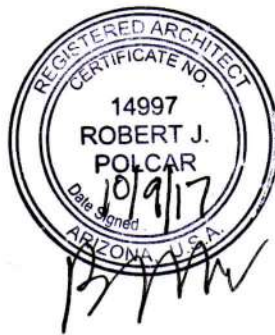


# SOLOMON ELEMENTARY SCHOOL DISTRICT

SOLOMON ELEMENTARY SCHOOL  
ROOF REPLACEMENT

October 9, 2017

SFB Project 050305101-1007-008-BRG



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1. PROJECT SITE

1.1 The Elementary School is located at 2250 South Stevens Avenue, Solomon, AZ 85551.

2. SCOPE OF THE WORK

2.1 The project involves replacement of roof systems of the Elementary School Building.

Roof related work, including fascia replacement, is to be performed at selected areas as indicated on the drawings.

Remove all roof coverings, metal flashings and trim. Inspect and repair substrate. Replace removed roof coverings with new shingle roof system.

Provide new sheet metal flashing and trim at new roof areas.

Where roof materials are being replaced, remove and replace all wood fascia with new to match existing, paint.

END OF SECTION 01 11 00

1. REQUIRED MEETINGS

1.1 Weekly Job Progress Meetings are to be held at the jobsite. Meetings are to review progress, schedule, answer requests for information and review pay application. Contractor shall be responsible for recording and distributing meeting minutes.

END OF SECTION 01 31 19

1 CONSTRUCTION PROGRESS SCHEDULE

1.1 At the pre-construction meeting the Contractor shall submit for review a detailed construction progress schedule showing the proposed dates of commencement and completion of each portion of the Work.

2 PRODUCT CERTIFICATE

2.1 Contractor shall submit notarized certificate indicating products intended for the Work, including product names and numbers, with statement indicating that products to be provided meet the minimum of the Contract Documents.

3 QUALIFICATION DATA

3.1 Letter written for this project indicating manufacturer approval of Installer to apply specified products and provide specified warranty.

4 PRODUCT TEST RESULTS

4.1 Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for elastomeric coating system, joint sealants and components of roof system.

5 INSPECTION REPORTS

5.1 Daily reports of Roofing Inspector. Include weather conditions, description of work performed, tests provided, defective work observed, and corrective actions required and carried out.

6 CLOSEOUT SUBMITTALS

6.1 One complete hard copy and 2 complete copies electronically on CD

6.2 Maintenance Data, to include maintenance manuals.

6.3 Warranties, executed copies of approved warranty forms.

END OF SECTION 01 33 00

1. WORK SPECIFIED HEREIN

1.1 Throughout the Contract Documents reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.

1.2 Reference to known standards within these Specifications shall mean and intend the latest edition or amendment published prior to date of these Specifications, unless specified otherwise, and to such portions of it that relate and apply directly to the material or installation called for on the Project.

1.3 Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is the Contractor's responsibility to provide material and workmanship which meet or exceed the specifically named code or standard.

1.4 It is the Contractor's responsibility, when so required by the Contract Documents or by written request from the Architect, to deliver to the Architect all required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or standard. Such proof shall be in the form requested in writing by the Architect, and generally will be required to be copies of a certified report of tests conducted by a testing agency approved for that purpose by the Architect.

1.5 In procuring all items used in this Work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.

1.6 The Architect reserves the right to reject items incorporated into the Work which fail to meet the specified minimum requirements. The Architect further reserves the right, and without prejudice to other recourse the Architect may take, to accept non-complying items subject to an adjustment in the Contract Amount as approved by the Architect and Owner.

1.7 Applicable standards and their abbreviations listed in these Specifications include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AGC	Associated General Contractors
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
AOSHA	Arizona Occupational Safety and Health Act
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASTM	American Society for Testing and Materials
ASME	American Society for Mechanical Engineers
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWSC	American Welding Society Code
AWI	Architectural Woodwork Institute
BIA	Brick Institute of America

CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
IBC	International Building Code
ICBO	International Conference of Building Officials
MAG	Maricopa Association of Governments
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBHA	National Builders Hardware Association
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NMWIA	National Mineral Wool Insulation Association
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturer's Association
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
PCI	Precast Concrete Institute
SDI	Steel Door Institute
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SSPC	Steel Structures Painting Council
UL	Underwriters' Laboratories, Inc.
UPC	Uniform Plumbing Code
USDA	United States Department of Agriculture
WCLA	West Coast Lumbermen's Association
WCLB	West Coast Lumber Bureau
WIC	Woodwork Institute of California
WPOA	Western Plumbing Officials Association
WWPA	Western Wood Products Association

END OF SECTION 01 42 19

1 GENERAL

1.1 This Section outlines requirements for cutting and patching of existing as well as new work.

A. Structural Work: Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio. Submit proposal and request and obtain Architect's approval before proceeding with any cut-and-patch of structural work.

B. Visual/Quality Limitations: Do not cut-and-patch work exposed to view (exterior and interior) in a manner resulting in noticeable reduction of visual qualities and similar qualities, as judged by Architect.

1. Engage the original installer/fabricator, or (if not available) an acceptable equivalent entity to perform cutting and patching.

2. Refinish entire surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection. For an assembly, refinish the entire unit.

C. Limitation on Approvals: Architect's approval to proceed with cutting and patching does not waive right to later require removal/replacement of work found to be cut-and-patched in an unsatisfactory manner, as judged by the Architect.

D. Where not more specifically described in any of the various Sections of these Specifications, workmanship shall conform to all of the methods and operations of best standards and accepted practices of the trade or trades involved, and shall include all items of fabrication, construction, or installation regularly furnished or required for completion, (including any finish), and for successful operation as intended.

E. Work shall be executed by mechanics skilled and experienced in their respective trade, and shall have proper certification or other credentials where appropriate.

F. In every case, exercise extreme care in cutting operations, and perform such operations under adequate supervision. Openings shall be neatly cut and shall be kept as small as possible to avoid unnecessary damage. Careless and/or avoidable cutting damage, etc., will not be tolerated, and the Contractor will be held responsible for such avoidable or willful damage.

G. Replacing, patching and repairing of materials and surfaces cut or damaged in the execution of the Work shall be performed by experienced mechanics of the applicable trades involved. Such replacing, repairing or patching shall be done with the applicable materials, in such manner that surfaces so replaced, etc., will, upon completion of the Work, match the surrounding similar surfaces.

H. When completed, all parts shall have been durably and substantially built and shall present a neat, workmanlike appearance.

END OF SECTION 01 73 29



## 1 GENERAL

1.1 This Section outlines requirements for cleaning of the Project work. This Section is complementary to the General Conditions and Supplementary General Conditions and nothing herein shall be considered to waive any requirements of the General conditions or Supplementary General Conditions.

1.2 Requirements of Regulatory Agencies; Safety and Insurance Standards: Maintain project in accordance with the following safety and insurance standards: State Industrial Commission (of Arizona), OSHA.

1.3 Store volatile waste in covered metal containers, and remove from premises daily.

1.4 Pollution Control: conduct clean-up and disposal operations to comply with local ordinances and anti-pollution laws. Burning or burying of rubbish and waste material on the project site is not permitted. Disposal of volatile fluid waste (such as mineral spirits, oil, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.

## 2 PRODUCTS

2.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

## 3 EXECUTION

### 3.1 CLEANING

#### 3.1.1. During Construction:

- A. During the construction period, the material to be used in the work shall be kept in an orderly manner, neatly stacked or piled.
- B. Clean up frequently (at least daily) all refuse, rubbish, scrap materials, and debris caused by operations, to the end that at all time the site of the Work shall present a neat, orderly and workmanlike appearance. Sprinkle dusty debris with water.
- C. Provide for the disposal of all waste products, trash, debris, etc., and make necessary arrangements for legal disposal of same off the site. Never throw rubbish from windows or other parts of building. Lower waste materials in a controlled manner with as few handlings as possible.
- D. Remove all surplus material, false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from operations, and put the site in a neat, orderly condition.
- E. Vacuum clean building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for acceptance.
- F. Schedule cleaning operations so that dust and other contaminates resulting from cleaning process will not fall on wet, newly painted surfaces.
- G. Contractor shall provide trash gondolas or containers for use by all trades.

#### 3.1.2. Final Cleaning:

- A. Use experienced workmen or professional cleaners for final cleaning.
- B. Besides general broom cleaning, the following special cleaning for all trades shall be done at completion of work:

- a. Remove putty stains from glass; wash, polish same, inside and outside. Exercise care not to scratch glass.
  - ~~b. Clean, polish and wax woodwork.~~
  - c. Clean and polish hardware for removal of stains, dust, dirt, paint and the like.
  - ~~d. Remove spots, soil, paint from tile and similar work; wash same.~~
  - e. Clean fixtures, equipment; remove stains, paint, dirt and dust.
  - f. Remove temporary floor protections.
  - ~~g. Clean and polish all floors.~~
  - h. Remove all temporary protections at the site.
  - i. Clean exterior and interior metal surfaces, including doors and windows, of oil, stains, dust, dirt, paint and the like.
  - j. Clean and vacuum all carpeted areas.
- C. Make buildings ready for occupancy in all respects. Lay heavy building paper in main circulation areas to protect the floors until final inspection and acceptance.
- D. All existing improvements inside or outside the property, which are disturbed, damaged or destroyed by the work under the Contract, shall be restored to the condition in which they originally were, or to the satisfaction of the Architect.

END OF SECTION 01 74 00

## PROJECT RECORD DOCUMENTS

### 1.1 RECORD DRAWINGS

- A. The Contractor shall maintain on site a set of the contract drawings showing all changes or modifications to the project during construction. At project substantial completion the contractor will provide the Architect with a complete record set of the original Construction Documents for review. Construction Change Directive and Change Order items shall be included and clearly indicated. The following shall be provided on the Drawings, as follows:
1. Any changes from the Contract Documents, secured with prior approval of the Architect, for any phase of the Work, including all Addenda, Construction Change Directives and Change Orders shall be recorded in a neat readable manner, on the record drawings. All changes from the documents originally bid shall be made by a competent drafter and "clouded". All deletions shall be made by strike-through and clouded.
  2. For plumbing; heating, ventilating and air conditioning; electrical; and fire protection Work, Record Drawings shall be maintained by the Contractor as the Work progresses and as follows:
    - a. Deviations from the sizes, locations, and from other features of installations shown in the Contract Documents shall be recorded. Shut-off valves and other controls shall be clearly marked.
    - b. In addition, it shall be possible, using these drawings, to correctly and easily locate, identify and establish sizes of all piping, directions and the like, as well as other features of the Work which will be concealed underground and/or in the finished building.
  3. Locations of underground Work shall be established by dimensions to column lines or walls, locating all turns, etc., and by properly referenced centerline or invert elevations and rates of fall.
    - a. For Work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others it may be sufficient to illustrate the Work on the drawings in relation to the spaces in the building near which it was actually installed. Architect's decision in this matter shall be final.
  4. Additional drawings shall be provided as necessary for clarification.
  5. Drawings shall be kept up-to-date during the entire course of the Work and shall be available upon request for examination by the Architect and, when necessary, to establish clearances for other parts of the Work.
  6. Upon substantial completion of the Work, submit one (1) copy of the Record Drawings to the Architect for review. The Architect may request additional information be included as part of the record drawing set prior to approval. The Architect shall review the Record Drawings and shall be the sole judge of the acceptability of these drawings.

### 1.2. OWNER'S MANUAL

Upon Substantial Completion of the Project Work, submit one (1) copy of the Owner's Manual suitably typed, indexed and labeled for ready reference to the Architect for review.

- A. Subcontractors, major suppliers list with company's names, addresses and telephone numbers.
- B. Guarantees/warranties, certifications as described in the General Conditions, Supplementary General conditions and/or the technical specification or each item or work product.
- C. Affidavit: Non-Use of Asbestos Containing Building Materials from General Contractor on use of asbestos free materials, included in this Section.
- D. Materials Receipt signed by Owner and Contractor, included in this Section
- E. Special certifications and inspections documentation.
- F. ~~Certification of building pad and finish floor elevations by a licensed surveyor.~~

- G. Training Log
- H. Other items required by the Specifications.

Upon acceptance of Owner's Manual document, the Contractor shall provide one (1) final hard copy and two (2) copies electronically on CDs to Architect for transmittal to the owner.

### 1.3 OPERATION AND MAINTENANCE DATA

- A. Upon Substantial Completion of the Project Work, submit one (1) copy of the Operation and Maintenance Manual and Operating Instructions including parts lists for materials, equipment and systems, electrical and control items, to the Architect for review and possible approval. Division 21 to 28 shall be contained in separate binders for each division. Unless approved, revise the Operation and Maintenance Manuals in strict accordance with the Architect's comments. Resubmit one (1) copy of the Operation and Maintenance Manual to the Architect for final review. Upon receipt of Notice of Approval, deliver one (1) hard copy and two (2) copies electronically on CDs of the Operation and Maintenance Manuals to the Architect who will transmit them to the Owner. NOTE: Failure to properly complete and submit Maintenance and Operation Manuals in a timely manner shall place responsibility for detrimental maintenance and operating procedures on the Contractor.
- B. Operating instructions shall include complete operating sequence, control diagrams, description of method of operating machinery, machine serial numbers, factory order numbers, parts, tests, instruction books, suppliers' phone numbers and addresses and individual equipment guarantees. Parts lists shall be complete in every respect, showing parts and part numbers for ready reference.
- C. Maintenance instructions shall include a written list of required and suggested maintenance for mechanical, plumbing, electrical or other equipment or features in the project. Each item shall contain a brief description of the maintenance required as well as the recommended time frame or period for the maintenance. Include lists of filter sizes for air handling equipment, indicated "washable" or "disposable" and for which unit the filter is for. Shut off valves, etc., must be clearly marked on as-constructed drawings.
- D. Assemble maintenance manual and operating instructions in hard back loose leaf binders. Suitably label and index material for ready reference.

### 1.4 CERTIFICATES AND AFFIDAVIT

- A. Certificates: Submit certificates from governing authorities, manufacturers and subcontractors not previously submitted at the time of Substantial Completion.
- B. Affidavit: Submit the completed "Non-Use of Asbestos Containing Building Materials".

END OF SECTION 01 77 00

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

- A. Removal of existing roofing.
- B. Fiberglass-reinforced asphalt roofing shingles.
- C. Leak barrier and moisture-shedding roof deck protection.
- D. Underlayment.
- E. Metal flashing associated with shingle roofing.

### 1.2 RELATED SECTIONS

- A. Section 07 62 00 - Flashing and Sheet Metal: Sheet metal flashing not associated with shingle roofing.
- B. Section 07 72 00 – Roof Accessories
- C. Section 09 91 00 - Painting

### 1.3 REFERENCES

- A. AC438-1011-R1 - New Acceptance Criteria for Alternative Asphalt Roofing Shingles
- B. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. Asphalt Roofing Manufacturers Association (ARMA).
- D. ASTM International (ASTM):
  - 1. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
  - 2. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
  - 3. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
  - 4. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 5. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
  - 6. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
  - 7. ASTM E 903 - Standard Test Method for Solar Absorption, Reflectance and Transmission of Materials Using Integrating Spheres.
- E. Cool Roof Rating Council (CRRC).
- F. ENERGYSTAR.
- G. National Roofing Contractors Association (NRCA).

- H. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
  - I. Underwriters Laboratory (UL)
    - 1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
    - 2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
- 1.4 DEFINITIONS
- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.
- 1.5 SUBMITTALS
- A. Submit under provisions of Section 01 33 00.
  - B. Product Data: Manufacturer's data sheets on each product to be used, showing compliance with requirements.
  - C. Installation Instructions: Manufacturer's installation instructions, showing required preparation and installation procedures.
- 1.6 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.
  - B. Installer Qualifications: Installer must be approved by manufacturer for installation of all roofing products to be installed under this section.
- 1.7 REGULATORY REQUIREMENTS
- A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.
  - B. Provide a roofing system achieving an ENERGYSTAR rating.
  - C. Install all roofing products in accordance with all federal, state and local building codes.
  - D. All work shall be performed in a manner consistent with current OSHA guidelines.
- 1.8 PRE-INSTALLATION MEETINGS
- A. Convene a pre-installation meeting a minimum two weeks prior to starting work of this section.
    - 1. Contractor shall schedule and arrange meeting and meeting place and notify attendees.
    - 2. Mandatory Attendees: Roofing installer and manufacturer's steep slope technical representative (not sales agent).
    - 3. Optional Attendees: Owner's representative, Architect's representative, prime Contractor's representative.
    - 4. Review all pertinent requirements for achieving the warranty specified below and set schedule for final warranty inspection.
- 1.9 DELIVERY, STORAGE, AND HANDLING
- A. Store products in manufacturer's unopened labeled packaging until ready for installation.

- B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in sunlight.
- C. Store bundles on flat surface to maximum height recommended by manufacturer; store rolls on end.
- D. Store and dispose of solvent-based materials in accordance with requirements of local authorities having jurisdiction.

#### 1.10 WEATHER CONDITIONS

- A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with roofing shingle manufacturer's recommendations.

#### 1.11 WARRANTY

- A. Provide manufacturer's standard warranty:
  - 1. Provide to the Owner a Shingle & Accessory Warranty.
    - a. Warranty Duration: 20 years.

### PART 2 PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
  - 1. CertainTeed
  - 2. GAF, Residential Roofing Products
  - 3. Tamko Building Products, Inc.
  - 4. Approved equal
- B. Requests for substitutions will be considered in accordance with provisions of the "Special Terms and Conditions of the IFB". Comply with "Request for Approved Equal."

#### 2.2 SHINGLES

- A. Granule surfaced, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave® core and StainGuard® protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules. Architectural laminate styling provides a wood shake appearance with a 5 5/8 inch exposure. Features GAF®'s patented High Definition® color blends and enhanced shadow effect. . UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; CSA-A123.5; AC438; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval. **Timberline Ultra HD® Lifetime High Definition Shingles, by GAF®.**
  - 1. Color: Timberline Ultra HD – Hickory.

#### 2.3 HIP AND RIDGE SHINGLES

- A. Distinctive self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 31 lineal feet (9.45m) with an 8 inch (203mm) exposure. Ridglass 10in. Ridge Cap Shingles by GAF or approved equal.

#### 2.4 STARTER STRIPS

- A. Self sealing starter shingle designed for premium roof shingles. Each bundle covers approx. 100 lineal feet for English and metric shingles or 50 lineal feet for oversized shingles. WeatherBlocker Eave/Rake Starter Strip by GAF or approved equal.

- B. Pre-cut, color coordinated starter strip shingle designed as a second starter course for shingles with large cut-outs. Each bundle covers approx.. 60 lineal feet
- C. StarterMatch Starter Strip by GAF or approved equal.

## 2.5 LEAK BARRIER

- A. Self-adhering, self-sealing, bituminous leak barrier surfaced with a smooth polyethylene film. Approved by UL, Dade County, ICC, State of Florida and Texas Department of Insurance. Each Roll contains approx. 200 sq ft., 36 inches x 66.7 feet. StormGuard Leak Barrier, by GAF or approved equal.

## 2.6 UNDERLAYMENT

- A. #30 Roofing Underlayment: Water repellent breather type cellulose fiber building paper. Meets or exceeds the requirements of ASTM D 4869 Type IV and ASTM D 226 Type II.

## 2.7 ROOFING CEMENT

- A. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.

## 2.8 ROOF ACCESSORIES

- A. Compression Collars: UV stable solid molded PVC compression collar, Kynar PVDF coated 24 gauge galvanized flange, Ultimate Pipe Flashing by Lifetime Tool or approved equal.

## 2.9 NAILS

- A. Nails: Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch to 7/16 inch in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch or through plywood or oriented strand board by at least 1/8 inch.

## 2.10 METAL FLASHING

- A. Galvanized Steel: 24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275.
- B. Aluminum: 0.032-inch aluminum sheet, complying with ASTM B 209.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until roof deck has been properly prepared.

### 3.2 REMOVAL OF EXISTING ROOFING

- A. Remove all existing roofing down to the roof deck.
- B. Verify that deck is dry, sound, clean and smooth, free of depressions, waves and projections.
- C. Cover with sheet metal all holes over 1 inch diameter, cracks over 1/2 inch in width, loose knots and excessively resinous areas.
- D. Replace damaged deck with new materials.
- E. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and



underlayment.

### 3.3 PREPARATION OF SUBSTRATE

- A. Clean deck surfaces thoroughly prior to installation of leak barrier and roof deck protection.
- B. At areas to receive leak barrier, fill knot holes and cracks with latex filler.

### 3.4 INSTALLATION OF UNDERLAYMENT

- A. Install using methods recommended by manufacturer in accordance with local building code. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
- B. Eaves:
  - 1. Place eave edge metal flashing tight with fascia boards; lap joints 2 inches and seal with plastic cement; nail at top of flange.
  - 2. On roofs with slope between 2:12 and 4:12, and on all roofs in the north, install leak barrier up the slope from eave edge to 36 inches from the edge or at least 24 inches beyond the interior face of the warm exterior wall, whichever is greater; lap ends 6 inches and bond.
- C. Valleys:
  - 1. Install leak barrier at least 36 inches wide centered on valley; lap ends 6 inches and seal.
  - 2. ~~Where valleys are indicated to be "open valleys", install metal flashing over leak barrier before roof deck protection is installed; DO NOT NAIL THROUGH metal flashing; secure by nailing at 18 inches on center just beyond edge of flashing so that nail heads hold down edge.~~
- D. Hips and Ridges:
  - 1. Install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots will not be covered.
- E. Roof Deck:
  - 1. Install one layer of roof deck protection over entire area not protected by eave or valley membrane; run sheets horizontally lapped so water sheds; nail in place.
  - 2. On roofs sloped between 2 in 12 and 4 in 12, lap horizontal edges at least 19 inches and at least 19 inches over eave protection membrane.
  - 3. Lap ends at least 4 inches; stagger end laps of each layer at least 36 inches.
  - 4. Lap roof deck protection over valley protection at least 6 inches.
- F. Penetrations:
  - 1. At vent pipes, install a 24 inch square piece of leak barrier lapping over roof deck protection; seal tightly to pipe.
  - 2. At vertical walls, install leak barrier extending at least 6 inches up the wall and 12 inches on to the roof surface lapping over roof deck protection.
  - 3. At skylights and roof hatches, install leak barrier up the sides of the frame and 12 inches on to the roof surface on all sides, lapping over roof deck protection.
  - 4. At rake edges, install metal edge flashing over leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches and seal with plastic cement; secure with nails.
  - 5. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots are not covered.

### 3.5 INSTALLATION OF SHINGLES

- A. Install in accordance with manufacturer's instructions and requirements of local building code.
  - 1. Avoid breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F.
  - 2. Handle carefully in hot weather to avoid damaging shingle edges.
  - 3. Secure with 4 to 6 nails per shingle; use number of nails required by manufacturer or by code, whichever is greater. Nails must be long enough to penetrate through plywood or OSB, or 3/4 inch into dimensional lumber.
- B. Install hip and ridge shingles as required by the manufacturer. At ridges, install hip and ridge shingles over ridge or ridge vent material.
- ~~C. Make valleys using "open valley" technique:
  - 1. Snap diverging chalk lines on metal flashing, starting at 3 inches (75 mm) each side of top of valley, spreading at 1/8 inch per foot (9 mm per meter) to eave.
  - 2. Run shingles to chalk line.
  - 3. Trim last shingle in each course to match chalk line; do not trim shingles to less than 12 inches (305 mm) width.
  - 4. Apply 2 inches (50 mm) wide strip of plastic cement under ends of shingles, sealing to metal flashing.~~
- D. Make valleys using "closed cut valley" technique:
  - 1. Run the first, and only the first, course of shingles from the higher roof slope across the valley at least 12 inches.
  - 2. Run all courses of shingles from the lower roof slope across the valley at least 12 inches and nail not closer than 6 inches to center of valley.
  - 3. Run shingles from the upper roof slope into valley and trim 2 inches from center of valley.
- E. All penetrations are to be flashed according to roof manufacturer's requirements, ARMA and NRCA application instructions and construction details.

### 3.6 PROTECTION

- A. Stage work progress so that traffic is minimized over completed roofing.
- B. Protect installed products until completion of project

END OF SECTION 07 31 13.13

PART 1 GENERAL

1.1 SCOPE

- A. All labor, material, equipment and services necessary to furnish and install sheet metal work as shown on plans or specified herein. The scope of work includes, but may not be limited to: flashings, counter-flashings, reglets, gutters, downspouts, vent flashing and copings.

1.2 SPECIFIED PRODUCTS AND SUBSTITUTIONS

- A. Comply with "Request for Approved Equal" in the "Special Terms and Conditions of the IFB".

1.3 SUBMITTALS

- A. Submittals are required in accordance with Section 01 33 00.
- B. Submit Product Data for all counter-flashings, reglets, vent flashings and copings.
- C. Submit layouts and details of all sheet metal fabrications.

PART 2 MATERIALS

- A. Sheet metal shall be galvanized iron that is of copper bearing steel having 2 ounce zinc coating.
- B. Galvanized iron shall be 24 gauge or as shown on the Drawings.
- C. Solder shall comply with ASTM B-32, Standard Specification for Solder Metal.

3.1 INSTALLATION

- A. Accurately form work to sizes, shapes and dimensions shown and detailed, with all angles and lines in true alignment, straight, sharp, level and in proper place.
- B. Cope and flange intersections to accurately fit and solder together.
- C. Turn back exposed edges and hem 1/2".
- D. Install sheet metal in a tight and solid manner so as to minimize the appearance and size of joints.
- E. Joints other than expansion joints shall be soldered.
- F. Materials to be used on the exterior of the structure are to be installed in a watertight and weather-tight manner.
- G. Materials are to be installed plumb and level without bulges, waves or sags.

END OF SECTION 07 62 00

## PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:  
Joint sealants designed for interior and exterior above grade applications.
- B. Related Sections:  
Section 07 62 00 – Sheet Metal Flashing and Trim.

### 1.2 SYSTEM DESCRIPTION

- A. Design Requirements:  
Design number of joints and joint widths for maximum of plus or minus 50 percent movement.  
Design depth of sealant to be 1/2 width of joint.
  - a. Maximum Depth: 1/2 inch (13 mm).
  - b. Minimum Depth: 1/4 inch (6 mm).
- B. Performance Requirements: ASTM C920 Type S, Grade NS, Class 50, Use NT, M, A, G and O.

### 1.3 SUBMITTALS

- A. Comply with Section 01 33 00.
- B. Product Data: Submit manufacturer's technical bulletins and MSDS on each product.
- C. Samples:  
Initial Selection Purposes: For each product exposed to view, manufacturer's standard bead consisting of strips of actual products showing full range of colors available.  
Verification: 2 sets of each type and color of joint sealant required. Install joint sealant samples in 1/2 inch wide joints formed between two 6 inch long strips of material matching appearance of exposed surfaces adjacent to joint sealants.
- D. Submit laboratory tests or data validating product compliance with performance criteria specified.
- E. Submit list of references from 5 projects similar in scope to this Project. Include contact name and phone number of person charged with oversight of each project.

### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company regularly engaged in manufacturing and marketing of products specified in this Section.  
Manufacturer Qualifications: Company shall be ISO 9001:2000 Certified.
- B. Installer Qualifications: Qualified to perform Work specified by reason of experience or training provided by product manufacturer. Contractor shall be qualified in the field of concrete/ CMU repair with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have received product training by a manufacturer's representative.
- C. Mock-Ups:

At start of Project, perform mock-up of required sealant Work at 1 area of building. Perform minimum of 1 mock-up for each different combination of substrates to be sealed. Coordinate mock-up areas with Architect.

Install mock-ups and test in presence of sealant manufacturer's authorized representative and Architect to assure installation procedures are consistent with warranty requirements.

After sealant has achieved sufficient cure as coordinated with manufacturer's representative, conduct adhesion pull-tests, or non-destructive testing, at discretion of Architect. Conduct tests per ASTM C1521.

a. Confirm results of adhesion tests as acceptable by Architect, Owner or Owner's representative, and sealant manufacturer prior to proceeding with Work.

Leave approved mock-ups in place to establish standards and guidelines for acceptable installation of sealant Work and acceptable appearance.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.
- B. Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight per manufacturer's recommendations.
- C. Condition products to approximately 60 degrees F (16 degrees C) to 70 degrees F (21 degrees C) for use per manufacturer's recommendations.
- D. Handle products with appropriate precautions and care as stated on Material Safety Data Sheet.

## 1.6 PROJECT CONDITIONS

- A. Do not use products under conditions of precipitation, or in inclement or freezing weather. Verify that substrates are clean, dry, and frost-free. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions per manufacturer's recommendations if application during inclement weather occurs.

## 1.7 WARRANTY

- A. Provide manufacturer's 5 year standard material warranty.
- B. Include coverage for replacement of sealant materials which fail to achieve water tight seal, exhibit loss of adhesion or cohesion, or do not cure, provided sealant has been installed per manufacturer's recommendations.
- C. Warranty Exclusions: Failure resulting from concrete shrinkage, excessive movement structural cracks or defects, faulty construction, faulty design, faulty materials (other than joint sealants), improper installation, misuse of structure, settlement, or accident, fire, or other casualty or physical damage.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products from the following manufacturer:  
BASF Corporation

- B. Substitutions: Comply with "Request for Approved Equal" in the "Special Terms and Conditions of the IFB".
- C. Specifications and Drawings are based on manufacturer's proprietary literature from BASF Building Systems. Other manufacturers shall comply with minimum levels of material, color selection, and detailing indicated in Specifications or on Drawings. Architect will be sole judge of appropriateness of substitutions.

## 2.2 MATERIALS

- A. A premium, very low-modulus, high-movement, non-sag, fast-curing, ready-to-use, silyl-terminated polyether sealant. ASTM C 920 compliance:
  - Type and Grade: S (single component) and NS (non-sag).
  - Class: 100/50 for vertical joints.
  - Use Related to Exposure: NT (non-traffic).
  - Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
  - For use with EIFS per ASTM C1382.
  - Acceptable Product: MasterSeal NP 150 (Formerly Sonolastic 150 VLM) Technology by BASF is considered to conform to the requirements of this specification
- B. Accessories:
  - Soft Backer Rod by BASF, or approved equal.
  - Closed Cell Backer Rod by BASF, or approved equal.
  - Porous Substrate Primer: MasterSeal P 179 (formerly Primer 2000) by BASF, or approved equal.
  - Cleaner: MasterSeal 990 (formerly Reducer 990) by BASF, or approved equal.

## 2.3 COLORS

- A. Colors - As selected by the Architect from the manufacturer's standard colors.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Comply with Division 01 requirements.
- B. Inspect areas involved in Work to establish extent of Work, access, and need for protection of surrounding construction.
- C. Examine joints for defects that would adversely affect quality of installation.
- D. Provide additional joint preparation, beyond that outlined in Specifications, as required by sealant manufacturer and Architect's recommendations based on mock-ups and field adhesion tests.

### 3.2 PREPARATION

- A. Remove loose materials and foreign matter that impair adhesion of joint sealant.
- B. Clean joints as required to expose sound surface free of contamination and laitance.

- C. Ensure structurally sound surfaces, dry, clean, free of dirt, moisture, loose particles, oil, grease, asphalt, tar, paint, wax, rust, waterproofing, curing and parting compounds, membrane materials, and other foreign matter.
- D. Concrete, Stone, and Other Masonry:
  - Clean by grinding, sandblasting, or wire brushing to expose sound surface free of contamination and laitance.
  - Prime masonry.
- E. Wood:
  - Do not apply over freshly treated wood; treated wood must have weathered for at least 6 months.
  - Clean new and weathered wood. Scrape away loose paint to bare wood. If coatings cannot be removed, test coatings to verify adhesion of sealant or determine appropriate.
- F. Metal:
  - Remove scale, rust, and coatings from metal to expose bright white surface. Remove protective coatings as well as chemical residue or film.
  - Aluminum Frames: Remove clear lacquer before application of joint sealants. If coatings cannot be removed, test coatings to verify adhesion of sealant or determine an appropriate primer.
  - Prime the following surfaces with primer recommended by joint sealant manufacturer:
    - a. Copper.
    - b. Galvanized steel.
    - c. Fluorocarbon (Kynar) coatings.
  - Remove other protective coatings or finishes that could interfere with adhesion.
- G. Glass:
  - Remove all oil and grease with xylene.
  - Wipe clean and dry with a clean cloth until no solvent film or fingerprints remain.

### 3.3 PRIMING

- A. Where circumstances or substrates require primer, comply with the following requirements:
  - Apply primer full strength with brush or clean, lint-free cloth. Apply primer to a light, uniform coating. Porous surfaces require more primer. Do not over apply, or allow primer onto face of substrate.
  - Allow primer to dry before applying joint sealants. Depending on temperature and humidity, primer will be tack free in 15 to 120 minutes.
  - Prime and seal on same workday.

### 3.4 INSTALLATION

- A. Back-Up Material:
  - Install appropriate size backer rod, larger than joint per manufacturer's recommendations, and in manner to provide concave sealant profile.
  - Where joint depth does not permit installation of backer rod, install adhesive-backed polyethylene bond-breaker tape along entire back of joint to prevent 3-sided adhesion of joint sealant.
- B. Sealant:
  - Verify that temperature and moisture conditions are within manufacturer's acceptable limits.
  - Using fresh sealant and equipment that is in proper working order, completely fill joint with sealant, filling from bottom up to avoid entrapping air.
  - Using clean, dry tool with rounded edge, and of appropriate width for each joint, tool freshly installed sealant to provide preferred concave profile, to ensure intimate contact between

sealant and substrate, and to provide neat appearance. Where surface aggregate does not permit proper tooling, install sealant and backer rod so that face of joint is recessed behind exposed aggregate, and sealant is bonded to firm, even surface.

Use dry tooling method. Do not use tooling agents such as soapy water or solvents that have not been approved by sealant manufacturer.

### 3.5 CURING TIME

- A. Curing of joint sealants varies with temperature and humidity. The following times assume 75 degrees F (24 degrees C), 50 percent relative humidity, and joints 1/2 inch (13 mm) wide by 1/4 inch (6 mm).
  - Skins: Within 1 hour.
  - Functional: Within 3 days.
  - Full Cure: Approximately 1 week.

### 3.6 INSPECTION

- A. During execution of Work, inspect Work to assure compliance with manufacturer's guidelines, these Specifications when they exceed manufacturer's guidelines, and good construction practice.
  - Refer to latest revision of ASTM C1521 for test methods and frequency.
  - Allow inspections of Work and assist in testing requested by manufacturer's representative and Architect.
- B. Non-Compliant Work: If inspections reveal non-compliant Work or Work that was not installed per Specifications, and/or manufacturer requirements, remove adjacent Work until a location is reached where installation was performed properly. Assist in spot-checking of remainder of Work.

### 3.7 CLEANING

- A. Remove uncured sealant and joint filler with xylene, toluene, MEK, or other sealant manufacturer approved solvent.
- B. Remove cured sealant by cutting with sharp-edged tool.
- C. Remove thin films by abrading.
- D. Remove debris related to application of sealants from Project site per applicable regulations for hazardous waste disposal.

### 3.8 PROTECTION

- A. Protect Work from contaminating substances and damage resulting from other construction operations or other causes so that sealed joints are without deterioration or damage at time of Project completion.

END OF SECTION 07 92 00



## PART 1 GENERAL

### 1.1 SCOPE

- A. All labor, materials, equipment and services necessary to paint surfaces as shown or specified.

### 1.2 SPECIFIED MATERIALS AND SUBSTITUTIONS

- A. Comply with "Request for Approved Equal" in the "Special Terms and Conditions of the IFB".

### 1.3 SUBMITTALS

- A. Submittals required in accordance with Section 01 33 00.
- B. Submit Product Data on all materials to be used, including product information sheets listing chemical composition and percentage of total volume. Submit data indicating that paint products submitted are in compliance with current county, state, and federal V.O.C. regulations.
- C. Submit color charts and Samples for the Architect's color selections.
- D. Submit six (6) 8-1/2 x 11 samples of each color and finish gloss selected by Architect.
- E. Submit a minimum 6' x 6' sample of each color and finish gloss selected by Architect on a location of Project selected by Architect.

### 1.4 PROJECT CLOSE-OUT

- A. See Section 01 77 00 for general Project Close-Out requirements.
- B. Submit manufacturer's or distributor's numbered and dated invoices showing type and quantity of products used on this Project.
- C. Provide Owner with complete information for future matching of all paint products and colors used on the Project.
- D. Provide Owner with (1) one-gallon can of each paint product and color used on the Project. The cans are to be unopened and product and color marked.

## PART 2 MATERIALS

### 2.1 MANUFACTURERS

- A. The following manufactures are approved for this Project provided they match the specified products and comply with Federal and Local Regulations governing volatile organic compounds (VOC's). Colors will be selected from the full line of colors available from the paint manufacturer. Acceptable manufacturers are: Dunn Edwards, Frazee;Deer-O, Pittsburgh, Sherwin Williams.
- B. Painting finishes schedule. Apply the following finishes to the surfaces specified (Dunn Edwards paints are scheduled as a basis of design, provide DE paints or approved equal):

<u>SUBSTRATE</u>	<u>PRIMER</u>	<u>FINISH</u>	<u>SHEEN</u>
<u>Ferrous metal</u>			
1 <sup>st</sup> Coat	(BRPROO) BLOC-RUST Premium		
2nd Coat		W 9 SYN-LUSTRO	Semi-gloss
3rd Coat		W 9 SYN-LUSTRO	Semi-gloss
<u>Galvanized metal</u>			
1 <sup>st</sup> Coat	(SC-ME01-1) Supreme Chemical Metal Clean & Etch		
2nd Coat	(ULGMOO) ULTRASHIELD Galvanized Metal Primer		
3rd Coat		(EVSH20-2) EVERSIELD	Velvet
4 <sup>th</sup> Coat		(EVSH20-2) EVERSIELD	Velvet
<u>Wood</u>			
1 <sup>st</sup> Coat	(EZPROO) EZ-PRIME Premium		
2nd Coat		(EVSH20-2) EVERSIELD	Velvet
3rd Coat		(EVSH20-2) EVERSIELD	Velvet

### PART 3 INSTALLATION

- 3.1 Standards of Workmanship: Preparation, application, workmanship, completion, and acceptance shall be in accordance with this Specification, manufacturer's recommendations, and applicable provisions of the PCDA manual for "type 1 standard job".
- 3.2 Deliver paint to site in manufacturer's labeled and sealed containers. Labels shall give manufacturer's name, brand, type, batch number, color of paint and instructions for reducing. Thin only in accordance with printed directions of manufacturer. Job mixing or job tinting may be done when approved by the Architect.
- 3.3 Store materials used on the job in a single space. Such storage place shall be kept clean. Receive, store, handle and mix paint materials in this space. Make good any damage to it or to its surroundings. Remove any oily rags, waste, etc. from the building every night and take every precaution to avoid any danger of fire.
- 3.4 Inspection of Surfaces: Do not begin painting on any surface until it has been inspected and is in proper condition to receive the paint as specified. Should any surface be found unsuitable to provide a proper paint finish, notify the Architect in writing. Apply no material until the unsuitable surfaces have been made satisfactory. After acceptance of surface by application of first coat of paint, assume responsibility for and rectify any unsatisfactory finish resulting.
- 3.5 Steel and Iron: Remove grease, rust and rust scale and touch up any chipped or abraded places on items that have been shop coated. Where steel or iron have a heavy coating of scale, remove by descaling or wire brushing as necessary to produce a satisfactory surface for painting Prime welds if required.
- 3.6 Galvanized Metal: Thoroughly clean by wiping surfaces with solvent cleaner and conditioner before applying primer.
- 3.7 Do not apply exterior paint in damp, rainy weather, or until the surface has dried thoroughly from the effects of such weather. Do not apply varnish or paint when temperature is below 50 degrees F.

- 3.8 Stain or paint only when surfaces are clean, dry smooth and adequately protected from dampness. Each coat of paint shall be well brushed or rolled on, worked out evenly and allowed to dry at least 24 hours before the subsequent coat is applied.
- 3.9 Finished work shall be uniform of approved color, smooth and free from runs, sags, clogging or excessive flooding. Make edges of paint adjoining other materials or colors sharp and clean, without overlapping. Where high gloss enamel is used, lightly sand undercoats to obtain a smooth finish coat.
- 3.10 At completion, touch up and restore finish where damaged, and leave surfaces in good condition.

END OF SECTION 09 91 00