. Testing Agency will have full authority to see that the Work is performed in strict accordance with requirements of Contract Documents and directions of Owner's Representative and/or Architect.



- d. Testing Agency will not provide additional testing and inspection services beyond scope of the Work without prior approval of Owner's Representative and/or Architect.
3. Testing Agency Duties:
  - a. Independent Testing Agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual specification Sections will cooperate with Architect or Owner Representative and Contractor in performance of its duties and will provide qualified personnel to perform required inspections and tests.
  - b. Testing Agency will test or obtain certificates of tests of materials and methods of construction, as described herein or elsewhere in technical specification.
  - c. Testing Agency will provide management, personnel, equipment, and services necessary to perform testing functions as outlined in this section.
  - d. Testing Agency must have experience and capability to conduct testing and inspecting indicated by ASTM standards and that specializes in types of tests and inspections to be performed.
  - e. Testing Agency will comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3666, ASTM D3740, and other relevant ASTM standards.
  - f. Testing Agency must calibrate all testing equipment at reasonable intervals (minimum yearly) with accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
  - g. Welding Procedure Review: Testing Agency will provide review and approval or rejection of all welding procedures to be used and verify compliance with all reference standard requirements.
4. Testing and Inspection Reports:
  - a. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
  - b. Laboratory Reports: Testing Agency will furnish reports of materials and construction as required, including:
    - 1) Description of method of test.
    - 2) Identification of sample and portion of the Work tested:
      - (a) Description of location in the Work of sample.
      - (b) Time and date when sample was obtained.
      - (c) Weather and climatic conditions at time when sample was obtained.
    - 3) Evaluation of results of tests including recommendations for action.
  - c. Inspection Reports:
    - 1) Testing Agency will furnish "Inspection at Site" reports for each site visit documenting activities, observations, and inspections.
    - 2) Include notation of weather and climatic conditions, time and date conditions and status of the Work, actions taken, and recommendations or evaluation of the Work.
  - d. Reporting Testing and Inspection (Conforming Work):
    - 1) Submit testing and inspection reports as required within twenty four (24) hours of test or inspection having been performed.
  - e. Reporting Testing and Inspection Defective Work (Non-Conforming Work):
    - 1) Testing Agency, upon determination of irregularities, deficiencies observed or test failure(s) observed in the Work during performance of its services of test or inspection having been performed, will:
      - (a) Verbally notify results to Architect, Contractor, and Owner's Representative within one hour of test or inspection having been performed (if Defective Work (Non-Conforming Work) is incorporated into project).
      - (b) Submit written inspection report and test results as required within twenty four (24) hours of test or inspection having been performed.
  - f. Final Report:
    - 1) Submit final report of tests and inspections at Substantial Completion, which identify unresolved deficiencies.
- F. Architect's Responsibility:
  1. Architect Duties:
    - a. Notify Owner's Representative before each test and/or inspection:
- G. Field Quality Control:
  1. Field Tests And Inspections:
    - a. Field Test and Inspection requirements are described in detail in 'Field Quality Control' in Part 3 Execution' of individual Sections in Division 01 thru Division 49.

## **SECTION 01 5000 TEMPORARY FACILITIES AND CONTROLS**

- A. Owner will provide electric power for construction activities within limits available at existing facility.
- B. Proprietary Camera Services: In its absolute discretion, and with or without notice to Contractor, Owner may provide from time to time, but is not obligated to provide, one or more cameras on or about Project site and/or signage or notices of the same:
1. If provided by Owner, such camera(s) and/or signage and notices are solely for Owner's benefit and convenience and shall not be for benefit of Contractor, Subcontractor(s) or for any third person.
  2. Owner shall have no liability, obligation, or responsibility to Contractor, Subcontractors, or any third person relative to such camera(s), signage, or notices, or absence of camera(s), signage, or notices, including without limitation, installation, maintenance, operation, repair, testing, functionality, capacity, recording, monitoring, posting, etc., of the same (hereafter 'Proprietary Camera Services').
  3. Contractor, with Owner's prior consent (which shall not be unreasonably withheld), may relocate such camera(s), signage, or notices as necessary to not unreasonably, materially and physically interfere with work at Project Site.
  4. Contractor's obligations under Contract Documents, including but not limited to, Contractor's obligation for security of Project Site, are not modified by Owner's opportunity to provide, actually providing, or not providing Proprietary Camera Services and/or signage or notices regarding the same.
  5. This Specification Section does not preclude Contractor from providing its own camera(s), signage, or notices pursuant to terms and conditions of this Agreement. Neither does this Section reduce, expand or modify any other right or obligation of Owner pursuant to terms of this Agreement.
- C. Exercise caution to avoid fire damage: Do not build fires on site.
- D. Permanent mechanical system may be operated upon following conditions:
1. Do not interfere with normal set-back temperature patterns except as approved by Project Manager.
  2. Do not operate system when the Work causing airborne dust is occurring or when dust caused by such Work is present without first installing temporary filtering system.
- E. Existing lighting system may be used by Contractor.
- F. Contractor will use existing water supply for construction purposes to extent of existing facilities.
- G. Existing restroom facilities may be used by Contractor. Clean restrooms and portions of existing building used in accessing restrooms daily. If existing facilities are not usable, provide and maintain temporary sanitary toilet.
- H. Erect adequate barricades, warning signs, and lights necessary to protect persons from injury or harm.
- I. Contractor is responsible for security of materials, tools, and equipment. Do not permit others to use building keys provided by Owner. Safeguard building and contents while the Work is being performed and secure building when the Work is finished for day.
- J. Protect existing trees and plants. Remove and replace vegetation that dies or is damaged beyond repair due to construction activities.
- K. Provide temporary enclosures at exterior building openings for security and protection from weather, theft, and vandalism. Erect and maintain dust-proof partitions and enclosures as required to prevent spread of dust and fumes to occupied portions of building.
- L. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and reduce possibility that air, waterways, and subsoil might be contaminated or polluted, or that other undesirable effects might result:
1. Avoid use of tools and equipment that produce harmful noise.
  2. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near site.
  3. Protect the Work, materials, apparatus, and fixtures from injury due to weather, theft, and vandalism.

## **SECTION 01 6100 PRODUCT REQUIREMENTS**

- A. Provide products that comply with Contract Documents, are undamaged, and, unless otherwise indicated, are new and unused at time of installation. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.

### **SECTION 01 6200 PRODUCT OPTIONS**

- A. Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include:
1. Substitutions And Equal Products:
    - a. Generally speaking, substitutions for specified products and systems, as defined in Uniform Commercial Code, are not acceptable. However, equal products may be approved upon compliance with Contract Document requirements.
    - b. Approved Products / Manufacturers / Suppliers / Installers:
      - 1) Category One:
        - (a) Owner has established 'Value Managed Relationships' that extend beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
        - (b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
      - 2) Category Two:
        - (a) Owner has established National Contracts that contain provisions extending beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
        - (b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
      - 3) Category Three:
        - (a) Specified products are provided to Church Projects under a National Account Program. Use these products to preserve advantages that accrue to Owner from those programs. No substitutions or equal products will be allowed on this Project.
      - 4) Category Four:
        - (a) Provide only specified products available from manufacturers listed. No substitutions, private-labeled, or equal products, or mixing of manufacturers' products is allowed on this Project.
        - (b) In Sections where lists recapitulating Manufacturers previously mentioned in Section are included under heading '*Manufacturers*' or '*Approved Manufacturers*', this is intended as convenience to Contractor as listing of contact information only. It is not intended that all manufacturers in list may provide products where specific products and manufacturers are listed elsewhere in Section.
    - c. Acceptable Products / Manufacturers / Suppliers / Installers:
      - 1) Type One: Use specified products / manufacturers unless approval to use other products / manufacturers has been obtained from Architect or Owner Representative by Addendum.
      - 2) Type Two: Use specified products / manufacturers unless approval to use other products and manufacturers has been obtained from Architect or Owner Representative in writing before installing or applying unlisted or private-labeled products.
      - 3) Use 'Equal Product Approval Request Form' to request approval of equal products, manufacturers, or suppliers before bidding or before installation, as noted in individual Sections.
    - d. Quality / Performance Standard Products / Manufacturers:
      - 1) Class One: Use specified product / manufacturer or equal product from specified manufacturers only.
      - 2) Class Two: Use specified product / manufacturer or equal product from any manufacturer.
      - 3) Products / manufacturers used will conform to Contract Document requirements.

### **SECTION 01 6600 DELIVERY, STORAGE, AND HANDLING REQUIREMENTS**

- A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
- B. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

- C. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- D. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.
- E. Store products at site in manner that will simplify inspection and measurement of quantity or counting of units.
- F. Store heavy materials away from Project structure so supporting construction will not be endangered.
- G. Store products subject to damage by elements above ground, under cover in weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

#### **SECTION 01 7000 EXECUTION REQUIREMENTS**

- A. Design, furnish, and install all shoring, bracing, and sheathing as required for safety and for proper execution of the Work and, unless otherwise required, remove same when the Work is completed.
- B. Require installer of each major component to inspect both substrate and conditions under which the Work is to be done:
  - 1. Notify Owner in writing of unsatisfactory conditions.
  - 2. Do not proceed until unsatisfactory conditions have been corrected.
- C. Provide attachment and connection devices and methods necessary for securing the Work:
  - 1. Secure the Work true to line and level.
  - 2. Allow for expansion and building movement.
- D. Recheck measurements and dimensions before starting each installation.
- E. Where mounting heights are not shown, install individual components at standard mounting heights recognized within industry or local codes for that application. Refer questionable mounting height decisions to Owner for final decision.
- F. Cover and protect furniture, equipment, and fixtures from soiling and damage when demolition the Work is performed in rooms and areas from which such items have not been removed.
- G. Completion Inspection:
  - 1. Upon 100 percent completion of Project, Contractor will request Substantial Completion Inspection.
  - 2. Owner will conduct Substantial Completion Inspection in presence of Contractor and furnish list of items to be corrected.
  - 3. Contractor will notify Owner in writing when items have been corrected.

#### **SECTION 01 7400 CLEANING AND WASTE MANAGEMENT**

- A. Disposal Of Waste:
  - 1. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in landfill or incinerator acceptable to authorities having jurisdiction:
    - a. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
    - b. Remove and transport debris in manner that will prevent spillage on adjacent surfaces and areas.
  - 2. Burning: Do not burn waste materials.
  - 3. Disposal: Transport waste materials off Owner's property and legally dispose of them.
- B. Progress Cleaning:
  - 1. Keep premises broom-clean during progress of the Work.
  - 2. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Completion.
  - 3. Clean and maintain completed construction as frequently as necessary throughout construction period.

4. Remove waste materials and rubbish caused by employees, subcontractors, and contractors under separate contract with Owner and dispose of legally.
- C. Final Cleaning:
1. Clean each surface or unit to condition expected in normal, commercial-building cleaning and maintenance program. Comply with manufacturer's instructions. Remove all rubbish from under and about building and leave building clean and habitable.
  2. In addition to general cleaning noted above, perform cleaning for all trades at completion of the Work in areas where construction activities have occurred.
  3. If Contractor fails to clean up, Owner may do so and charge cost to Contractor.

## **SECTION 01 7700 CLOSEOUT PROCEDURES**

- A. General:
1. Closeout process consists of three specific project closeout inspections. Contractor shall plan sufficient time in construction schedule to allow for required inspections before expiration of Contract Time.
  2. Contractor shall conduct his own inspections of The Work and shall not request closeout inspections until The Work of the contract is reasonably complete and correction of obvious defects or omissions are complete or imminent.
  3. Date of Substantial Completion shall not occur until completion of construction work, unless agreed to by Architect / Owner's Representative and included on Certificate of Substantial Completion.
- B. Preliminary Closeout Review:
1. When Architect, Owner and Contractor agree that project is ready for closeout, Pre-Substantial Inspection shall be scheduled. Preparation of floor substrate to receive carpeting and any work which could conceivably damage or stain carpet must be completed, as carpet installation will be scheduled immediately following this inspection.
  2. Prior to this inspection, completed test and evaluation reports for HVAC system and font, where one occurs, are to be provided to Project Manager, Architect, and applicable consultants.
  3. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Completion of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Completion that contains:
    - a. Punch list of items requiring completion and correction will be created.
    - b. Time frame for completion of punch list items will be established, and date for Substantial Completion Inspection shall be set.
- C. Substantial Completion Inspection:
1. When Architect, Owner and Contractor agree that project is ready for Substantial Completion, an inspection is held. Punch list created at Pre-Substantial Inspection is to be substantially complete.
  2. Prior to this inspection, Contractor shall discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements.
  3. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Completion of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Completion that contains:
    - a. Date of Substantial Completion.
    - b. Punch List Work not yet completed, including seasonal and long lead items.
    - c. Amount to be withheld for completion of Punch List Work.
    - d. Time period for completion of Punch List Work.
    - e. Amount of liquidated damages set forth in Supplementary Conditions to be assessed if Contractor fails to complete Punch List Work within time set forth in Certificate.
  4. Contractor shall present Closeout Submittals to Architect and place tools, spare parts, extra stock, and similar items required by Contract Documents in locations as directed by Facilities Manager.
- D. Final Acceptance Meeting:
1. When punch list items except for any seasonal items or long lead items which will not prohibit occupancy are completed, Final Acceptance Meeting is held.
  2. Owner, Architect and Contractor execute Owner's Project Closeout - Final Acceptance form, and verify:
    - a. All seasonal and long lead items not prohibiting occupancy, if any, are identified, with committed to completion date and amount to be withheld until completion.
    - b. Owner's maintenance personnel have been instructed on all system operation and maintenance as required by the Contract Documents.
    - c. Final cleaning requirements have been completed.

3. If applicable, once any seasonal and long lead items are completed, Closeout Inspection is held where Owner and Architect verify that The Work has been satisfactorily completed, and Owner, Architect and Contractor execute Closeout portion of the Project Closeout - Final Acceptance form.
4. When Owner and Architect confirm that The Work is satisfactorily completed, Architect will authorize final payment.

## **SECTION 01 7800 CLOSEOUT SUBMITTALS**

- A. Operations And Maintenance Data: Operations And Maintenance Manual that include:
1. Project Manual:
    - a. Copy of complete Project Manual including Addenda, Modifications as defined in General Conditions, and other interpretations issued during construction:
      - (1) Mark these documents to show variations in actual Work performed in comparison with text of specifications and Modifications. Show substitutions, selection of options, and similar information, particularly on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
      - (2) Note related record drawing information and Product Data.
  2. Soils Report:
    - a. Copy of Soils Report.
  3. Operations and Data:
    - a. Operations and maintenance submittals required by Contract Documents.
  4. Warranty Documentation:
    - a. Copies of warranties required by Contract Documents.
  5. Record Documentation:
    - a. Certifications required by Contract Documents.
    - b. Documentation submittals required by Contract Documents.
    - c. Testing and Inspection Reports required by Contract Documents.
  6. Landscape Management Plan (LMP):
    - a. Irrigation Section:
      - (1) Documentation required by Sections under 32 8000 Heading: Irrigation.
    - b. Landscaping Section:
      - (1) Documentation required by Sections under 32 8000 Heading: Irrigation.
- B. Warranties:
1. When written guarantees beyond one (1) year after substantial completion are required by Contract Documents, secure such guarantees and warranties properly addressed and signed in favor of Owner. Include these documents in Operations & Maintenance Manual(s) specified above.
  2. Delivery of guarantees and warranties will not relieve Contractor from obligations assumed under other provisions of Contract Documents.
- C. Project Record Documents:
1. Do not use record documents for construction purposes:
    - a. Protect from deterioration and loss in secure, fire-resistive location.
    - b. Provide access to record documents for reference during normal Working hours.
  2. Maintain clean, undamaged set of Drawings. Mark set to show actual installation where installation varies from the Work as originally shown. Give particular attention to concealed elements that would be difficult to measure and record at later date.
    - a. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
    - b. Mark new information that is important to Owner, but was not shown on Contract Drawings.
    - c. Note related Change Order numbers where applicable.

**END OF SECTION**

**SECTION 03 4800****PRECAST CONCRETE SPECIALTIES****PART 1 - GENERAL****1.1 SUMMARY**

## A. Includes But Not Limited To:

1. Furnish and install precast concrete elements as described in Contract Documents including but not limited to the following:
  - a. Splash blocks.

**1.2 REFERENCES**

## A. Reference Standards:

1. ASTM International:
  - a. ASTM C33/C33M-13, 'Standard Specification for Concrete Aggregates'.
  - b. ASTM C150/C150M-12, 'Standard Specification for Portland Cement'.

**1.3 SUBMITTALS**

## A. Action Submittals:

1. Product Data:
  - a. Manufacturer product literature for each type of product indicated.
2. Shop Drawings:
  - a. Precast concrete elements:
    - 1) Detail fabrication and installation of architectural precast concrete units.
    - 2) Indicate locations, plans, elevations, dimensions, shapes, and cross sections of each unit.
    - 3) Indicate locations, extent, and treatment of dry joints if two-stage casting is proposed.

**1.4 DELIVERY, STORAGE, AND HANDLING**

## A. Delivery And Acceptance Requirements:

1. Check, carefully unload, and deliver material to site in such manner as to avoid soiling and damaging.

## B. Storage And Handling Requirements:

1. Store material on planks clear of ground and protect from damage.

**PART 2 - PRODUCTS****2.1 MANUFACTURED UNITS**

## A. Materials:

1. Design Criteria:
  - a. Precast Concrete:
    - 1) Air Entrainment: Wet cast mixture maintains 5 to 7 percent air entrainment where surfaces are exposed to freeze-thaw. Admixture conforms to ASTM C260.

- 2) Aggregates: ASTM C33/C33M.
  - 3) Cement: ASTM C150/C150M, Type II.
  - 4) Compressive Strength: 4500 psi (31.03 MPa) concrete minimum.
  - 5) Water: Potable water free from impurities.
- b. Reinforcing:
- 1) Bars: ASTM A615/A615M, Grade 60.
  - 2) Reinforcing Mesh: ASTM A1064/A1064M.
- c. Concrete Elements:

## 2.2 ACCESSORIES

- A. Sealant: As specified in Section 07 9213: 'Elastomeric Joint Sealants'.

## 2.3 FABRICATION

- A. General:
1. Chamfered edges.
  2. Smooth finish free from pits and rock pockets.
- B. Splash Blocks:
1. 16 inches (400 mm) wide by 24 inches (600 mm) long by 3 inches (75 mm) high.
  2. Formed water trough.
  3. Cast in reinforcing mesh.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Splash Blocks: Set level in planting areas and centered under each downspout.

**END OF SECTION**



**SECTION 06 1011****WOOD FASTENINGS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of wood fastening methods and materials used for Rough Carpentry unless specified otherwise.
- B. Related Requirements:
  - 1. Section 03 1511: 'Concrete Anchors and Inserts' for Quality of Anchors and Inserts.
  - 2. Section 05 0523: 'Metal Fastenings' for Quality of bolts used for Rough Carpentry.
  - 3. Furnishing and installing of other fasteners are specified in individual Sections where installed.

**1.2 REFERENCES**

- A. Reference Standards;
  - 1. APA-The Engineered Wood Association:
    - a. APA AFG-01: Adhesives for Field-Gluing Plywood to Wood Framing (September 1974).
  - 2. ASTM International:
    - a. ASTM A153/A153M-09, 'Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware'.
    - b. ASTM D3498-03(2011), 'Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems'.
    - c. ASTM F1667-15, 'Standard Specification for Driven Fasteners: Nails, Spikes, and Staples'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature on framing anchors and powder actuated fasteners.
  - 2. Shop Drawings:
    - a. Submit diameter and lengths of fasteners proposed for use on Project. If length or diameter of proposed fasteners differ from specified fasteners, also include technical and engineering data for proposed fasteners including, but not limited to:
      - 1) Adjusted fastener spacing where using proposed fasteners and,
      - 2) Adjusted number of fasteners necessary to provide connection capacity equivalent to specified fasteners.
    - b. Submit on powder-actuated fasteners other than those specified in Contract Documents showing design criteria equivalents at each application.
    - c. Show type, quantity, and installation location of framing anchors. Where necessary, reference Drawing details, etc, for installation locations.

**PART 2 - PRODUCTS****2.1 MANUFACTURED UNITS**

- A. Description:
  - 1. Nail Terminology:

- a. When following nail terms are used in relation to this Project, following lengths and diameters will be understood. Refer to nails of other dimensions by actual length and diameter, not by one of listed terms:

Nail Term	Length	Diameter	Length	Diameter
8d Box	2-1/2 inches	0.113 inch	63.5 mm	2.827 mm
8d Common	2-1/2 inches	0.131 inch	63.5 mm	3.389 mm
10d Box	3 inches	0.128 inch	76.2 mm	3.251 mm
10d Common	3 inches	0.148 inch	76.2 mm	3.759 mm
16d Box	3-1/2 inches	0.135 inch	88.9 mm	3.411 mm
16d Sinker	3-1/4 inches	0.148 inch	82.6 mm	3.759 mm
16d Common	3-1/2 inches	0.162 inch	88.9 mm	4.115 mm

B. Materials:

1. Fasteners:

a. General:

- 1) Fasteners for preservative treated and fire-retardant-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronzed, or copper. Coating weights for zinc-coated fasteners shall be in accordance with ASTM A153/A153M.

b. Nails:

- 1) Meet requirements of ASTM F1667.  
 2) Unless noted otherwise, nails listed on Drawings or in Specifications shall be common nail diameter, except 16d nails, which shall be box diameter.

c. Wood Screws:

1) SDS Screws:

- a) Category Four Approved Products. See Section 01 6200 for definitions of categories.

(1) SDS Screws by Simpson Strong Tie Co, Dublin, CA [www.strongtie.com](http://www.strongtie.com).

- 2) All Other: Standard type and make for job requirements.

d. Powder-Actuated Fasteners:

- 1) Type One Quality Standard: Hilti X-DNI 62P8.

2) Manufacturers:

- a) Hilti, Tulsa, OK [www.us.hilti.com](http://www.us.hilti.com).

- b) Redhead Division of ITW, Wood Dale, IL [www.itw-redhead.com](http://www.itw-redhead.com) and Markham, ON [www.itwconstruction.ca](http://www.itwconstruction.ca).

- c) Equals as approved by Architect through shop drawing submittal before installation. See Section 01 6200.

2. Adhesives:

a. Construction Mastics:

- 1) Meet requirements of 'APA-The Engineered Wood Association' Specification AFG-01 or ASTM D3498.

- 2) Use phenol-resorcinol type for use on pressure treated wood products.

3. Framing Anchors:

- a. Framing anchors and associated fasteners in contact with preservative hot dipped zinc-coated galvanized steel or stainless steel. Do not use stainless steel items with galvanized items.

b. Type Two Acceptable Products:

- 1) KC Metals Inc, San Jose, CA [www.kcmetals.com](http://www.kcmetals.com).

- 2) Simpson Strong Tie Co, Dublin, CA [www.strongtie.com](http://www.strongtie.com).

- 3) United Steel Products Co Inc (USP), Montgomery, MN [www.uspconnectors.com](http://www.uspconnectors.com).

- 4) Equals as approved by Architect through shop drawing submittal before installation. See Section 01 6200.

**PART 3 - EXECUTION**

**3.1 ERECTION**

- A. Secure one Manufacturer approved fastener in each hole of framing anchor that bears on framing member unless approved otherwise in writing by Architect.
- B. Provide washers with bolt heads and with nuts bearing on wood.

**END OF SECTION**



**SECTION 06 1100****WOOD FRAMING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install wood framing and blocking as described in Contract Documents.
- B. Products Installed But Not Furnished Under This Section:
  - 1. Glue-laminated structural units.
  - 2. Roof related blocking, wood nailers, and curbs.
  - 3. Structural composite lumber.
  - 4. Wood panel product sheathing.
- C. Related Requirements:
  - 1. Section 06 1636: 'Wood Panel Product Sheathing'.
    - a. Pre-installation conference held jointly with Section 06 1100.
  - 2. Sections in Division 07: Roofing membranes for related blocking, wood nailers, and curbs.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American Lumber Standard Committee (ALSC) (Maintains NIST standard):
    - a. Voluntary Product Standard:
      - 1) PS 20-15, 'American Softwood Lumber Standard'.
  - 2. National Institute of Standards and Technology (NIST), U. S. Department of Commerce:
    - a. Voluntary Product Standard DOC PS 20-15, 'American Softwood Lumber Standard'.

**1.3 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Protect lumber and sheathing and keep under cover in transit and at job site.
  - 2. Do not deliver material unduly long before it is required.
- B. Storage And Handling Requirements:
  - 1. Store lumber and sheathing on level racks and keep free of ground to avoid warping.
  - 2. Stack to insure proper ventilation and drainage.

**PART 2 - PRODUCTS****2.1 MATERIALS**

- A. Dimension Lumber:
  - 1. Design Criteria:
    - a. Meet requirements of PS 20 and National Grading Rules for softwood dimension lumber.
    - b. Bear grade stamp of WWPA, SPIB, or other association recognized by American Lumber Standards Committee identifying species of lumber by grade mark or by Certificate of Inspection.

- c. Lumber **2 inches (50 mm)** or less in nominal thickness shall not exceed 19 percent in moisture content at time of fabrication and installation and be stamped 'S-DRY', 'K-D', or 'MC15'.
  - d. Preservative Treated Plates / Sills:
    - 1) **2x4 (38 mm by 64 mm)**: Standard and better Douglas Fir, Southern Pine, or HemFir, or StrandGuard by iLevel by Weyerhaeuser Boise, ID [www.ilevel.com](http://www.ilevel.com). (LSL 1.3 E)
    - 2) **2x6 (38 mm by 140 mm)** And Wider: No. 2 or or MSR 1650f - 1.5e Douglas Fir, Southern Pine, HemFir, or StrandGuard by iLevel by Weyerhaeuser, Boise, ID [www.ilevel.com](http://www.ilevel.com). (LSL 1.3 E).
  - e. Fire-Retardant:
    - 1) Fire-Retardant as specified in Section 06 0573 applied to wood materials used above top plate that is part of attic space including soffit/fascia components if shown on Contract Drawings.
- B. Lumber Ledgers:
- 1. Design Criteria:
    - a. No. 2 Douglas Fir-Larch, or Southern Pine.
- C. See drawings for additional requirements.

## 2.2 ACCESSORIES

- A. Blocking:
- 1. Sound lumber without splits, warps, wane, loose knots, or knots larger than **1/2 inch (13 mm)**.
- B. Furring Strips:
- 1. Utility or better.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
- 1. Use preservative treated wood for wood members in contact with concrete or masonry, including wall, sill, and ledger plates, door and window subframes and bucks, etc.
  - 2. Fire-Retardant Wood Treatment:
    - a. Field Cuts:
      - 1) Do not rip or mill fire retardant treated lumber. Cross cuts, joining cuts, and drilling holes are permitted.
- B. Interface With Other Work:
- 1. Coordinate with other Sections for location of blocking required for installation of equipment and building specialties. Do not allow installation of gypsum board until required blocking is in place.
  - 2. Where manufactured items are to be installed in framing, provide rough openings of dimensions within tolerances required by manufacturers of such items. Confirm dimensions where not shown on Contract Drawings.
- C. Roof Framing:
- 1. Place with crown side up at **16 inches (400 mm)** on center unless noted otherwise.
  - 2. Install structural blocking and bridging as necessary and as described in Contract Documents.
  - 3. Special Requirements:
    - a. Roof And Ceiling Joists: Lap joists **4 inches (100 mm)** minimum and secure with code approved framing anchors.
    - b. Roof Rafters And Outlookers:
      - 1) Cut level at wall plate and provide at least **2-1/2 inches (64 mm)** bearing where applicable. Spike securely to plate with three 10d nails.

- 2) Attach to trusses or other end supports with framing anchors described in Contract Documents.
- 3) Provide for bracing at bearing partitions.
4. Installation of Structural Composite Lumber:
  - a. Install temporary horizontal and cross bracing to hold members plumb and in safe condition until permanent bracing is installed.
  - b. Install permanent bracing and related components before application of loads to members.
- D. Accessory / Equipment Mounting And Gypsum Board Back Blocking (nailers):
  1. Furnish and install blocking in wood framing required for hardware, specialties, equipment, accessories, and mechanical and electrical items, etc.
  2. Furnish and install back blocking in wood framing required for joints in gypsum wallboard.
    - a. Install back blocking between I-joist framing members with equivalent of Simpson Z2 clips attached with four 10d x 1-1/2 inches (38 mm) nails at each end, two into 'I' joist and two into blocking.
    - b. Attach back blocking at trusses, stick framing, or walls with two 10d nails in each end of each piece of blocking.
- E. Furring Strips:
  1. On Wood: Nail or screw as required to secure firmly.

**END OF SECTION**





**SECTION 07 2123****LOOSE-FILL INSULATION****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Furnish and install loose-fill insulation as described in Contract Documents.

**1.2 REFERENCES**

- A. Definitions:
1. Flame Spread: The propagation of flame over a surface.
  2. Flame Spread Index: The numerical value assigned to a material tested in accordance with ASTM E84.
  3. Smoke-Developed Index: The numerical value assigned to a material tested in accordance with ASTM E84.
- B. Reference Standards:
1. ASTM International:
    - a. ASTM C518-15, 'Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus'.
    - b. ASTM C764-11, 'Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation'.
    - c. ASTM E84-15a, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
    - d. ASTM E136-12, 'Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C'.

**1.3 SUBMITTALS**

- A. Action Submittals:
1. Product Data:
    - a. Manufacturer's literature describing products to be used, showing compliance with specified requirements.
    - b. Manufacturer's storage and handling requirements and recommendations.
    - c. Manufacturer's installation instructions.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
1. Insulation shall be manufactured to be in compliance with International Code Council (IBC) or other applicable building codes.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
1. Materials shall be delivered in original, unopened packages with labels intact.
    - a. Labels to identify reference standards, type and class as applicable, minimum net weight of insulation, coverage, "R" values, and required warning statements.

**B. Storage And Handling Requirements:**

1. Protect from physical damage and from becoming wet, soiled, or covered with ice or snow.
2. Provide dry location with adequate ventilation for storage, not subject to open flames or sparks, and permitting easy access for inspection and handling.
3. Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling
4. Comply with Manufacturer's recommendations for handling, storage, and personal protection during installation.

**PART 2 - PRODUCTS****2.1 SYSTEMS****A. Manufacturers:****1. Insulation:****a. Type One Acceptable Manufacturers:**

- 1) Certainteed Corp, Valley Forge, PA [www.certainteed.com](http://www.certainteed.com).
- 2) FiberTEK, Salt Lake City, UT [www.fibertekinsulation.com](http://www.fibertekinsulation.com).
- 3) Guardian Fiberglass, Greer, SC [www.guardianbp.com](http://www.guardianbp.com).
- 4) Johns Manville, Denver, CO [www.jm.com](http://www.jm.com).
- 5) Knauf Fiber Glass, Shelbyville, IN [www.knaufusa.com](http://www.knaufusa.com).
- 6) Owens-Corning Fiberglass Corporation, Toledo, OH [www.owens-corning.com](http://www.owens-corning.com).

**b. Equal as approved by Architect before bidding. See Section 01 6200.****B. Materials:****1. Loose-Fill Insulation:****a. Blown Insulation:**

- 1) Fiber glass.
- 2) Comply with requirements of ASTM C764, Type I or II, non-combustible when tested in accordance with ASTM E136.

**b. 'R' Factor Required:**

- 1) Order insulation by 'R' factor rather than 'U' factor, rating, or thickness.
  - a) Add 6" to existing.

**PART 3 - EXECUTION****3.1 EXAMINATION****A. Verification Of Conditions:****1. Inspection:**

- a. Examine substrate and verify framing is suitable for installation of insulation:
- b. Verify that mechanical and electrical services have been installed and tested and, if appropriate, verify that adjacent materials are dry and ready to receive insulation.
- c. Notify Architect of unsuitable conditions in writing.
- d. Do not install insulation over unsuitable conditions:
  - 1) Commencement of Work by installer is considered acceptance of substrate.

**3.2 INSTALLATION****A. General:**

1. Install in accordance with manufacturer's instructions.
2. Install in insulation in sufficient depth to provide thermal value specified after settlement of insulation.

3. Do not blow insulation into electrical devices and vents.
4. Provide minimum clearance around recessed lighting fixtures as approved by local code.
5. Install baffles between trusses and rafters at ventilation spaces if necessary to prevent insulation from blocking airflow from soffit.

### **3.3 FIELD QUALITY CONTROL**

- A. Field Inspections:
  1. Insulation meets required thickness requirements.
- B. Non-Conforming Work: Non-conforming work as covered in General Conditions applies, but is not limited to the following:
  1. Correct any work found defective or not complying with contract document requirements at no additional cost to Owner.

### **3.4 PROTECTION**

- A. Protect installed products until project completion.
- B. Repair or replace damaged products.

### **3.5 CLEANING**

- A. Waste Management:
  1. Disposal of rubbish, debris, and packaging materials in approved manner.

**END OF SECTION**



**SECTION 07 3113****ASPHALT SHINGLES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install Asphalt Shingle Roofing System as described in Contract Documents.
- B. Related Requirements:
  - 1. Division 22: Plumbing vent piping.
  - 2. Division 23: HVAC flues and air piping.
- C. Products Installed But Not Furnished Under This Section:
  - 1. Miscellaneous flashing and sheet metal.
    - a. Drip metal.
    - b. Valley flashing.
    - c. Wall flashings.
  - 2. Pipe and flue roof jacks.
  - 3. Ridge vent.
- D. Related Requirements:
  - 1. Section 07 6210: 'Galvanized Steel Flashing And Trim' or Section 07 6220: 'Stainless Steel Flashing And Trim' for furnishing scupper(s) metal used at steeple.
  - 2. Section 07 6310: 'Steep Slope Roof Flashing: Asphalt Tile' for furnishing of roof flashing, pipe jacks, drip edge and miscellaneous flashing and sheet metal.
  - 3. Section 07 7226: 'Ridge Vent.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Flame Spread Classification: Categories as per ASTM E84/UL 723 or ULC 102:
    - a. Class A: Highest fire-resistance rating for roofing as per ASTM E108. Indicated roofing is able to withstand severe exposure to fire exposure to fire originating from sources outside building.
    - b. Class B: Fire-resistance rating indicating roofing materials are able to withstand moderate exposure to fire originating from sources outside of building.
    - c. Class C: Fire-resistance rating indicating roofing materials are able to withstand light exposure to fire originating from sources outside of building.
  - 2. Life Safety Code Classes (NFPA 101):
    - a. Class A: rating 0-25.
    - b. Class B: rating 26-75.
    - c. Class C: rating 76-200.
    - d. Class D: rating 201-500.
    - e. Class E: rating over 500.
  - 3. Shiner: Incorrectly placed nail which isn't covered by subsequent course of shingles.
  - 4. Wind Uplift: Wind-induced forces on roof system or components in roof system. Wind uplift generally includes negative pressure component caused by wind being deflected around and across surfaces of building and positive pressure component from air flow beneath roof deck.
- B. Reference Standards:
  - 1. ASTM International:

- a. ASTM D226-09/D226M-09, 'Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing'.
  - b. ASTM D228/D228M-15, 'Standard Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing'.
  - c. ASTM D1970/D1970M-15a, 'Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection'.
  - d. ASTM D2626-04(2012), 'Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing'.
  - e. ASTM D3018/D3018M-11, 'Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules'.
  - f. ASTM D3019-08, 'Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered'.
  - g. ASTM D3161/D3161M-16, 'Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)'.
  - h. ASTM D3462/D3462M-16, 'Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules'.
  - i. ASTM D4869/D4869M-16a, 'Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing'.
  - j. ASTM D6757-16a, 'Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing'.
  - k. ASTM D7158/D7158M-16, 'Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)'.
  - l. ASTM E84-16, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
  - m. ASTM E108-11, 'Standard Test Methods for Fire Tests of Roof Coverings'.
  - n. ASTM F1667-15, 'Standard Specification for Driven Fasteners: Nails, Spikes, and Staples'.
2. International Building Code (IBC):
    - a. Chapter 15, 'Roof Assemblies And Rooftop Structures':
      - 1) Section 1507, 'Requirements for Roof Coverings':
        - a) 1507.2, 'Asphalt Shingles'.
  3. National Fire Protection Association:
    - a. NFPA 101: 'Life Safety Code' (2015 Edition or most recent edition adopted by AHJ).
  4. Underwriters Laboratories (UL):
    - a. UL 580: 'Tests for Uplift Resistance of Roof Assemblies' (5th Edition).
    - b. UL 723, 'Tests for Safety Test for Surface Burning Characteristics of Building Materials' (10th Edition).
    - c. UL 790, 'Standard Test Methods for Fire Tests of Roof Coverings' (8th Edition).
    - d. UL 2218, 'Standard for Impact Resistance of Prepared Roof Covering Materials' (2nd Edition).
    - e. UL 2390, 'Standard for Tests for Wind Resistant Asphalt Shingles with Sealed Tabs' (1st Edition).

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
  1. Participate in mandatory pre-installation conference:
    - a. Roofing Installer's Foreman and those responsible for installation of roofing to be in attendance. Include Shingle Manufacturer's Representative if available.
  2. Schedule pre-installation conference at project site after completion of the installation of roof sheathing but before installation of any roofing system component.
  3. In addition to agenda items specified in Section 01 3100, review following:
    - a. Review if Project is in high wind area.
    - b. Review if Project could have ice dam problems.
    - c. Review if Project could have fungus-algae resistance problems.
    - d. Review Shingle Manufacturer's ventilation requirements.
    - e. Review Shingle Manufacturer's Ambient Conditions requirements.
    - f. Review existing roof conditions including moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.

- g. Review proper valley, flashing, penetrations, secondary underlayment, sealants, and nailing requirements.
  - h. Review racking installation method is not permitted.
  - i. Review Cleaning and Disposal requirements.
  - j. Review Special Procedure Submittal for Warranty Information to be given to Manufacturer before Manufacture will issue Roof Warranty by Installer.
  - k. Review safety issues.
- B. Sequencing:
1. Sequence of Roofing Materials (see valley flashing detail in Contract Drawings):
    - a. Apply continuous **12 inches (300 mm)** wide strip at edge of eaves and rakes of secondary underlayment.
    - b. Metal drip edge.
    - c. Secondary underlayment.
    - d. Apply three (3) continuous **36 inch (900 mm)** wide sheets of secondary underlayment in valley.
    - e. Install one (1) continuous **36 inch (300 mm)** wide strip of primary underlayment atop secondary underlayment and centered over valley.
    - f. Install formed valley metal over strip of primary underlayment.
    - g. Apply **12 inches (300 mm)** wide strips of secondary underlayment lapping nailed edge of formed valley metal **3 inches (75 mm)**.
    - h. Primary underlayment.
    - i. Asphalt shingles.
    - j. Counter flashings over step flashing.
  2. Coordinate sequencing of products furnished in Section 07 7226: 'Ridge Vents'.

#### 1.4 SUBMITTALS

- A. Action Submittals:
1. Product Data:
    - a. Color and style selection.
  2. Samples:
    - a. Full size shingle.
- B. Informational Submittals:
1. Certificates:
    - a. Installers:
      - 1) Provide current Certification for completion of certified training from Shingle Manufacturer.
      - 2) Installer's signed certificate stating roofing system complies with Contract Documents performance requirements and work only performed by trained and authorized personnel in those procedures.
  2. Tests And Evaluation Reports:
    - a. Manufacturer's test reports.
    - b. ICC-ESR evaluation report.
    - c. Wind speed coverage for warranted wind speed.
  3. Manufacturers' Instructions:
    - a. Shingle Manufacturer's installation instructions and details for installation of secondary underlayment at penetrations, dormers, eaves, rakes, etc, to fit environmental conditions at Project.
  4. Special Procedure Submittals:
    - a. Contact Owner's Representative (FM Group or Project Manager) for following information:
      - 1) Installer to include following mandatory information to be added to 'Roofing Manufacturer System Warranty' submitted with Closing Documents.
        - a) Name of Owner (name of FM Group) Provo South FM Group
        - b) Mailing Address (FM office address) PO Box 358 Provo, UT 84603
        - c) Building Property ID (unique 7 digit identifier) 529456815010101
        - d) Project site address: 1498 East 800 South Provo, UT
        - e) Roof Completion Date \_\_\_\_\_

- f) Any addition data required from Manufacturer.
- 2) Installer to include following mandatory information to be added to 'Roof Installer Workmanship Warranty' submitted with Closing Documents:
  - a) Name of Owner (name of FM Group) Provo South FM Group
  - b) Mailing Address (FM office address) PO Box 358 Provo, UT 84603
  - c) Building Property ID (unique 7 digit identifier) 529456815010101
  - d) Project site address: 1498 East 800 South Provo, UT 84601
  - e) Roof Completion Date \_\_\_\_\_
  - f) Any addition data required from Manufacturer.
- 5. Qualification Statement:
  - a. Installer:
    - 1) Asphalt Shingles:
      - a) Provide Qualification documentation.

#### C. Closeout Submittals:

- 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
  - a. Warranty Documentation:
    - 1) Asphalt Shingles:
      - a) Final, executed copy of 'Roofing Manufacturer System Warranty' including wind speed coverage and required Owner mandatory information.
      - b) Final, executed copy of 'Roof Installer Workmanship Warranty' including required Owner mandatory information.
    - 2) Verify mandatory information as specified in Special Procedure Submittal has been included in Final Warranty.
  - b. Record Documentation:
    - 1) Manufacturers Documentation:
      - a) Manufacturer's literature.
      - b) Color selections.
      - c) Test and evaluation reports.
    - 2) Roofing Inspection Documentation:
      - a) Include copy of roof inspection report.
    - 3) Certificate: Installer statement of compliance for performance requirements.
    - 4) Certificate: Installer completion of certified training.
    - 5) Test And Evaluation Report: UL fire-resistance rating test report.
    - 6) Test And Evaluation Report: NFPA 101 Class A approval.
    - 7) Test And Evaluation Report: Wind resistance requirements required.

#### D. Maintenance Material Submittals:

- 1. Extra Stock Materials:
  - a. Provide one (1) square minimum of bundled shingles.

### 1.5 QUALITY ASSURANCE

#### A. Regulatory Agency Sustainability Approvals:

- 1. Building Codes:
  - a. Meet requirements for NFPA 101 Class A roof assembly.
  - b. Roof system will meet requirements of all federal, state, and local codes having jurisdiction.
- 2. Fall Protection: Meet requirement of fall protection as required by federal, state, and local codes having jurisdiction.
- 3. Fire Characteristics:
  - a. Provide shingles and related roofing materials with fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL / ULC or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency:
    - 1) Exterior Fire-Test Exposure: Class A; UL 790 or ASTM E108, for application and roof slopes indicated.
      - a) Materials shall be identified with appropriate markings of applicable testing agency.
- 4. Impact Resistance:
  - a. Meet UL 2218 impact resistant testing.



- b. Meet UL 2218 Class 4 impact resistant rating for hail.
  5. Wind Resistance:
    - a. Meet ASTM D3161/D3161M for wind resistance.
      - 1) Installation shall comply with IBC Table 1507.2.7, 'Attachment'.
  6. Wind Speed:
    - a. As required to meet local codes having jurisdiction.
  7. Wind Uplift Resistance:
    - a. Meet UL 580 wind uplift of roof assemblies.
    - b. Meet UL 1897 uplift test for roof covering systems.
    - c. Meet ASTM D7158/D7158M for wind resistance for uplift force/uplift resistance.
- B. Qualifications:
1. Manufacturer:
    - a. Asphalt Shingles:
      - 1) Asphalt shingles are required to be produced under quality control program administered by inspection agency currently accredited by ICBO ES or recognized by National Evaluation Service, Inc. Quality control manual developed in consultation with approved agency, and complying with ICBO ES Acceptance Criteria for Quality Control Manuals (AC10), must be submitted.
    - b. Underlayment:
      - 1) Underlayment is required to be manufactured under approved quality control program with inspections by inspection agency accredited by International Accreditation Service (IAS) or otherwise acceptable to ICC-ES.
      - 2) Quality documentation complying with ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted for roof underlayment.
  2. Roof Installer Foreman Qualifications:
    - a. Requirements of Section 01 4301 applies but not limited to the following:
      - 1) Provide documentation if requested by Architect.
        - a) Approved and authorized by Roofing Manufacturer to install Manufacturer's product and eligible to receive Manufacturer's warranty before bid.
        - b) Completed Shingle Manufacturer's certified trained.
        - c) Have thorough knowledge of installing asphalt shingle roofing and have minimum of five (5) years roofing experience.
        - d) Current license for the city, county, and state where project is located and license for specific type of roofing work to be performed.
        - e) Roofing Installer's foreman shall be skilled in his trade and qualified to lay out and supervise the Work.
        - f) Flashing installation shall be performed by personnel trained and authorized by Roofing Manufacturer.
  3. Roof Installer:
    - a. Provide 'Roof Installer Workmanship Warranty' as specified in Warranty in Part 1 of this specification.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
1. Make no deliveries to job site until installation is about to commence, or until approved storage area is provided.
  2. Deliver products job site in Manufacturer's original unopened containers or wrappings with labels intact and legible bearing all seals and approvals.
  3. Deliver materials in sufficient quantities to allow continuity of work.
  4. Remove any material not approved from job site.
- B. Storage And Handling Requirements:
1. Storage Requirements:
    - a. Follow Manufacturer's instructions and precautions for storage and protection of materials.
    - b. Protect roof materials from physical damage, moisture, soiling, and other sources in a clean, dry, protected location.
    - c. Stacking:

- 1) Shingles: Bundles should be stacked flat.
- 2) Underlayment:
  - a) Do not double-stack pallets.
  - b) Stack rolls upright until installation.
- d. Temperature:
  - 1) Shingles:
    - a) Store in covered ventilated area at maximum temperature of 110 deg F (43 deg C).
    - b) Use extra care in handling shingles when temperature is below 40 deg F (4.4 deg C).
  - 2) Underlayment: Store in area with temperature between 40 deg F and 100 deg F (4.4 deg C and 38 deg C).
- e. Unacceptable Material:
  - 1) Remove from job site materials that are determined to be damaged by Architect or by Roofing Manufacturer and replace at no additional cost to Owner.
2. Handling Requirements:
  - a. Handle rolled goods so as to prevent damage to edge or ends.
3. Roof Top Loading:
  - a. Lay shingle bundles flat.
  - b. Do not bend over ridge.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  1. General:
    - a. Proceed with installation only when existing and forecasted weather conditions permit roofing to be performed according to manufacturer's written instructions and warranty requirements.
  2. Shingles:
    - a. Do not install shingles at lower temperatures than allowed by Shingle Manufacturer for application.
  3. Underlayment:
    - a. Install self-adhering sheet underlayment within range of ambient and substrate temperatures recommended by manufacturer.

## 1.8 WARRANTY

- A. Special Warranty:
  1. Shingle Manufacturer's special forty (40) year minimum labor and material warranty written for VMR program, including but not limited to:
    - a. CertainTeed:
      - 1) First ten (10) years minimum of warranty will provide for full replacement cost, including tear-off and disposal, for any failure, including material defects and workmanship. Remaining thirty (30) years of warranty will provide for pro-rated replacement cost.
    - b. Owens Corning:
      - 1) First ten (10) years minimum of warranty will provide for full replacement cost, including tear-off and disposal, for any failure, including material defects and workmanship. Remaining thirty (30) years of warranty will provide for pro-rated replacement cost.
  2. Roofing system will resist blow-offs in winds up to 110 mph (177 kph) for ten (10) years when installed as specified below.
    - a. Meet requirements of ASTM D3161/D3161M UL Class D.
  3. Roof Installer Workmanship Warranty:
    - a. Provide ten (10) year workmanship warranty on roofing system and related components, including flashings, and responsible for all repairs to roofing system and related components due to roof installer's own negligence or faulty workmanship:
      - 1) In the event that, during ten (10) year period following installation, Roof Installer defaults or fails to fulfill its obligation in relation to workmanship warranty as specified in Manufacturer's Agreement, Manufacturer will assume that obligation for remainder of ten (10) year period following original installation and Owner shall have no obligation to

make or pay for repairs to or materials for roofing system that are necessary due to Roof Installer's negligence or faulty installation during that period.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

#### A. Manufacturers:

##### 1. Manufacturer Contact List:

- a. CertainTeed Roofing Products, Valley Forge, PA [www.certainteed.com](http://www.certainteed.com).
  - 1) Contact Information: Wendy Fox, (800) 404-9880 [wfox@dataworksintl.com](mailto:wfox@dataworksintl.com).
- b. Owens Corning, Toledo, OH [www.owenscorning.com](http://www.owenscorning.com).
  - 1) Duration Premium shingles are available in all areas of the USA and Canada including all Duration Premium colors under LDS Church contract. Request shingles through local distribution. Any distribution questions, contact Area Sales Manager.
  - 2) For all other questions, Contact: Sam Baroudi (419) 248-7754 [sam.baroudi@owenscorning.com](mailto:sam.baroudi@owenscorning.com). or Robert Hill (801) 553-2417 [Robert.Hill@owenscorning.com](mailto:Robert.Hill@owenscorning.com).

#### B. Components:

##### 1. Shingles And Underlayment:

- 1) ASTM D3161/D3161M UL Class D.
  - 2) ASTM E108 Class A.
  - 3) CSA A123.1/A123.5 (Canadian standard).
  - 4) ASTM D3462/D3462M where required by local codes.
  - 5) Impact Resistant Shingles: Meet requirements of UL 2218 Class 4 Impact, ASTM E108 Class A Fire Resistance, ASTM D3161/D3161M Class F Wind, ASTM D7158/D7158M Class H Wind, ASTM D3018/D3018M Type 1, ASTM D3462/D3462M, and UL 790 Class A Fire Resistance.
  - 6) Primary Underlayment: Meet requirements of ASTM D226/D226M and ASTM D4869/D4869M.
  - 7) Secondary Underlayment: Meet requirements of ASTM D1970/D1970M and UL 790 Class A Fire Resistance.
  - 8) Synthetic Underlayment: Meet requirements of ASTM D226/D226M and ASTM D4869/D4869M (physical properties only) or ASTM D1970/D1970M and ASTM E108 Class A Fire.
  - 9) Color as selected by Architect from Shingle Manufacturer's full color line..
- b. Category One VMR Products And Manufacturers. See Section 01 6200 for definitions of Categories:
- 1) CertainTeed:
    - a) Shingles:
      - (1) Standard Wind: Hatteras / Landmark Premium.
      - (2) Hip And Ridge Shingles: Shadow Ridge or Laminate Accessory for shingle used.
    - b) Primary Underlayment Under Shingles:
      - (1) Synthetic Underlayment: Diamond Deck.
    - c) Secondary Underlayment Under Shingles:
      - (1) WinterGuard Granular.  
or
      - (2) WinterGuard Sand.  
or
      - (3) WinterGuard High Tack/High Temperature. This is required at all horizontal to vertical transitions as well as underneath all metal flashings.
    - d) Secondary Underlayment Under Shingles over Unheated Buildings:
      - (1) Not required over unheated buildings such as Storage Shed and Stake Pavilions.
  - 2) Owens Corning:
    - a) Note:

- (1) Duration Premium shingles are available in all areas of the USA and Canada including all Duration Premium colors under LDS Church contract. Request shingles through local distribution.
- (2) Any questions, contact Manufactures Area Sales Manager.
- b) Shingles:
  - (1) Standard Wind: Duration Premium shingles.
  - (2) Cool Roof: Duration Premium Cool Series (use only if CRRC 'Cool Roof' Certification is required by AHJ):
    - (a) Approved Colors: 'Frosted Oak', 'Harbor Fog', 'Sage', and 'Sunrise'.
    - (b) Not Approved: off-white or bright white colors.
  - (3) Hip And Ridge Shingles: DecoRidge Hip & Ridge.
- c) Primary Underlayment Under Shingles:
  - (1) Synthetic Underlayment: Deck Defense High Performance Roof Underlayment.
- d) Secondary Underlayment Under Shingles:
  - (1) Weatherlock G Granulated Self-Sealing Ice & Water Barrier.  
or
  - (2) Weatherlock Specialty Tile & Metal for High Temperature. This is required at all horizontal to vertical transitions as well as underneath all metal flashings.  
or
  - (3) Weatherlock Cold Climate for cold weather adhesion and flexibility.
- e) Secondary Underlayment Under Shingles over Unheated Buildings:
  - (1) Not required over unheated buildings such as Storage Shed and Stake Pavilions.

## 2.2 ACCESSORIES

### A. Fasteners:

1. Primary Underlayment:
  - a. Corrosion resistant roofing nails with **one inch (25 mm)** diameter head and **3/4 inch (19 mm)** long shank minimum.
    - 1) If shingles applied as underlayment is laid, use metal or plastic head Simplex roofing nails.
    - 2) If shingles not applied as underlayment is laid, use plastic head only.
  - b. Staples not permitted.
2. Shingles:
  - a. Design Criteria:
    - 1) Meet following requirements for nails:
      - a) Comply with ASTM F1667, Type I, Style 20-Roofing Nails.
      - b) Eleven gauge galvanized steel or equivalent corrosion-resistant roofing nail.
      - c) Nail head sizes: **3/8 inch (9.5 mm)** nominal diameter.
      - d) Sufficient length to penetrate through roof sheathing **1/4 inch (6 mm)** or **3/4 inch (19 mm)** minimum into solid wood decking.
      - e) Hot-dipped galvanized or electroplated fasteners comply with requirements of ASTM A153, Class D.
      - f) Stainless-steel fasteners meet requirements of Type 304 (UNS S30400) or Type 316 (UNS S31600).
  - b. General:
    - 1) Hot-dipped galvanized, electroplated non-corrosive gun-driver nails, or stainless steel fasteners may be used.
    - 2) Fasteners within **15 miles (24.1 km)** of coastal areas (oceanside) applications must use hot-dipped galvanized or stainless steel.
    - 3) All exposed fasteners (including ridge shingles) must use hot-dipped galvanized or stainless steel.
    - 4) Staples not permitted.

### B. Elastomeric Roofing Sealant:

1. Design Criteria:
  - a. Meet requirements of ASTM D3019.

- b. Non asphalt roofing cement (not permitted).
  - c. Elastomeric.
  - d. Cold temperature pliability.
  - e. Compatible with roof penetration boots.
2. Category Four Products And Manufacturers. See Section 01 6200 for definitions of Categories:
- a. Flintbond SBS Modified Bitumen Caulk by CertainTeed.

## **PART 3 - EXECUTION**

### **3.1 INSTALLERS**

- A. VMR Manufacture's Approved Roofing Installers: See Section 01 4301.
1. Utah Area:
    - a. Approved Installers:
      - 1) CertainTeed:
        - a) American Roofing Co. (AMCO), Salt Lake City, UT – Contact: Keith J Yorgason (801) 269-1276.
        - b) Far West Roofing, Bluffdale, UT – Contact Douglas Cooper (801) 253-7799.
        - c) Heritage Roofing, Bluffdale, UT – Contact: Russ or Jim (801) 576-8447.
        - d) Island Heights Construction Inc., Logan, UT – Contact: Alan Ringer (435) 753-7403.
        - e) JTS Roofing Inc., Ogden, UT – Contact: Todd Shupe (801) 627-6450.
        - f) Kendrick Bros Roofing Inc., Ogden, UT – Contact: Greg Kendrick (801) 430-6060.
        - g) Mountain Peak Builders, Inc., Logan, UT – Contact: Zane Rust (435) 232-1367.
        - h) North Face Roofing, Inc., Park City, UT – Craig Peters (801) 455-8492.
        - i) Perkes Roofing, Ogden, UT – Contact: Jon Bertagnolli (801) 430-4489.
        - j) Redd Roofing Co., Ogden, UT – Lance Redd (801) 621-1363.
        - k) Skyline Roofing, Inc. Adam Stout, LaVerkin, UT (435) 635-3172.
        - l) Stout Roofing Inc., St George, UT - Contact: Kelly Casey (435) 635-4288.
        - m) Stuart Roofing, Ogden, UT, Forest Stuart (801) 394 1923.
        - n) VIP Roofing, Centerville, UT – Contact: Max Ker (801) 631-6182.
        - o) Warburton's Inc., Pleasant Grove, UT - Contact: Greg Warburton (801) 785-9500.
        - p) White Roofing Co., Nephi, UT – Contact: Shannon White (435) 623-0241.
      - 2) Owens-Corning:
        - a) American Roofing Co. (AMCO), Salt Lake City, UT – Contact: Keith J Yorgason (801) 269-1276.

### **3.2 EXAMINATION**

- A. Verification Of Conditions:
1. Examine deck to determine if it is satisfactory for installation of roofing system. Conditions include, but are not limited to, moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
    - a. Report unsatisfactory conditions in writing to Architect.
    - b. Commencement of Work by installer is considered acceptance of substrate.
  2. Verify existing soffit and ridge vents meet ventilation code requirements.
    - a. Report inadequate ventilation conditions with recommendations in writing to Architect.

### **3.3 PREPARATION**

- A. Protection Of In-Place Conditions:
1. Install only as much roofing as can be made weathertight each day, including flashing and detail work.
- B. Surface Preparation:

1. Clean roof deck:
  - a. Remove dirt, protruding nails, shingle nails, and debris, before installation of underlayment.
2. Roof deck must be dry to help prevent buckling of deck, which can result in deck movement and damage to primary underlayment.
3. Following Manufacturer's recommendations for placing materials on roof.
  - a. Prevent material from sliding off roof.

### 3.4 INSTALLATION

#### A. General:

1. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.

#### B. Sequence of Roofing Materials as shown and noted on Contract Drawings:

1. 12 inch strip Secondary Underlayment at Eave.
2. Metal Drip Edge.
3. General Secondary Underlayment.
4. Valley Secondary Underlayment (8' - 6" (2.62 m) wide strip of Secondary Underlayment (3 strips) in Valleys applied over sheathing).
5. Valley Secondary Underlayment (36 inch (915 mm) wide Primary Underlayment under Valley Metal).
6. Valley Metal (24 inch (610 mm) wide valley metal 10 ft (3.05 m) lengths).
7. 12 inch strip of Secondary Underlayment over nailed edges (of Valley Metal).
8. General Primary Underlayment.
9. Asphalt Shingles, Step Flashings.
10. Counter Flashing.

#### C. Underlayment:

1. General:
  - a. Temporary Roof:
    - 1) Do not use permanent underlayment installation as temporary roof.
    - 2) If temporary roof is used, remove completely before installation of permanent underlayment.
  - b. Follow Shingle Manufacturer's recommendations for installation of primary and secondary underlayment, particularly at eaves, rakes, and penetrations, unless specified installation procedures and Contract Drawing details are more stringent.
  - c. Avoid scuffing underlayment that can compromise surface and cause leaking. If scuffing occurs, following Manufacturer's recommendation for repair.
  - d. Staples are not permitted.
  - e. Weather conditions:
    - 1) Do not leave underlayment exposed to weather more than thirty (30) days after beginning of underlayment installation even if Manufacture allows longer period of time.
    - 2) If underlayment is exposed for more than thirty (30) days after beginning of underlayment installation, treat as temporary roof under first paragraph above.
    - 3) If moisture is deposited on exposed underlayment, obtain written approval from Shingle Manufacturer's Representative before installing shingles.
  - f. Install valley secondary underlayment, valley primary underlayment, and valley metal after installation of general secondary underlayment, but before installation of general primary underlayment.
2. Primary Underlayment:
  - a. Apply 48 inch (1 200 mm) wide courses over complete deck, including areas covered with secondary underlayment unless specified otherwise.
    - 1) Overlap underlayment before fastening.
    - 2) Maintain end laps of 6 inch (150 mm) and side laps of 3 inch (76 mm).
    - 3) Stop primary underlayment between 3 and 6 inches (75 and 150 mm) of inside edge of strip of secondary underlayment installed over edge of formed valley metal.
  - b. Nailing Synthetic Underlayment:

- 1) Use low-profile plastic or steel cap corrosion resistant nails with **1 inch (25 mm)** diameter heads to fasten underlayment in place. (Fastening underlayment without caps is not permitted).
  - 2) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
  - 3) Fasteners should be long enough to penetrate at least **3/4 inch (19 mm)** into roof sheathing. Fasteners must be lie flush to roof deck at 90 degree angle to roof deck and tight with underlayment.
  - 4) Do not nail through metal flashing, except drip edge, when installing primary underlayment.
  - 5) Follow Shingle Manufacturer's installation instructions for following:
    - a) Securing underlayment to roof deck adjusting for roof slope nailing requirements.
    - b) Side lap, end lap, and overlapping nailing requirements.
    - c) Rake and eave nailing requirements.
    - d) High wind condition nailing requirements.
    - e) Sealants recommendations.
3. Secondary Underlayment:
- a. Under Shingles:
    - 1) Lap end joints **6 inches (150 mm)** and side joints **3 inch (76 mm)** minimum.
    - 2) Apply continuous **12 inches (300 mm)** wide strip at edge of eaves and rakes before installing drip edge.
    - 3) Apply two (2) **36 inch (900 mm)** wide courses along eaves and rakes as described in Contract Documents with first course overlapping drip edge and **12 inches (300 mm)** wide previously applied strip.
    - 4) 100% continuous secondary underlayment is required on this project.
4. Valley Underlayment:
- a. Apply three (3) continuous **36 inch (900 mm)** wide sheets of secondary underlayment in valley lapped so as to provide **102 inch (2 590 mm)** wide covered area centered over valley.
  - b. Apply one (1) continuous **36 inch (300 mm)** wide strip of primary underlayment atop secondary underlayment and centered over valley.
  - c. Install formed valley metal over strip of primary underlayment.
    - 1) Nail top of each section and lap **8 inches (200 mm)** in direction of flow.
    - 2) Seal laps with continuous bead of elastomeric roofing sealant.
    - 3) Secure edges of valley metal with fasteners spaced at **12 inches (300 mm)** maximum on center and approximately **1/2 inch (13 mm)** in from edge of metal.
  - d. Install **12 inches (300 mm)** wide strips of secondary underlayment lapping nailed edge of formed valley metal **3 inches (75 mm)**.
- D. Shingles:
1. Before installing shingles, inspect underlayment and metal installation with Architect and Owner. Correct improperly installed and damaged material before beginning shingle installation.
  2. Racking installation method is not permitted by Owner and will be considered non-conforming work.
  3. Starter shingles:
    - a. Manufacturer's starter shingles are required for Warranty.
    - b. Install shingles at eve and rakes in accordance with Shingle Manufacturer's instructions.
    - c. Cut shingles in accordance with Shingle Manufacturer's instructions, or use approved starter course.
    - d. Nail to eave granule side up in continuous mastic bed with cut edge down-slope and edge overhanging eave **3/8 inch (9 mm)** so sealing tabs are at edge of eave.
    - e. Install shingles with maximum exposure recommended by Shingle Manufacturer.
    - f. Lay first course directly over starter strip with ends flush with starter strip at eaves and so joints in starter strip are offset **4 inches (100 mm)** minimum from joints in first course.
  4. Lay shingles so end joints are offset in accordance with Shingle Manufacturer's installation procedures.
  5. Insure alignment by snapping chalk line at least each fifth course to control horizontal and vertical alignment.
  6. Run courses true to line with end joints properly placed. Leave shingles flat without wave and properly placed.
  7. Hip and ridge shingles:



8. Nailing:
  - a. General:
    - 1) Six (6) Nail Pattern as recommended by Shingle Manufacturer in each shingle.
    - 2) Place in relation to top edge of shingle as required by Shingle Manufacturer.
    - 3) Place nails **one inch (25 mm)** from each end of shingle and remainder evenly spaced between.
    - 4) Should any nail fail to penetrate sheathing by **1/4 inch (6 mm)** minimum, drive additional nail nearby.
  - b. Nailing guns:
    - 1) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
    - 2) Adjust nail gun pressure for nailing flush and tight to deck without cutting shingle surface.
    - 3) Drive nails perpendicular to shingle surface so nail head is flat against shingle.
    - 4) Should any nail fail to penetrate sheathing by **1/4 inch (6 mm)** minimum, drive additional nail nearby.
9. Hand-Sealing:
  - a. If ambient temperature or exposure to sun will not be sufficient to secure adhesive strip to under-lying shingle within one week, hand seal shingles with elastomeric roofing sealant.
10. Over valley metal:
  - a. Do not drive nails through valley metal.
  - b. Run chalk line so valley metal will be exposed **6 inches (150 mm)** wide at top and diverge **3/32 inch (one mm)** per **ft (300 mm)** down to eaves.
  - c. Neatly trim shingles to this line.
  - d. Seal trimmed shingle edges to valley metal with continuous bead of elastomeric roofing sealant applied within **one inch (25 mm)** of shingle edge.
11. Vent pipe sleeve flange:
  - a. Vent pipe sleeve flange as specified in Section 07 6310.
  - b. Fit shingles under lower edge and over sides and upper edge.
  - c. Set vent pipe flange in elastomeric roofing sealant.
  - d. Embed shingles in elastomeric roofing sealant where they overlap flange.
  - e. Apply bead of elastomeric roofing sealant at junction of vent pipe and vent flashing.
12. Furnished and installed in Section 07 7226 'Ridge Vents'.

### 3.5 FIELD QUALITY CONTROL

- A. Non-Conforming Work:
  1. Correct any work found defective or not complying with Contract Document requirements at no additional cost to the Owner.
  2. Raking installation method is not permitted by Owner and will be considered to be not complying with Contract Document requirements and must be corrected at no additional cost to Owner.

### 3.6 CLEANING

- A. General:
  1. All tools and unused materials must be collected at end of each workday and stored properly off finished roof surface and protected from exposure to elements.
  2. Leave metals clean and free of defects, stains, and damaged finish.
    - a. Replace fascia metal that is scratched through finish to base metal.
  3. Properly clean finished roof surface after completion.
  4. Verify drains and gutters are not clogged.
  5. Clean shingles and building of soiling caused by this installation.
  6. Clean and restore all damaged surfaces to their original condition.
- B. Waste Management:
  1. Disposal:
    - a. All work areas are to be kept clean, clear and free of debris at all times.



- b. Do not allow trash, waste, or debris to collect on roof. These items shall be removed from roof on a daily basis.
- c. Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current EPA regulations and local laws.

### **3.7 PROTECTION**

- A. Do not permit traffic over finished roof surface.

**END OF SECTION**



**SECTION 07 6210****GALVANIZED STEEL FLASHING AND TRIM****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install miscellaneous flashing, counterflashing, and hold-down clips as described in Contract Documents and not specified to be of other material.
- B. Products Furnished But Not Installed Under This Section:
  - 1. Gravel stops, copings, scuppers, and miscellaneous sheet metal specialties not specified to be of other materials.
- C. Related Requirements:
  - 1. Section 06 1100: 'Wood Framing' for wood base.
  - 2. Sections under 07 3000 heading: 'Steep Slope Roofing' for installation of gravel stops, copings, scuppers, and miscellaneous roofing related flashing.
  - 3. Sections under 07 5000 heading: 'Membrane Roofing' for installation of gravel stops, copings, scuppers, and miscellaneous roofing related flashing.
  - 4. Section 07 9213: 'Elastomeric Joint Sealant'.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-13, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
    - b. ASTM A792/A792M-10, 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
  - 2. Federal Specifications:
    - a. TT-S-00230C(2) Sealing Compound, Elastomeric Type, Single Component, (For Caulking, Sealing, and Glazing in Buildings and Other Structures).

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Type Two Acceptable Manufacturers Of Metal:
    - a. CMG – Coated Metals Group, Denver, CO [www.cmgmetals.com](http://www.cmgmetals.com).
    - b. Drexel Metals, LLC, Ivyland, PA [www.drexmet.com](http://www.drexmet.com).
    - c. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - d. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - e. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - f. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - g. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - h. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - i. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - j. Equal as approved by Architect before installation. See Section 01 6200.

- B. Materials:
1. Sheet Metal:
    - a. Galvanized iron or steel meeting requirements of ASTM A653/A653M, G 90 or Galvalume steel meeting requirements of ASTM A792/A792M AZ50, 50 ksi.
      - 1) 22 ga (0.792 mm) for hold-down clips.
      - 2) 24 ga (0.635 mm) for all other.
- C. Fabrication:
1. Form accurately to details.
  2. Profiles, bends, and intersections shall be even and true to line.
  3. Fold exposed edges 1/2 inch (12.7 mm) to provide stiffness.
- D. Finish:
1. Exposed to view:
    - a. Provide face coating of polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
    - b. Reverse side coating shall be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
  2. Color as selected by Architect from Manufacturer's standard colors.

## 2.2 ACCESSORIES

- A. Sealants: Rubber base type conforming to Fed Spec TT-S-00230C.
- B. Fasteners:
1. Of strength and type consistent with function.
  2. Nails: Hot-dipped galvanized.
  3. Screws, Bolts, And Accessory Fasteners: Galvanized or other acceptable corrosion resistant treatment.
- C. Roof Diverter:
1. Roof Diverter (Kickout Diverter) required when vertical wall extends beyond lower roof.
    - a. 24 ga (0.635 mm) galvanized iron or steel meeting requirements for sheet metal specified in materials above.
    - b. Size: 6 inch (150 mm) x 6 inch (150 mm) by 12 inches (300 mm) length.
- D. Step Flashing:
1. Step flashing required for steep slope for roof to wall flashing.
    - a. 24 ga (0.635 mm) galvanized iron or steel meeting requirements for sheet metal specified in materials above.
    - b. Size: 5 inch (125 mm) x 5 inch (125 mm) by 8 inch (200 mm) or 12 inches (300 mm) length.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install with small, watertight seams.
- B. Slope to provide positive drainage.
- C. Provide sufficient hold down clips to insure true alignment and security against wind.
- D. Provide 4 inch (100 mm) minimum overlap.

- E. Allow sufficient tolerance for expansion and contraction.
- F. Insulate work to prevent electrolytic action.
- G. Roof Diverter (Kickout Diverter):
  - 1. Extend roof diverter 1 inch (25 mm) minimum beyond face edge of lower roof.
  - 2. Extend underlayment vertically up wall behind flashing.
  - 3. Solder all joints.
  - 4. Apply sealant.

### 3.2 CLEANING

- A. Leave metals clean and free of defects, stains, and damaged finish.

**END OF SECTION**



**SECTION 07 6310****STEEP SLOPE ROOF FLASHING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Roof flashing including:
    - a. Formed Valley Metal.
    - b. Pipe flashing for vent piping and flues.
    - c. Roof jacks.
    - d. Saddles and curb flashings.
    - e. Miscellaneous flashing.
- B. Related Requirements:
  - 1. Section 07 3113: 'Asphalt Shingles' for installation.
  - 2. Section 07 9213: 'Elastomeric Joint Sealants' for quality of sealants.
  - 3. Division 22: Plumbing vent piping.
  - 4. Division 23: HVAC flues and air piping.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Base Flashing: That portion of flashing attached to or resting on roof deck to direct flow of water onto the roof covering.
  - 2. Cap Flashing: Material used to cover top edge of base flashings or other flashings to prevent water seepage behind base flashing. Cap flashing overlaps base flashing.
  - 3. Collar: Pre-formed flange placed over vent pipe to seal roof around vent pipe opening. Also called vent sleeve.
  - 4. Drip Edge: Non-corrosive, non-staining material used along eaves and rakes to allow water runoff to drip clear of underlying building.
  - 5. Flange: Metal pan extending up and down roof slope around flashing pieces. Usually at plumbing vents.
  - 6. Flashing: Components used to prevent seepage of water into a building around any intersection or projection in a roof such as vent pipes, adjoining walls, and valleys.
  - 7. Metal Flashing: Roof components made from sheet metal that are used to terminate roofing membrane or other material alongside roof perimeters as well as at roof penetrations.
  - 8. Penetration: Any object that pierces surface of roof.
  - 9. Pipe Boot: Prefabricated flashing piece used to flash around circular pipe penetrations. Also known as a Roof Jack.
  - 10. Roof Jack: Term used to describe a Pipe Boot or Flashing Collar.
  - 11. Valley: Internal angle formed by intersection of two sloping roof planes to provide water runoff.
  - 12. Vent: Any outlet for air that protrudes through roof deck such as pipe or stack. Any device installed on roof, gable or soffit for purpose of ventilating underside of roof deck.
  - 13. Vent Sleeve: See collar.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-15, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
    - b. ASTM A792/A792M-10(2015), 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
  - 2. ASTM International: (specifically referenced for pipe flashing only):

- a. ASTM B117-11, 'Standard Practice for Operating Salt Spray (Fog) Apparatus'.
- b. ASTM E283-04(2012), 'Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen'.
- c. ASTM E330/E330M-14, 'Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference'.
- d. ASTM E331-00(2009), 'Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference'.
- e. ASTM E2140-01(2009), 'Standard Practice for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head'.

### 1.3 SUBMITTALS

- A. Informational Submittals:
  1. Tests And Evaluation Reports:
    - a. Manufacturer's test reports:
    - b. ICC-ESR evaluation report.

### 1.4 WARRANTY

- A. Pipe Flashing:
  1. Manufacturer's warranty against defects in materials and workmanship when correctly installed in appropriate application for life of original roofing material from installation or replacement or fifty (50) years whichever is greater.
- B. Pipe Flashing For Concentric Piping Flashing Retrofitting:
  1. Manufacturer's twenty (20) warranty pipe flashing will not fail (does not allow water to leak through flashing) due to normal weather and atmospheric conditions from date of installation.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Manufacturers:
  1. Type Two Acceptable Manufacturers:
    - a. Aztec Washer Co., Poway, CA [www.aztecwasher.com](http://www.aztecwasher.com).
    - b. CMG – Coated Metals Group, Denver, CO [www.cmgmetals.com](http://www.cmgmetals.com).
    - c. Drexel Metals, LLC, Ivyland, PA [www.drexmet.com](http://www.drexmet.com).
    - d. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - e. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - f. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - g. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - h. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - i. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - j. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - k. Equal as approved by Consultant before installation. See Section 01 6200.
- B. Formed Valley Metal:
  1. Metal:
    - a. Steel: Minimum 24 ga (0.635 mm), hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz/sq ft. or galvalume meeting requirements of ASTM A792/A792M AZ50, 50 ksi.
- C. Formed Drip Edge:
  1. Metal:



- a. Aluminum: 0.032 inch (0.81 mm) thick minimum.
- D. Fabrication:
1. Valley-ribbed flashing:
    - a. Form accurately to details. Provide formed valley metal in 10 foot (3 meter) lengths with one inch (25 mm) 'V' crimp and break in center to match roof slopes.
  2. Profiles, bends, and intersections shall be even and true to line.
- E. Finishes:
1. Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  2. Reverse side coating of steel flashings to be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
  3. Color as selected by Consultant from Manufacturer's standard colors.

## 2.2 ACCESSORIES

- A. Pipe Flashing For Plumbing Vent Lines metal flues, and HVAC Air Piping:
1. Description:
    - a. Ultra-pure high consistency molded one hundred (100) percent silicone rubber pipe boot that prevents cracking and splitting for life of roof.
  2. Design Criteria:
    - a. Meet following Tests:
      - 1) ASTM B117 (Salt Spray Test).
      - 2) ASTM E283 (Air Leakage).
      - 3) ASTM E 330 (Uniform Structural Load).
      - 4) ASTM E331 (Water Penetration).
      - 5) ASTM E2140 (Water).
  3. 24 ga (0.635 mm) coated galvanized steel plate.
  4. Minimum 4 inch (100 mm) flashing on each side, 6 inch (150 mm) flashing at top, 3 inch (76 mm) flashing at bottom with nailing slots.
  5. UV stable solid molded PVC compression collar.
  6. Use Ultimate Pipe Flashing for PVC, ABS and IP.
  7. Use Ultimate Pipe Flashing and Easy Sleeve for Copper, Cast Iron, or irregular and damaged pipes:
    - a. Black PVC with integral cap.
  8. Sizes: 1-1/4 inch (32 mm), 1-1/2 inch (38 mm), 2 inch (50 mm), 3 inch (76 mm), and 4 inch (100 mm).
  9. Slope: Flat to 18/12 pitch.
  10. Flashing Finish: Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500) for coil coating components containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  11. Color: Brown (no other color available).
  12. Category Four Approved System Manufacturers. See Section 01 6200 for definitions of Categories:
    - a. Ultimate Pipe Flashing by Lifetime Tool & Building Products LLC, Winchester, VA [www.lifetimetool.com](http://www.lifetimetool.com) (877) 904-1002.
    - b. Ultimate Pipe Flashing and Easy Sleeve by Lifetime Tool & Building Products LLC, Winchester, VA [www.lifetimetool.com](http://www.lifetimetool.com) (877) 904-1002.
- B. Roof Jacks For Metal Flues: Factory-made galvanized steel.
- C. Pipe Flashing For Concentric Piping Flashing Retrofitting:
1. Description:

- a. Black EPDM Pipe flashing for existing Concentric Piping for reroofing existing roofs (cutting Concentric Roof Termination cap off and replacing is not permitted).
  - b. Weather resistance to withstand ultra violet light and ozone.
  - c. Malleable base to conform to different roof pitches.
  - d. Pipe size: 1/2 inch (12.7 mm) to 4 inch (101 mm).
    - 1) On-site customization.
  - e. Fasteners included.
2. Type One Acceptable Products:
    - a. Aztec RF101BP.
    - b. Equal as approved by Consultant before bidding. See Section 01 6200.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Interface With Other Work:
  1. Coordinate with pipe installers for proper size of roof jacks and pipe flashing.
- B. Pipe Flashing:
  1. Follow Manufacturer's installation instructions.
- C. Pipe Flashing For Concentric Piping Flashing Retrofitting:
  1. Follow Manufacturer's installation instructions including but not limited to:
    - a. Choose appropriate retrofit size.
    - b. Wrap pipe flashing around pipe.
    - c. Apply 100 percent silicone sealant between base, roof, and top of flashing.
    - d. Use fasteners provided.
    - e. Apply cable tie as directed.

**END OF SECTION**

**SECTION 07 6311****METAL SOFFIT PANELS****PART 1 - GENERAL****1.1 SUMMARY**

## A. Includes But Not Limited To:

1. Furnish and install metal soffit panel system as described in Contract Documents.

**1.2 REFERENCES**

## A. Association Publications:

1. American Architectural Manufacturers Association:
  - a. AAMA 1402-09, 'Standard Specification for Aluminum Siding Soffit and Fascia'.

## B. Reference Standards:

1. ASTM International:
  - a. ASTM A653/A653M-13, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
  - b. ASTM A792/A792M-10, 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
  - c. ASTM B209-10, 'Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate'.
  - d. ASTM E84-13a, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
2. Military Specifications and Standards:
  - a. MIL-DTL-5541F, 'Chemical Conversion Coatings On Aluminum And Aluminum Alloys' (Superseding MIL-C-5541E) 11-Jul-2006'.

**1.3 SUBMITTALS**

## A. Action Submittals:

1. Product Data:
  - a. Manufacturer's literature or cut sheet for products furnished.

## B. Closeout Submittals:

1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
  - a. Warranty Documentation:
    - 1) Final, executed copy of Warranty.

**1.4 QUALITY ASSURANCE**

## A. Regulatory Agency Sustainability Approvals:

1. Fire Characteristics Performance Requirement:
  - a. Meet requirements of ASTM E84 Class A fire rating.

## B. Qualifications:

1. Installer:
  - a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  - 1. Materials shall be delivered in original, unopened packages with labels intact.
  - 2. Inspect delivered material for damage.
- B. Storage And Handling Requirements:
  - 1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.
  - 2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

## 1.6 WARRANTY

- A. Manufacturer Warranty:
  - 1. Manufacturer's standard warranty against manufacturer defects.
  - 2. Manufacturer's written thirty five (35) year warranty on paint finish against cracking, peeling, blistering, chalk, and color change.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

- A. Manufacturers:
  - 1. Type One Acceptable Manufacturers Of Metal:
    - a. AEP / Span, Dallas, TX [www.aep-span.com](http://www.aep-span.com).
    - b. ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
    - c. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - d. Fashion Inc, Ottawa, KS [www.fashioninc.com](http://www.fashioninc.com).
    - e. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - f. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - g. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - h. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - i. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - j. Equal as approved by Architect before bidding. See Section 01 6200.
- B. Performance:
  - 1. Design Criteria:
    - a. Flush panel design.
      - 1) Panels shall be interlocked full length of panel.
      - 2) Panel widths shall be Manufacturer's standard.
    - b. Performance Standard: ATAS Wind-LOK Soffit MPS120.
- C. Materials:
  - 1. **0.032 inch (0.8 mm)** thick minimum 3105-H24 alloy aluminum meeting requirements of ASTM B209.
  - 2. **24 ga (0.0276 in) (0.7010 mm)** galvanized iron or steel meeting requirements of A653/A653M, G 90.
  - 3. **24 ga (0.0276 in) (0.7010 mm)** minimum 50 ksi galvalume steel meeting requirements of ASTM A792/A792M AZ-55.
- D. Fabrication:
  - 1. Panels shall be uniformly dimensioned, roll formed to lengths to avoid trimming.
  - 2. Panel system shall be anchored as recommended by Manufacturer.
  - 3. Panels shall be continuous.

- E. Finish:
  - 1. Polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base (Kynar 500 or Hylar 5000) finish for coil coating components containing 70 percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  - 2. Color as selected by Architect from Manufacturer's standard colors.

## 2.2 ACCESSORIES

- A. Fastening Devices: 1-1/2 inch (38 mm) cadmium or zinc plated ring shanked nails.
- B. Continuous Soffit Vent:
  - 1. Type Two Acceptable Products:
    - a. Aluminum 8.8 sq in (56.8 sq cm) net free ventilation per lineal foot (0.32 m). Width: 2 inches (50 mm). Color: white or brown.
      - 1) Mastic VAS70 Vent-A-Strip (Model 70) by Mastic Home Exteriors by Ply Gem Chicago, IL [www.mastic.com/](http://www.mastic.com/).
    - b. Aluminum 9.9 sq in (63.9 sq cm) net free ventilation per lineal foot (0.32 m). Width: 2-1/4 inches (57 mm). Color: white or brown.
      - 1) Mastic VAS79 Vent-A-Strip (Model 79) by Mastic Home Exteriors by Ply Gem Chicago, IL [www.mastic.com/](http://www.mastic.com/).
    - c. Equal as approved by Architect before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  - 1. Examine substrate and verify framing is suitable for installation of soffit system.
  - 2. Notify Architect of unsuitable conditions in writing.
    - a. Do not install soffit over unsuitable conditions.
    - b. Commencement of Work by installer is considered acceptance of substrate.

### 3.2 INSTALLATION

- A. Conceal fasteners where possible. Paint heads of exposed fasteners to match background.
- B. Isolate from dissimilar metals to prevent electrolytic action.

### 3.3 FIELD QUALITY CONTROL

- A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  - 1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

### 3.4 CLEANING

- A. General:
  - 1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.

B. Waste Management:

1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

**END OF SECTION**

**SECTION 07 6321****ALUMINUM FASCIA****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install aluminum fascia as described in Contract Documents.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM B209-10, 'Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate'.
    - b. ASTM E84-13a, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.

**1.2 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature or cut sheet for products furnished.
- B. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Final, executed copy of Warranty.
    - b. Record Documentation:
      - 1) Manufacturers documentation:
        - a) Manufacturer's literature.
        - b) Color selection.

**1.3 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. Fire Characteristics Performance Requirement:
    - a. Meet requirements of ASTM E84 Class A fire rating.
- B. Qualifications:
  - 1. Installer:
    - a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Materials shall be delivered in original, unopened packages with labels intact.
  - 2. Inspect delivered material for damage.
- B. Storage And Handling Requirements:
  - 1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.
  - 2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

## 1.5 WARRANTY

- A. Manufacturer Warranty:
  - 1. Manufacturer's standard warranty against manufacturer defects.
  - 2. Manufacturer's written thirty five (35) year warranty on paint finish against cracking, peeling, blistering, chalk, and color change.

## PART 2 - PRODUCTS

### 2.1 ASSEMBLIES

- A. Manufacturers:
  - 1. Type One Acceptable Manufacturers Of Metal:
    - a. AEP / Span, Dallas, TX [www.aep-span.com](http://www.aep-span.com).
    - b. ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
    - c. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - d. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - e. Hunter-Douglas Canada Ltd, Brampton, ON [www.hunterdouglas.com](http://www.hunterdouglas.com).
    - f. Jenisys Engineered Products, Goodlettsville, TN [www.jenisysep.com](http://www.jenisysep.com).
    - g. Kaycan Ltd, Montreal, PQ [www.kaycan.com](http://www.kaycan.com).
    - h. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - i. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - j. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - k. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - l. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - m. VicWest, Oakville, ON [www.vicwest.ca](http://www.vicwest.ca).
    - n. Equal as approved by Architect before bidding. See Section 01 6200.
- B. Materials:
  - 1. Aluminum: **0.032 inch (0.813 mm)** thick minimum complete with accessories recommended by Manufacturer for proper installation.
- C. Finishes:
  - 1. Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing 70 percent minimum PVF<sub>2</sub> in resin portion of formula. Thermocured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  - 2. Color as selected by Architect from Manufacturer's standard colors.
- D. Fabrication: Fascia may either be shop-fabricated using metal from a specified manufacturer, or a factory-fabricated standard system from a specified manufacturer.

### 2.2 ACCESSORIES

- A. Fastening Devices: **One inch (25 mm)** zinc or cadmium plated screws.
- B. Continuous Soffit Vent:
  - 1. Type Two Acceptable Products:
    - a. Aluminum **8.8 sq in (56.8 sq cm)** net free ventilation per **lineal foot (0.32 m)**. Width: **2 inches (50 mm)**. Color: white or brown.
      - 1) Mastic VAS70 Vent-A-Strip (Model 70) by Mastic Home Exteriors by Ply Gem Chicago, IL [www.mastic.com/](http://www.mastic.com/).
    - b. Aluminum **9.9 sq in (63.9 sq cm)** net free ventilation per **lineal foot (0.32 m)**. Width: **2-1/4 inches (57 mm)**. Color: white or brown.
      - 1) Mastic VAS79 Vent-A-Strip (Model 79) by Mastic Home Exteriors by Ply Gem Chicago, IL [www.mastic.com/](http://www.mastic.com/).



- c. Equal as approved by Architect before installation. See Section 01 6200.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verification Of Conditions:
  1. Examine substrate and verify framing is suitable for installation of fascia.
  2. Notify Architect of unsuitable conditions in writing.
    - a. Do not install fascia over unsuitable conditions.
    - b. Commencement of Work by installer is considered acceptance of substrate.

### **3.2 INSTALLATION**

- A. Conceal fasteners except where details might require a minimum number to be exposed. Paint heads of exposed fasteners to match background.
- B. Install with slip joints at each end. Screw to substrate through pre-drilled, over-size holes.
- C. Isolate from dissimilar metals not part of fascia system to prevent electrolytic action.

### **3.3 FIELD QUALITY CONTROL**

- A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

### **3.4 CLEANING**

- A. General:
  1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.
- B. Waste Management:
  1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

**END OF SECTION**



**SECTION 07 7123****MANUFACTURED GUTTERS AND DOWNSPOUTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install gutters and downspouts as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 07 9213: 'Elastomeric Joint Sealant', for quality of sealants for joints.

**1.2 REFERENCES**

- A. Reference Standard:
  - 1. Sheet Metal & Air Conditioning Contractors National Association Inc:
    - a. SMACNA Architectural Sheet Metal Manual, (7th edition 2012).

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Shop Drawings: Show gutter cross-section, mounting method, gauge of metal, expansion joint design and locations, and downspout locations minimum.

**PART 2 - PRODUCTS****2.1 ASSEMBLIES**

- A. Manufacturers:
  - 1. Type Two Acceptable Manufacturers of Metal:
    - a. ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
    - b. CMG – Coated Metals Group, Denver, CO [www.cmgmetals.com](http://www.cmgmetals.com).
    - c. Fabral, Jackson, GA [www.fabral.com](http://www.fabral.com).
    - d. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - e. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - f. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - g. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - h. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - i. Reynolds Metals Company, Richmond, VA [www.rmc.com](http://www.rmc.com).
    - j. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - k. Equal as approved by Architect before installation. See Section 01 6200.
- B. Materials
  - 1. Steel:
    - a. Downspouts: Rectangular, 26 ga (0.0217 inches - 0.5512 mm) galvanized steel including necessary elbows.
    - b. Gutters: 24 ga (0.0276 inches - 0.7010 mm) galvanized steel.
    - c. Brackets: 22 ga (0.0336 inches - 0.8534 mm) galvanized steel or 26 ga (0.0217 inches - 0.478 mm) double-hemmed minimum.

2. Screws, Bolts, Nails, And Accessory Fasteners: Non-corrosive and of strength and type consistent with function.
  3. Downspouts, gutters, brackets, fasteners, and accessories shall be compatible material.
- C. Fabrication:
1. Fabricate in accordance with SMACNA Architectural Manual recommendations, where applicable.
  2. Cross-sectional configuration of gutter shall be Style A, (Page 1.13 6th Edition) of SMACNA Architectural Manual.
  3. Form accurately to details.
  4. Profiles, bends, and intersections shall be even and true to line.
- D. Finishes:
1. Metal exposed to view shall have face coating of polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula.
    - a. Thermo-cured two (2) coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
    - b. Reverse side coating shall be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
  2. Color as selected by Architect from Manufacturer's standard colors.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protection Of In-Place Conditions:
1. Before starting work, verify governing dimensions at building. Inspect for conditions that would prevent installation of specified system. Do not install over improper conditions.
  2. Insulate work from fascia as necessary to prevent electrolytic action.

### 3.2 INSTALLATION

- A. Allow no more than **40 feet (12 meters)** between downspouts. Lap joints in downspouts **1-1/2 inches (38 mm)** minimum in direction of water flow.
- B. Furnish and install outlet tubes and gutter ends where required. Furnish and install expansion joints in runs exceeding **50 feet (15 meters)** and in runs that are restrained at both ends. Lap other joints in gutter **one inch (25 mm)** minimum, apply sealant in lap, and stainless steel rivet **one inch (25 mm)** on center maximum.

### 3.3 FIELD QUALITY CONTROL

- A. Field Tests:
1. At completion of this work, block downspouts and flood gutters.
  2. Notify Architect two (2) working days before testing.
  3. Repair leaks and adjust for proper drainage.

### 3.4 CLEANING

- A. Leave metals clean and free of defects, stains, and damaged finish.

**END OF SECTION**

**SECTION 07 7226****RIDGE VENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Ridge vent system consisting of:
    - a. Ridgevent Cover.
    - b. Splice Plate.
    - c. Metal Screen.
    - d. Intermittent Spacer Brackets.
    - e. Z-Brackets.
    - f. End Cap.
    - g. Deflector.
- B. Related Requirements:
  - 1. Section 07 9213: 'Elastomeric Joint Sealants'.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Balanced System: Equal amounts of intake net free area ventilation low at roof's edge or in soffit and exhaust net free area ventilation at or near the ridge.
  - 2. Bernoulli Effect: Phenomenon whereby low pressure resulting from wind passing over a structure or object creates pulling or lifting action.
  - 3. Exhaust Vent: Outlet or opening installed high on roof near ridge or in gable for purpose of ventilating underside of roof deck (attic space).
  - 4. External Wind Baffle: Built-in wing or lip on ridge vent that deflects wind up and over vent creating Bernoulli Effect that enhances airflow performance by pulling or lifting the air out of attic. It also deflects weather elements over vent away from attic.
  - 5. Intake Vent: Inlet or opening installed low at roof's edge or in soffit or undereave area for purpose of ventilating underside of roof deck (attic space).
  - 6. Net Free Area (NFA): Total unobstructed area (adjusted for insect screen, louvers and weather coverings) through which air can pass through a vent; generally measured in square inches. All non-powered vents have a Net Free Area rating.
  - 7. Stainless Steel: Stainless steels are alloys of iron to which at least 10 percent chromium has been added to increase corrosion resistance and will not rust when exposed to weather. To obtain greater corrosion resistance, more nickel and chromium are added to the alloy. Along with iron and chromium, all stainless steels contain some carbon to make it stronger.
    - a. Austenitic Stainless Steel: Most popular of the stainless steels because of their ductility, ease of working and good corrosion resistance.
  - 8. Vent: Any device installed in a roof, gable or soffit for purpose of ventilating underside of roof deck. Any outlet for air that protrudes through roof deck such as pipe or stack.
  - 9. Wind Uplift: Wind-induced forces on roof system or components in roof system. Wind uplift generally includes negative pressure component caused by wind being deflected around and across surfaces of building and positive pressure component from air flow beneath roof deck.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-13, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.

- b. ASTM A792/A792M-10, 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
  - c. ASTM B117-11, 'Standard Practice for Operating Salt Spray (Fog) Apparatus'.
  - d. ASTM C920-14, 'Standard Specification for Elastomeric Joint Sealants'.
  - e. ASTM G23
  - f. ASTM G152-13, 'Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials'.
2. Florida Building Code (FBC), Tallahassee, FL [www.floridabuilding.org](http://www.floridabuilding.org):
    - a. Section 1626.1, HVHZ – Impact Test for Wind-Bourn Debris' (2010 Code).
  3. International Building Code (IBC) (2003, 2009 and 2012 code):
    - a. Chapter 12, 'Interior Environment':
      - 1) Section 1203, 'Ventilation':
        - a) 1203.2, 'Attic Spaces'.
  4. International Code Council Evaluation Services (ICC-ES):
    - a. AC132, 'Acceptance Criteria For Attic Vents' (February 2010).

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
  1. Participate in pre-installation conference held jointly with Section 07 3113.
  2. In addition to agenda items specified in Section 01 3100, review following:
    - a. Review if Project is in high wind area.
    - b. Review Ridge Vent Manufacturers ventilation cutout requirements on roof deck and location of ventilation cutouts shown on Contract Documents.
- B. Sequencing:
  1. Coordinate installation with roof membrane.
  2. Installation of ridge vent system.

### 1.4 SUBMITTALS

- A. Informational Submittals:
  1. Manufacturer Instructions:
    - a. Design details.
    - b. Published ridge vent installation instructions for R&I projects.
    - c. Storage and handling requirements.
- B. Informational Submittals:
  1. Certificates:
    - a. Manufacturer's Certificates of compliance showing products meet or exceed specified requirements.
  2. Tests And Evaluation Reports:
    - a. Manufacturer's test reports.
    - b. Wind speed coverage for warranted wind speed.
  3. Special Procedure Submittals:
    - a. Installer to fill out Attachment for Warranty Information to be given to Ridge Vent Manufacturer before Manufacture will issue Warranty.
- C. Closeout Submittals:
  1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Final, executed copy of Warranty.

### 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
  1. Ridge Vent System:

2. Wind Speed:
  - a. As required to meet local codes having jurisdiction.

B. Qualifications:

1. Manufacturer:
  - a. Company specializing in manufacturing products specified with this section with at least five (5) years experience and no known failures of specified product manufactured.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:

1. Deliver products job site in original unopened containers or wrappings.
2. Deliver materials in sufficient quantities to allow continuity of work.

B. Storage And Handling Requirements:

1. Storage Requirements:
  - a. Follow Manufacturer's instructions and precautions for storage of materials.
  - b. Protect materials from physical damage in a clean, dry, well vented, and protected location.
2. Handling Requirements:
  - a. Handle material so as to prevent damage.

## 1.7 WARRANTY

A. Manufacturer Warranty:

1. General:
  - a. Ridge vent system will provide calculated net free area (NFA) stated design.
  - b. Warranty starts at completion of installation.
  - c. Warranty covers replacement cost excluding labor and any costs involved with repairing or replacing other roofing or building materials.
2. Manufacturer's thirty (30) year warranty covering:
  - a. Kynar 500 paint and finish warranty covering color fade, chalk, and film integrity for ridge vent system.
3. Manufacturer's twenty (20) year warranty covering:
  - a. Ridge vent system to be free from defects that will affect its performance.
  - b. Ridge vent system will withstand winds up to 120 mph (193 kph) average wind speed.
  - c. Ridge vent system will withstand snow load.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

A. Manufacturers:

1. Category One VMR Products And Manufacturers. See Section 01 6200 for definitions of Categories:
  - a. Metal-Era Airflow Solutions, Waukesha, WI [www.metalera.com](http://www.metalera.com).
    - 1) Contact Information: Marlea Knox (800) 558-2162 [thechurch@metalera.com](mailto:thechurch@metalera.com).

B. Materials:

1. Description / Design Criteria:
  - a. Ridge Vent:
    - 1) General:
      - a) Not approved on roof mean heights greater than 33 feet (10 m).
    - 2) Slope to Slope Version (Model HPSS):
      - a) Weather-proof and bug-proof ventilation system.
      - b) Withstand winds up to 120 mph (193 kph) average wind speed.
      - c) Intermittent spacers at 12 inch (305 mm) on center for snow load.

- d) Provide net free area (NFA) requirements as determined by vented roof deck system and eave condition as indicated on Contract Drawings.
  - 3) Slope to High Wall Version (Model HPSH):
    - a) Weather-proof and bug-proof ventilation system.
    - b) Withstand winds up to **120 mph (193 kph)** average wind speed.
    - c) Provide net free area (NFA) requirements as determined by vented roof deck system and eave condition as indicated on Contract Drawings.
  - 4) Net free area (NFA):
    - a) Net free area: **27 sq in (174 sq cm)** per lineal **foot (305 mm)**.
2. Components:
- a. Ridge vent system comprising of following:
    - 1) Cover plate **8 inch (200 mm)** wide at each joint over ridge vent cover.
    - 2) Continuous deflector with baffle.
    - 3) Continuous Z bracket with intermittent spacer at **12 inch (305 mm)** on center to supporting ridge cover.
    - 4) End cap / cover plate.
    - 5) Expanded metal support screen.
    - 6) Fasteners.
    - 7) Intermittent spacers at **12 inch (305 mm)** on center directly under ridge vent cover.
    - 8) Ridge vent cover in **12 feet (3.657 m)** length.
  - b. Metal:
    - 1) **24 ga (0.0276 in) (0.7010 mm)** minimum hot-dipped galvanized to meet requirements of ASTM A653/A653M, **1.25 oz per sq ft (381.5 g per sq m)** or galvalume meeting requirements of ASTM A792/A792M AZ50.
    - 2) Aluminum: 0.040 inch, 0.050, 0.063 inch.
  - c. Expanded metal support screen:
    - 1) **0.050 inch (1.27 mm)** 3003-H14 formed aluminum with minimum of 48 percent open area.
  - d. Z brackets: **20 gauge (0.0396 in) (1.0058 mm)** G90 galvanized steel.
  - e. Deflector: **24 ga (0.0276 in) (0.7010 mm)** minimum.
- C. Finishes:
- 1. Ridge vent and accessories:
    - a. Polyvinylidene Fluoride (PV<sub>2</sub>) Resin-base finish (Kynar 500) for coil coating components containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
    - b. Approved Color: Medium Bronze.

## 2.2 ACCESSORIES

- A. Ridge Vent System:
  - 1. End Caps, Cover Plates, and other accessories necessary for proper installation.
- B. Fasteners:
  - 1. Ridge vent fastened to structure:
    - a. Fasteners shall be approved by Manufacturer and provide minimum pull out resistance of **240 lbf (109 kg)** into substrate when tested in accordance with TAS 105 test protocol.
    - b. New Buildings:
      - 1) **#9 1-1/2 inches (38 mm)** stainless steel screws.
      - 2) Provided by Manufacturer.
    - c. Existing Buildings:
      - 1) **#9 1-1/2 inches (38 mm)** stainless steel screws.
      - 2) Provided by Manufacturer.
      - or
      - 3) Fasteners provided by Installer consistent with manufacturer's instructions for each product that is suitable for substrate to which it is being installed.
    - d. No nailing permitted.
    - e. Equal as approved by Consultant before bidding. See Section 01 6200.



- C. Sealant:
  - 1. Description:
    - a. Weathersealing expansion, contraction, perimeter, and other movement joint sealant.
  - 2. Design Criteria:
    - a. As specified in Section 07 9213 'Elastomeric Joint Sealants'.
    - b. Meet following standards for Sealant:
      - 1) ASTM C920: Type S Grade NS, Class 25 (min) Use O.
      - 2) 100 percent silicone.
  - 3. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
    - a. Dow Corning: 790 Silicone Building Sealant.
    - b. Momentive Performance Materials (formerly, GE Sealants & Adhesives): GE SCS2350 Silicone Elastomeric Sealant.
    - c. Tremco: Tremsil 600 Silicone Sealant.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Verify Ridge Vent Manufacturers ventilation cutout requirements on roof deck and location of ventilation cutouts shown on Contract Documents to verify correct location for all cutouts.
    - a. Make adjustments to ventilation cutouts if necessary before installation of ridge vent.
  - 2. Examine deck to determine if it is satisfactory for installation of ridge vent system.
    - a. Conditions include, but are not limited to, moisture on deck and protruding deck fasteners.
    - b. Verify substrate is dry, clean and free of foreign matter.
  - 3. Do not begin installation until substrates have been properly prepared.

### **3.2 PREPARATION**

- A. Surface Preparation:
  - 1. Clean roof sheathing, including removal of dirt, shingle nails, and debris, before installation of ridge vent system.

### **3.3 INSTALLATION**

- A. General:
  - 1. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.
- B. Ridge Vent:
  - 1. Install in accordance with IBC Section 1503.2 'Flashing'.
  - 2. Install in accordance and as shown with Manufacturer's installation instructions for assembly of components and attachment to roof deck:
  - 3. Use provided fasteners consistent with manufacturer's instructions, suitable for substrate to which it is being installed.
  - 4. Attach to roof/wall structure with stainless steel screws provided by Manufacturer at spacing required by Manufacturer. All nail heads and vent section joints shall be sealed with silicone sealant.
  - 5. Remove protective film before applying sealant.
  - 6. Apply sealants as per Manufacturer's installation instructions.

### **3.4 PROTECTION**

- A. Protect installed products until completion of project.

- B. Touch-up, repair or replace damaged products before Substantial Completion.

### **3.5 CLEANING**

- A. General:

- 1. Properly clean finished roof surface after completion.

- B. Waste Management:

- 1. Disposal:

- a. General:

- 1) Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current EPA regulations and local laws.

**END OF SECTION**

**ATTACHMENTS**

## WARRANTY INFORMATION

- Installer required to provide mandatory information to Ridge Vent Manufacturer to be included in Manufacturer Warranty as described in this specification to be included with Closing Submittals.
- Installer to contact Owner's Representative for following information to be included in warranty.

<b>Description</b>	<b>Information Required</b>	<b>Notes</b>
Name of Owner	( )	FM Group
Mailing Address	( )	FM Office Address
Property ID	( )	Property No.
Site Address	( )	Project Site Address
Date roof completion	( )	Date

Provide any addition data required from Ridge Vent Manufacturer as needed.



**SECTION 07 9213****ELASTOMERIC JOINT SEALANTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install sealants not specified to be furnished and installed under other Sections.
  - 2. Quality of sealants to be used on Project not specified elsewhere, including submittal, material, and installation requirements.
  
- B. Related Requirements:
  - 1. Removing existing sealants specified in Sections where work required.
  - 2. Furnishing and installing of sealants is specified in Sections specifying work to receive new sealants.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Sealant Types and Classifications:
    - a. ASTM Specifications:
      - 1) Type:
        - a) Type S: Single-component sealant.
        - b) Type M: Multi-component sealant.
      - 2) Grade:
        - a) Grade P: Pourable or self-leveling sealant used for horizontal traffic joints.
        - b) Grade NS: Non-sag or gunnable sealant used for vertical and non-traffic joints.
      - 3) Classes: Represent movement capability in percent of joint width.
        - a) Class 100/50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand of at least 100 percent increase and decrease of at least 50 percent of joint width as measured at time of application.
        - b) Class 50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 50 percent of joint width as measured at time of application.
        - c) Class 25: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 25 percent of joint width as measured at time of application.
        - d) Class 12: Sealant that, when tested for adhesion and cohesion under cyclic movement shall withstand increase and decrease of at least 12 percent of joint width as measured at time of application.
      - 4) Use:
        - a) T (Traffic): Sealant designed for use in joints in pedestrian and vehicular traffic areas such as walkways, plazas, decks and parking garages.
        - b) NT (Non-Traffic): Sealant designed for use in joints in non-traffic areas.
        - c) I (Immersion): Sealant that meets bond requirements when tested by immersion (Immersion rated sealant applications require primer).
        - d) M (Mortar): Sealant that meets bond requirements when tested on mortar specimens.
        - e) G (Glass): Sealant that meets bond requirements when tested on glass specimens.
        - f) A (Aluminum): Sealant that meets bond requirements when tested on aluminum specimens.

- g) O (Other): Sealant that meets bond requirements when tested on substrates other than standard substrates, being glass, aluminum, mortar.
- b. Federal Specifications:
  - 1) Type:
    - a) Type I: Self-leveling, pour grade.
      - (1) Compound which has sufficient flow to give smooth level surface when applied in horizontal joint at 40 deg F (4.4 deg C).
    - b) Type II: Non-sag, gun grade
      - (1) Compound which permits application in joints on vertical surfaces without sagging (slumping) at temperatures 40 deg F (4.4 deg C) and 122 deg. F (50 deg. C).
    - c) Type NS: Non-sag, gun grade.
      - (1) Non-sag shall be a compound which permits application in joints on vertical surfaces without sagging (slumping) at temperatures between -20 deg F and 122 deg. F (- 29 and 50 deg. C).
  - 2) Class:
    - a) Class A: Compounds resistant to 50 percent total joint movement (includes Type I and Type II).
      - (1) Capable of resisting compression-extension cycling of plus and minus 25 percent of nominal half inch width.
    - b) Class B: Compounds resistant to 25 percent total joint movement (includes Type I and Type II).
      - (1) Capable of resisting compression-extension cycling of plus and minus 12 1/2 percent of nominal half inch width.
- 2. Silicone: Any member of family of polymeric products whose molecular backbone is made up of alternating silicon and oxygen atoms and which has pendant hydrocarbon groups attached to silicon atoms. Used primarily as a sealant. Offers excellent resistance to water and large variations in temperature (minus 100 deg F to + 600 deg F) (minus 73.3 deg C to + 316 deg C).

#### B. Reference Standards:

- 1. American Association of State and Highway Transportation Officials:
  - a. AASHTO T 132-87(2013), 'Standard Method of Test for Tensile Strength of Hydraulic Cement Mortars'.
- 2. ASTM International:
  - a. ASTM C639-15, 'Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants'.
  - b. ASTM C661-15, 'Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer'.
  - c. ASTM C679-15, 'Standard Test Method for Tack-Free Time of Elastomeric Sealants'.
  - d. ASTM C719-14, 'Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)'.
  - e. ASTM C793-05(2010), 'Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants'.
  - f. ASTM C794-15a, 'Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants'.
  - g. ASTM C920-14a, 'Standard Specification for Elastomeric Joint Sealants'.
  - h. ASTM C1135-15, 'Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants'.
  - i. ASTM C1184-14, 'Standard Specification for Structural Silicone Sealants'.
  - j. ASTM C1193-16, 'Standard Guide for Use of Joint Sealants'.
  - k. ASTM C1248-08(2012), 'Standard Test Method for Staining of Porous Substrate by Joint Sealants'.
  - l. ASTM C1330-02(2013), 'Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants'.
  - m. ASTM C1481-12 'Standard Guide for Use of Joint Sealants with Exterior Insulation & Finish Systems (EIFS)'.
  - n. ASTM D412-15a, 'Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension'.
  - o. ASTM D2202-00(2014), 'Standard Test Method for Slump of Sealants'.
  - p. ASTM D2240-15, 'Standard Test Method for Rubber Property-Durometer Hardness'.

- q. ASTM D5893-10, 'Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements'.
- r. ASTM E119-16a, 'Standard Test Methods for Fire Tests of Building Construction and Materials'.
- 3. Federal Specifications:
  - a. Federal Specification TT-S-001543A (CON-NBS), 'Sealing Compound: Silicone Rubber Base (for Calking, Sealing & Glazing in Buildings and Other Structures)' (9 Jun 1971).
  - b. TT-S-00230C (CON-NBS), 'Sealing compound: Elastomeric Type, Single Component (For Calking, Sealing, And Glazing In Buildings And Other Structures.' (2 Feb 1970).
- 4. Government Services Administration (GSA), Commercial Item Descriptions (CID):
  - a. GSA CID A-A-272A, 'Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures)'.
  - b. GSA CID A-A-1556, 'Sealing Compound Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures)'.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Scheduling:
  - 1. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.
  - 2. Ensure sealants are cured before covering with other materials.

### 1.4 SUBMITTALS

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
    - b. Manufacturer's literature for each Product.
    - c. Schedule showing joints requiring sealants. Show also backing and primer to be used.
- B. Informational Submittals:
  - 1. Certificates:
    - a. Manufacturer's Certificate:
      - 1) Certify products are suitable for intended use and products meet or exceed specified requirements.
      - 2) Certificate from Manufacturer indicating date of manufacture.
  - 2. Manufacturers' Instructions:
    - a. Manufacturer's installation recommendations for each Product.
    - b. Manufacturer's installation for completing sealant intersections when different materials are joined.
    - c. Manufacturer's installation for removing existing sealants and preparing joints for new sealant.

### 1.5 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten (10) years documented experience.
  - 2. Applicator Qualifications:
    - a. Company specializing in performing work of this section.
    - b. Provide if requested, reference of projects with minimum three (3) years documented experience, minimum three (3) successfully completed projects of similar scope and complexity, and approved by manufacturer.
    - c. Designate one (1) individual as project foreman who shall be on site at all times during installation.

- B. Preconstruction Testing:
  - 1. Pre-construction testing is not required when sealant manufacturer can furnish data acceptable to Consultant based on previous testing for materials matching those of the Work.
- C. Mockups:
  - 1. Provide mockups including sealant and joint accessories to illustrate installation quality and color if requested by Consultant or Project Manager.
    - a. Incorporate accepted mockup as part of Work.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements:
  - 1. Deliver and keep in original containers until ready for use.
  - 2. Inspect for damage or deteriorated materials.
- B. Storage and Handling Requirements:
  - 1. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets (MSDS).
  - 2. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
  - 3. Store in a cool dry location, but never under 40 deg F (4 deg C) or subjected to sustained temperatures exceeding 90 deg F (32 deg C) or as per Manufacturer's written recommendations.
  - 4. Do not use sealants that have exceeded shelf life of product.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
  - 2. Follow Manufacturer's temperature recommendations for installing sealants.

## 1.8 WARRANTY

- A. Manufacturer Warranty:
  - 1. Signed warranties against adhesive and cohesive failure of sealant and against infiltration of water and air through sealed joint for period of three (3) years from date of Substantial Completion.
    - a. Manufacturer's standard warranty covering sealant materials.
    - b. Applicator's standard warranty covering workmanship.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

- A. Manufacturers:
  - 1. Manufacturer Contact List:
    - a. Dow Corning Corp., Midland, MI [www.dowcorning.com](http://www.dowcorning.com).
    - b. Momentive Performance Materials Inc. (formally GE Sealants & Adhesives), Huntersville, NC [www.ge.com/silicones](http://www.ge.com/silicones).
    - c. Tremco, Beachwood, OH [www.tremcosealants.com](http://www.tremcosealants.com) or Tremco Ltd, Toronto, ON (800) 363-3213.
- B. Materials:
  - 1. Design Criteria:
    - a. Compliance: Meet or exceed requirements of these standards:



- 1) ASTM C920: Elastomeric joint sealant performance standard.
  - 2) ASTM C639 or ASTM D2202: Flow (sag or slump).
  - 3) ASTM C661 or ASTM D2240: Durometer hardness (shore A).
  - 4) ASTM C679 or ASTM C794: Tack free time (peel strength).
  - 5) ASTM C719: Joint movement capability.
  - 6) ASTM C793: Effects of accelerated weathering.
  - 7) ASTM C1135 or ASTM D412: Tensile adhesion strength.
  - 8) ASTM C1184: Structural silicone sealants.
  - 9) ASTM C1248: Staining.
  - 10) ASTM D412: Modulus.
  - 11) ASTM D5893: Silicone Joint Sealant for Concrete Pavements.
  - 12) Federal Specification TT-S-001543A.
  - 13) Federal Specification TT-S-00230C.
  - 14) GSA CID A-A-272A.
  - 15) GSA CID A-A-1556.
- b. Comply with Manufacturer's ambient condition requirements.
  - c. Sealants must meet Manufacturer's shelf-life requirements.
  - d. Sealants must adhere to and be compatible with specified substrates.
  - e. Sealants shall be stable when exposed to UV, joint movements, and particular environment prevailing at project location.
  - f. Primers (Concrete, stone, masonry, and other nonporous surfaces typically do not require a primer. Aluminum and other nonporous surfaces except glass require use of a primer. Installer Option to use Adhesion Test to determine if primer is required or use primer called out in related sections):
    - 1) Adhesion Test:
      - a) Apply silicone sealant to small area and perform adhesion test to determine if primer is required to achieve adequate adhesion. If necessary, apply primer at rate and in accordance with Manufacturer's instructions. See 'Field Quality Control' in Part 3 of this specification for Adhesive Test.
      - 2) If Primer required, shall not stain and shall be compatible with substrates.
      - 3) Allow primer to dry before applying sealant.
2. Sealants At Exterior Sheet Metal And Miscellaneous:
    - a. Description:
      - 1) Weathersealing expansion, contraction, perimeter, and other movement joints which may include all or part of the following for project:
        - a) Flashings.
        - b) Gutters.
        - c) Penetrations in soffits and fascias.
        - d) Roof vents and flues.
        - e) Lightning protection components.
    - b. Design Criteria:
      - 1) Meet following standards for Sealant:
        - a) ASTM C920: Type S Grade NS, Class 25 (min) Use NT, M, G, A and O.
      - 2) Limitations:
        - a) Do not use below-grade applications.
        - b) Do not use on surfaces that are continuously immersed or in contact with water.
        - c) Do not use on wet, damp, frozen or contaminated surfaces.
        - d) Do not use on building materials that bleed oils, plasticizers or solvents, green or partially vulcanized rubber gaskets or tapes.
    - c. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
      - 1) Dow Corning: 790 Silicone Building Sealant.
      - 2) Momentive Performance Materials (formerly, GE Sealants & Adhesives): GE SCS2350 Silicone Elastomeric Sealant.
      - 3) Tremco: Tremsil 600 Silicone Sealant.

## 2.2 ACCESSORIES

### A. Bond Breaker Tape:

1. Pressure sensitive tape as by Sealant Manufacturer to suit application.

2. Provide tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.
- B. Joint Backing:
1. Comply with ASTM C1330.
  2. Flexible closed cell, non-gassing polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.
  3. Oversized 25 to 50 percent larger than joint width.
- C. Joint Cleaner:
1. Non-corrosive and non-staining type as recommended by Sealant Manufacturer, compatible with joint forming materials.
- D. Masking Tape:
1. Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verification Of Conditions:
1. Examine substrate surfaces and joint openings are ready to receive Work.
    - a. Verify each sealant is compatible for use with joint substrates.
    - b. Verify joint surfaces are clean and dry.
    - c. Ensure concrete surfaces are fully cured.
  2. Sealants provided shall meet Manufacturer's shelf-life requirements.
  3. Notify Consultant of unsuitable conditions in writing.
    - a. Do not proceed until unsatisfactory conditions are corrected.
  4. Commencement of Work by installer is considered acceptance of substrate.

### **3.2 PREPARATION**

- A. Surface Preparation:
1. Remove existing joint sealant materials where specified.
    - a. Clean joint surfaces of residual sealant and other contaminants capable of affecting sealant bond to joint surface using manufacturer's recommended joint preparation methods.
    - b. Repair deteriorated or damaged substrates as recommended by Sealant Manufacturer to provide suitable substrate. Allow patching materials to cure.
  2. Surfaces shall be clean, dry, free of dust, oil, grease, dew, frost or incompatible sealers, paints or coatings that may interfere with adhesion. Prepare substrates in accordance with Manufacturer's instructions:
    - a. Porous surfaces: Clean by mechanical methods to expose sound surface free of contamination and laitance followed by blasting with oil-free compressed air.
    - b. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C1193. Allow solvent to evaporate prior to sealant application.
    - c. High-pressure water cleaning: Exercise care that water does not enter through failed joints.
    - d. Primers:
      - 1) Primers enhance adhesion ability.
      - 2) Use of primers is not a substitution for poor joint preparation.
      - 3) Primers should be used always in horizontal application where there is ponding water.
  3. Field test joints in inconspicuous location.
    - a. Verify joint preparation and primer required to obtain optimum adhesion of sealants to joint substrate.
    - b. When test indicates sealant adhesion failure, modify joint preparation primer, or both and retest until joint passes sealant adhesion test.

4. Masking: Apply masking tape as required to protect adjacent surfaces and to ensure straight bead line and facilitate cleaning.
- B. Joints:
1. Prepare joints in accordance with ASTM C1193.
    - a. Clean joint surfaces of contaminants capable of affecting sealant bond to joint surface using Manufacturer's recommended instructions for joint preparation methods.
    - b. Remove dirt, dust, oils, wax, paints, and contamination capable of affecting primer and sealant bond.
    - c. Clean concrete joint surfaces to remove curing agents and form release agents.
- C. Protection:
1. Protect elements surrounding the Work of this section from damage or disfiguration.

### 3.3 APPLICATION

- A. General:
1. Apply silicone sealant in accordance with Manufacturer's instructions.
  2. Do not use damaged or deteriorated materials.
  3. Install primer and sealants in accordance with ASTM C1193 and Manufacturer's instructions.
  4. Apply primer where required for sealant adhesion.
  5. Install sealants immediately after joint preparation.
  6. Do not use silicone sealant as per the following:
    - a. Apply caulking/sealant at temperatures below 40 deg F (4 deg C).
    - b. Below-grade applications.
    - c. Brass and copper surfaces.
    - d. Materials bleeding oils, plasticizers, and solvents.
    - e. Structural glazing and adhesive.
    - f. Surfaces to be immersed in water for prolonged time.
- B. Joint Backing:
1. Install joint backing to maintain sealant joint ratios recommended by Manufacturer.
  2. Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
  3. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch (9.5 mm) deep.
- C. Bond Breaker:
1. Install bond breaker where joint backing is not used or where backing is not feasible.
    - a. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.
- D. Sealant:
1. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint. Apply sealants in vertical joints from bottom to top.
  2. Fill joint opening to full and proper configuration.
  3. Apply in continuous operation.
  4. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface. Tool joints in opposite direction from application direction, i.e., in vertical joints, from the top down. Do not 'wet tool' sealants.
  5. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.
- E. Caulk gaps between painted or coated substrates and unfinished or pre-finished substrates. Caulk gaps larger than 3/16 inch (5 mm) between painted or coated substrates.

### 3.4 TOLERANCES

- A. Provide joint tolerances in accordance with Manufacturer's printed instructions.

### 3.5 FIELD QUALITY CONTROL

- A. Adhesion Test (Installer Option to use adhesion test to determine if primer is required).
  - 1. Perform adhesion tests in accordance with Manufacturer's instructions and ASTM C1193, Method A, Field-Applied Sealant joint Hand-Pull Tab:
    - a. Perform five (5) tests for first 1,000 linear feet (300 meters) of applied silicone sealant and one (1) test for each 1,000 linear feet (300 meters) seal thereafter or perform one (1) test per floor per building elevation minimum.
    - b. For sealants applied between dissimilar materials, test both sides of joints.
  - 2. Sealants failing adhesion test shall be removed, substrates cleaned, sealants re-installed, and re-testing performed.
  - 3. Maintain test log and submit report to Consultant indicating tests, locations, dates, results, and remedial actions.

### 3.6 CLEANING

- A. Remove masking tape and excess sealant.
- B. Clean adjacent materials, which have been soiled, immediately (before setting) as recommended by Manufacturer.
- C. Waste Management: Dispose of products in accordance with manufacturer's recommendation.

**END OF SECTION**

**SECTION 09 9001**

**COMMON PAINTING AND COATING REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Common procedures and requirements for field-applied painting and coating.
- B. Related Requirements:
  - 1. Section 07 9213: 'Elastomeric Joint Sealants' for quality of Elastomeric Joint Sealants.
  - 2. Sections under 09 9000 heading 'Paints and Coatings'.
    - a. Pre-Installation conferences held jointly with Section 09 9001.
  - 3. Divisions 22 and 23: Painting of plumbing and HVAC piping above roof plane.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Damage Caused By Others: Damage caused by individuals other than those under direct control of Painting Applicator (MPI(a), PDCA P1.92).
  - 2. Gloss Levels:
    - a. Specified paint gloss level shall be defined as sheen rating of applied paint, in accordance with following terms and values, unless specified otherwise for a specific paint system.

Gloss Level '1'	Traditional matte finish - flat	0 to 5 units at 60 degrees to 10 units maximum at 85 degrees.
Gloss Level '2'	High side sheen flat - 'velvet-like' finish	10 units maximum at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level '3'	Traditional 'eggshell-like' finish	10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level '4'	'Satin-like' finish	20 to 35 units at 60 degrees and 35 units minimum at 85 degrees.
Gloss Level '5'	Traditional semi-gloss	35 to 70 units at 60 degrees.
Gloss Level '6'	Traditional gloss	70 to 85 units at 60 degrees.
Gloss Level "7"	High gloss	More than 85 units at 60 degrees.

- 3. Properly Painted Surface:
  - a. Surface that is uniform in appearance, color, and sheen and free of foreign material, lumps, skins, runs, sags, holidays, misses, strike-through, and insufficient coverage. Surface free of drips, spatters, spills, and overspray caused by Paint Applicator. Compliance will be determined when viewed without magnification at a distance of 5 feet (1.50 m) minimum under normal lighting conditions and from normal viewing position (MPI(a), PDCA P1.92).
- 4. Latent Damage: Damage or conditions beyond control of Painting Applicator caused by conditions not apparent at time of initial painting or coating work.

**B. Reference Standards:**

- 1. The latest edition of the following reference standard shall govern all painting work:
  - a. MPI(a), 'Architectural Painting Specification Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.
  - b. MPI(r), 'Maintenance Repainting Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.

### 1.3 SUBMITTALS

- A. Action Submittals:
1. Product Data:
    - a. Include following information for each painting product, arranged in same order as in Project Manual.
      - 1) Manufacturer's cut sheet for each product indicating ingredients and percentages by weight and by volume, environmental restrictions for application, and film thicknesses and spread rates.
      - 2) Provide one (1) copy of 'MPI Approved Products List' showing compliance for each MPI product specified.
        - a) MPI Information is available from MPI Approved Products List using the following link: <http://www.paintinfo.com/mpi/approved/index.shtml>.
      - 3) Confirmation of colors selected and that each area to be painted or coated has color selected for it.
- B. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Manufacturer's documentation:
        - a) Manufacturer's cut sheet for each component of each system.
        - b) Schedule showing rooms and surfaces where each system was used.

### 1.4 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approval:
1. Conform to work place safety regulations and requirements of those authorities having jurisdiction for storage, mixing, application and disposal of all paint and related hazardous materials.
  2. Paint and painting materials shall be free of lead and mercury, and have VOC levels acceptable to local jurisdiction.
  3. Master Painters Institute (MPI) Standards:
    - a. Products: Comply with MPI standards indicated and listed in 'MPI Approved Products List'.
    - b. Preparation and Workmanship: Comply with requirements in 'MPI Architectural Painting Specification Manual' for products and coatings indicated.
- B. Qualifications:
1. Applicator: Requirements of Section 01 4301 applies, but not limited to following:
    - a. Minimum five (5) years experience in painting installations.
    - b. Minimum five (5) satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
    - c. Maintain qualified crew of painters throughout duration of the Work.
    - d. Upon request, submit documentation.

### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
1. Deliver specified products in sealed, original containers with Manufacturer's original labels intact on each container.
  2. Deliver amount of materials necessary to meet Project requirements in single shipment.
- B. Storage And Handling Requirements:
1. Store materials in single place.
  2. Keep storage area clean and rectify any damage to area at completion of work of this Section.
  3. Maintain storage area at **55 deg F (13 deg C)** minimum.

## 1.6 FIELD CONDITIONS

### A. Ambient Conditions:

1. Perform painting operations at temperature and humidity conditions recommended by Manufacturer for each operation and for each product for both interior and exterior work.
2. Apply painting systems at lighting level of 540 Lux (50 foot candles) minimum on surfaces to be painted.
  - a. Inspection of painting work shall take place under same lighting conditions as application.
  - b. If painting and coating work is applied under temporary lighting, deficiencies discovered upon installation of permanent lighting will be considered latent damage as defined in MPI Manual, PDCA P1-92.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

#### A. Performance:

##### 1. Design Criteria:

- a. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
- b. All materials, preparation and workmanship shall conform to requirements of 'Architectural Painting Specification Manual' by Master Painters Institute (MPI).
- c. All paint manufacturers and products used shall be as listed under Approved Product List section of MPI Painting Manual.
- d. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
- e. Where specified paint system does not have Premium Grade, provide Budget Grade.
- f. Provide products of same manufacturer for each coat in coating system.
- g. Where required to meet LEED (Leadership in Energy and Environmental Design) program requirements, use only MPI listed materials having an "L" rating designation.
- h. Color Levels:
  - 1) Color Level II:
    - a) Number and placement of interior and exterior paint colors and gloss levels shall be as defined by Color Level II from MPI Manual, PDCA P3-93 as modified in following paragraph.
    - b) No more than one paint color or gloss level will be selected for same substrate within designated interior rooms or exterior areas.
  - 2) Color Level III:
    - a) Number and placement of interior and exterior paint colors and gloss levels shall be Color Level III from MPI Manual, PDCA P3-93 as modified in following paragraph.
    - b) Several paint colors or gloss levels will be selected for same substrate within designated interior rooms or exterior areas.

#### B. Materials:

1. Materials used for any painting system shall be from single manufacturer unless approved otherwise in writing by painting system manufacturers and by Architect. Include manufacturer approvals in Product Data submittal.
2. Linseed oil, shellac, turpentine, and other painting materials shall be pure, be compatible with other coating materials, bear identifying labels on containers, and be of highest quality of an approved manufacturer listed in MPI manuals. Tinting color shall be best grade of type recommended by Manufacturer of paint or stain used on Project.

## **PART 3 - EXECUTION**

### **3.1 APPLICATORS**

- A. Approved Applicators:
  - 1. Meet Quality Assurance Applicator Qualifications as specified in Part 1 of this specification.

### **3.2 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Directing applicator to begin painting and coating work will indicate that substrates to receive painting and coating materials have been previously inspected as part of work of other Sections and are complete and ready for application of painting and coating systems as specified in those Sections.
- B. Pre-Installation Testing:
  - 1. Before beginning work of this Section, examine, and test surfaces to be painted or coated for adhesion of painting and coating systems.
  - 2. Report in writing to Architect of conditions that will adversely affect adhesion of painting and coating work.
  - 3. Do not apply painting and coating systems until party responsible for adverse condition has corrected adverse condition.
- C. Evaluation And Assessment:
  - 1. Report defects in substrates that become apparent after application of primer or first finish coat to Architect in writing and do not proceed with further work on defective substrate until such defects are corrected by party responsible for defect.

### **3.3 PREPARATION**

- A. Protection Of In-Place Conditions:
  - 1. Protect other finish work and adjacent materials during painting. Do not splatter, drip, or paint surfaces not intended to be painted. These items will not be spelled out in detail but pay special attention to the following:
    - a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel, anodized aluminum, or monel metal except as explicitly specified.
    - b. Keep cones of ceiling speakers completely free of paint. In all cases where painting of metal speaker grilles is required, paint without grilles mounted to speakers and without grilles on ceiling.
    - c. On existing work where ceiling is to be painted, speakers and grilles are already installed, and ceiling color is not being changed, mask off metal grilles installed on ceiling speakers. If ceiling color is being changed, remove metal grilles and paint, and mask off ceiling speakers.
- B. Surface Preparation:
  - 1. Prepare surfaces in accordance with MPI requirements and requirements of Manufacturer for each painting system specified, unless instructed differently in Contract Documents. Bring conflicts to attention of Architect in writing.
  - 2. Fill minor holes and cracks in wood surfaces to receive paint or stain.
  - 3. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust surfaces before painting or finishing.
  - 4. Do no exterior painting while surface is damp, unless recommended by Manufacturer, nor during rainy or frosty weather. Interior surfaces shall be dry before painting. Moisture content of materials to be painted shall be within tolerances acceptable to Paint Manufacturer.
  - 5. Sand woodwork smooth in direction of grain leaving no sanding marks. Clean surfaces before proceeding with stain or first coat application.



### 3.4 APPLICATION

- A. Interface With Other Work:
  - 1. Coordinate with other trades for materials and systems that require painting before installation.
  - 2. Schedule painting and coating work to begin when work upon which painting and coating work is dependent has been completed. Schedule installation of pre-finished and non-painted items, which are to be installed on painted surfaces, after application of final finishes.
- B. Paint or finish complete all surfaces to be painted or coated as described in Contract Documents, including but not limited to following items.
  - 1. Paint mechanical, electrical, and audio/visual items that require field painting as indicated in Contract Documents. These include but are not limited to:
    - a. Mechanical flues and pipes penetrating roof.
- C. Apply sealant in gaps **3/16 inch (5 mm)** and smaller between two substrates that are both to be painted or coated. Sealants in other gaps furnished and installed under Section 07 9213.
- D. On wood to receive a transparent finish, putty nail holes in wood after application of stain using natural colored type to match wood stain color. Bring putty flush with adjoining surfaces.
- E. In multiple coat paint work, tint each succeeding coat with slightly lighter color, but approximating shade of final coat, so it is possible to check application of specified number of coats. Tint final coat to required color.
- F. Spread materials smoothly and evenly. Apply coats to not less than wet and dry film thicknesses and at spreading rates for specified products as recommended by Manufacturer.
- G. Touch up suction spots after application of first finish coat.
- H. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.
- I. Use fine sandpaper between coats as necessary to produce even, smooth surfaces.
- J. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.
- K. Finished work shall be a 'Properly Painted Surface' as defined in this Section.

### 3.5 FIELD QUALITY CONTROL

- A. Non-Conforming Work:
  - 1. Correct deficiencies in workmanship as required to leave surfaces in conformance with 'Properly Painted Surface,' as defined in this Section.
  - 2. Correction of 'Latent Damage' and 'Damage Caused By Others,' as defined in this Section, is not included in work of this Section.

### 3.6 CLEANING

- A. General:
  - 1. As work proceeds and upon completion of work of any painting Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition.
- B. Waste Management:
  - 1. Remove rags and waste used in painting operations from building each night. Take every precaution to avoid danger of fire.
  - 2. Paint, stain and wood preservative finishes and related materials (thinners, solvents, caulking, empty paint cans, cleaning rags, etc.) shall be disposed of subject to regulations of applicable authorities having jurisdiction.

3. Remove debris caused by work of paint Sections from premises and properly dispose.
4. Retain cleaning water and filter out and properly dispose of sediments.

**END OF SECTION**

## ATTACHMENTS

### PART 4 - PAINT COLOR SCHEDULE

- A. Related Requirements:
  - 1. Section 09 9111 'Exterior Painted Aluminum'.
  - 2. Section 09 9112 'Exterior Painted Ferrous Metal'.
  - 3. Section 09 9113 'Exterior Painted Galvanized Metal'.
  - 4. Exterior:
    - a. Class One Color Quality Standards. See Section 01 6200:
      - 1) Exterior Aluminum (See Section 09 09111):
      - 2) Exterior Metal (See Section 09 9112):
      - 3) Exterior Galvanized Metal (See Section 09 9113):



**SECTION 09 9111****EXTERIOR PAINTED ALUMINUM****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing and painting new and/or existing exterior unfinished aluminum surfaces as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 9001: 'Common Painting And Coating Requirements':
    - a. Pre-installation conference for Sections under 09 9000 heading 'Paints and Coatings'.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Category Four Approved Products and Manufacturers. See Section 01 6200 for definitions of Categories:
    - a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved, providing they meet VOC requirements in force where Project is located. See Section 01 6200 for definitions of Categories.
- B. Description:
  - 1. New Surfaces: Use MPI(a) EXT 5.4H Latex Finish system.
  - 2. Previously Finished Surfaces: Use MPI(r) REX 5.4G Latex Finish system.
- C. Performance:
  - 1. Design Criteria:
    - a. New Surfaces: MPI Premium Grade finish requirements.
    - b. Deteriorated Existing Surfaces: MPI Premium Grade finish requirements.
    - c. Sound Existing Surfaces: MPI Custom Grade finish requirements.
    - d. Gloss / Sheen Level Required: Gloss Level 6 or 7.
- D. Materials:
  - 1. Primer Coat: MPI Product 95: 'Primer, Quick Dry, for Aluminum'.
  - 2. Finish Coats: MPI Product 119: 'Latex, Exterior, Gloss (MPI Gloss Level 6)'.

**PART 3 - EXECUTION**

- A. General: See appropriate paragraphs of Section 09 9001.

**END OF SECTION**



**SECTION 09 9112****EXTERIOR PAINTED FERROUS METAL****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing and painting new and/or existing exterior ungalvanized iron and steel surfaces as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 9001: 'Common Painting And Coating Requirements':
    - a. 'Attachment: Paint Color Schedule' for O&M / R&I Projects.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Category Four Approved Products and Manufacturers. See Section 01 6200 for definitions of Categories:
    - a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved.
- B. Description:
  - 1. New Surfaces: Use MPI(a) EXT 5.1M Waterborne Light Industrial Coating system .
  - 2. Previously Finished Surfaces: Use MPI(r) REX 5.1K Waterborne Light Industrial Coating.
- C. Design Criteria:
  - 1. Systems specified are in addition to prime coats provided under other Sections of Project Manual.
  - 2. Finish Requirements: Use MPI Premium Grade finish requirements for work of this Section.
  - 3. Gloss / Sheen Level Required: Gloss Level 5.
- D. Materials:
  - 1. All paints and coatings.
    - a. Primer Coat: MPI Product 107, 'Primer, Rust-Inhibitive, Water Based'.
    - b. Finish Coats: MPI Product 163, 'Light Industrial Coating, Exterior, Water Based, Semi-Gloss (MPI Gloss Level 5).
  - 2. Traffic signage:
    - a. Primer Coat: MPI Product 107, 'Primer, Rust-Inhibitive, Water Based'.
    - b. Finish Coats: MPI Product 163, 'Light Industrial Coating, Exterior, Water Based, Semi-Gloss (MPI Gloss Level 5).

**PART 3 - EXECUTION****3.1 APPLICATION**

- A. General: See appropriate paragraphs of Section 09 9001.

- B. New Surfaces: Clean metal to be painted of rust, mill scale, grease, oil, and welding spatters, burrs, flux, slag, and fume. If all traces of rust cannot be removed, apply rust blocker recommended by Paint Manufacturer before applying primer coat.
  
- C. Existing Painted Surfaces:
  - 1. Remove deteriorated and chalked existing paint and rust down to sound substrate by scraping or power tools.
  - 2. Clean existing sound painted surfaces as well as scraped and sanded existing painted surfaces as recommended by Paint Manufacturer. If all traces of rust cannot be removed, apply rust blocker recommended by Paint Manufacturer before applying primer coat.
  - 3. Spot prime bare metal surfaces followed by a prime coat over entire surface to be painted.
  - 4. Lightly sand entire surface.
  - 5. Clean surface as recommended by Paint Manufacturer.
  - 6. Apply specified finish coats.

**END OF SECTION**



**SECTION 09 9113****EXTERIOR PAINTED GALVANIZED METAL****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing and painting new and/or existing exterior exposed galvanized metal surfaces as Described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 9001: 'Common Painting And Coating Requirements':
    - a. Attachment: Paint Color Schedule' for O&M / R&I Projects.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Category Four Approved Products and Manufacturers. See Section 01 6200 for definitions of Categories.
    - a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved, providing they meet VOC requirements in force where Project is located.
- B. Description:
  - 1. Exposed Miscellaneous Structural Steel:
    - a. New Surfaces: Use MPI(a) EXT 5.3D Pigmented Polyurethane Finish system.
    - b. Previously Finished Work: Use MPI(r) REX 5.3D Pigmented Polyurethane Finish system.
  - 2. All Other:
    - a. New Surfaces: Use MPI(a) EXT 5.3H Latex Finish system.
    - b. Previously Finished Surfaces: Use MPI(r) REX 5.3H Latex Finish system.
- C. Performance:
  - 1. Design Criteria:
    - a. New Surfaces: MPI Premium Grade finish requirements.
    - b. Deteriorated Existing Surfaces: MPI Premium Grade finish requirements.
    - c. Sound Existing Surfaces: MPI Custom Grade finish requirements.
    - d. Gloss / Sheen Level Required: Gloss Level 5.
- D. Materials:
  - 1. Polyurethane:
    - a. Vinyl Wash Primer Coat: MPI Product 80: 'Primer, Vinyl Wash'.
    - b. Finish Coats:
      - 1) Epoxy MPI Product 101: 'Primer, Epoxy, Anti-Corrosive, for Metal'.
      - 2) Polyurethane MPI Product 72: 'Polyurethane, Two-Component, Pigmented, Gloss (MPI Gloss Level 6-7)'.
  - 2. Latex:
    - a. Waterborne Primer Coat: MPI Product 134: 'Primer, Galvanized, Water Based'.
    - b. Finish Coats: MPI Product 11: 'Latex, Exterior Semi-Gloss (MPI Gloss Level 5)'.

**PART 3 - EXECUTION****3.1 APPLICATION**

- A. General: See appropriate paragraphs of Section 09 9001.
- B. New Surfaces:
  - 1. Clean 'passivated' or 'stabilized' galvanized steel as specified in SSPC-SP1.
  - 2. After removal of 'passivated' or 'stabilized' coating or for surfaces without coating, clean surfaces to be painted with mineral spirits or product recommended by Paint Manufacturer. Change to clean rags or wiping cloths regularly to reduce possibility of re-contamination of surface.
  - 3. Apply prime coat.
  - 4. Apply finish coats.
- C. Existing Painted Surfaces:
  - 1. Remove deteriorated and chalked existing paint and rust deposits down to sound substrate by sanding, scraping, or wire brushing.
  - 2. Clean existing sound painted surfaces as well as scraped and sanded existing painted surfaces as recommended by Paint Manufacturer.
  - 3. Apply prime coat.
  - 4. Apply finish coats.
- D. Existing Unpainted Surfaces:
  - 1. Wirebrush or power wash as necessary to remove 'white rust'.
  - 2. Apply prime coat.
  - 3. Apply finish coats.

**END OF SECTION**