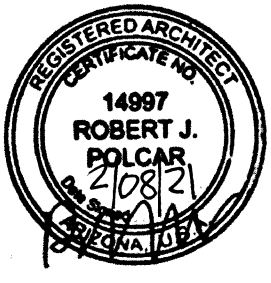
DOUGLAS UNIFED SCHOOL DISTRICT

FARAS ELEMENTARY SCHOOL
WEATHERIZATION ROOFING AND STRUCTURAL REPAIRS

February, 2021

SFB Project 020227105-9999-012-BRG



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1. PROJECT SITE

1.1 The Elementary School is located at 410 W. Fir Avenue, Pirtleville, AZ 85626.

2. SCOPE OF THE WORK

2.1 The project involves work at Building 1002 (South Wing) constructed in 1969, and 1003 (North Wing) constructed in 1996 on the Faras Elementary School campus.

Clean all exterior surfaces, including concrete, masonry, metal, gypsum board, metal fascia and wood fascia, exposed steel trusses and exposed wood decks, glass, and aluminum frames.

Structural stabilization of a portion of the building foundation through the use of helical piers as indicated on the structural plan, grinding, leveling and patching of portions of the interior concrete floor slabs, and repair of masonry joints and cracks in both interior and exterior walls.

Remove all building sealants including those at all expansion and construction joints, window and door frames, sheet metal and flashing joints, penetrations and any other sealants where they occur. Clean and repair joints and cracks, apply new backer rod and sealant. Apply self-leveling sealant at joint between sidewalk and buildings.

Excavate top three inches of soil adjacent to walls at all buildings for application of coating to walls. Regrade for positive drainage after application and cure of coating.

Repair, prepare, blockfill and coat all concrete masonry surfaces.

Prepare and paint all steel, steel doors, steel frames, ferrous metal downspouts, metal trim, metal fascia, steel framing, and exposed flashings. Factory finished metal roofing, gutters, trim and downspouts excluded.

Prepare, repair, spot prime and paint all paintable horizontal surfaces such as exterior soffits and exposed decks.

At both buildings remove the existing roof membrane systems to deck, repair any damaged roof deck, install new rigid insulation, cover board and PVC roof membranes including replacement of roof scuppers, downspouts and splash blocks. At South Building install new nailers and metal coping, at North Building repair metal coping where necessary to provide a watertight condition.

Verify mechanical curbs to comply with roof membrane warranty requirements and adjust if necessary.

Remove and reinstall all building mounted signs for coating of exterior walls.

Appropriate trades person to remove and reinstall, modify or extend any mechanical, electrical, plumbing, cctv, telephone, antennae, sound, or lighting facilities, etc. found to obstruct the work of this project or found to be not safe or not code compliant.

The project will take place during the school year while the campus is occupied.

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 by product manufacturer for this project indicating manufacturer approval of Installer to apply specified products and provide specified warranty. Submit with bid.

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 roofing systems.

5 PRIOR APPROVALS

5.1 Products and materials shall be reviewed and approved prior to award of bid.

5.2 Comply with “Request for Approval” in the “Special Terms and Conditions of the IFB”.

6 REVIEWED SUBMITTALS

6.1 The General Contractor shall keep all reviewed submittals on site and they shall be accessible at all times through the duration of the project.

7 INSPECTION REPORTS

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

8 CLOSEOUT SUBMITTALS

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

8.2 Maintenance Data, to include maintenance manuals.

8.3 Record Drawings.

8.4 Warranties, executed copies of approved warranty forms. Warranties shall indicate start date of warranty period.

8.5 Written field records of all inspections, testing, construction administration and quality assurance/ quality control site visits conducted during the installation of the systems.

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 Lumbermans' 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. Final cleaning shall be completed just prior to the final punch list visit.

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.~~
   k. Clean dust and dirt from all roof surfaces.
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 SUMMARY

A. Replacement of existing roof system with new single ply membrane roofing system.

B. Removal and legal disposal/ recycling, offsite, of all existing BUR system and insulation to the deck substrate. Verify if existing insulation can be saved prior to roof demolition of each section (see bid form).

C. Removal and legal disposal/ recycling, offsite, of all existing base flashings on walls and penetrations including all lead jacks.

D. Inspection and repair of existing roof deck. The wood deck consists of 2 x 6 tongue and groove lumber on the south building and ½" plywood sheathing on the north building. Repairs to the deck shall be of the same material as existing.

E. Removal, and retention for reinstallation, of the bottom metal piece of the two piece reglet to allow for the termination of the new membrane wall flashings direct to the substrate.

F. Provision and installation of polyisocyanurate insulation:

1. Mechanically attached to deck. Total flat insulation thickness to be 3-1/2" assembled in two layers.

G. Provision and installation of pre-engineered polyisocyanurate crickets at twice the slope rate of the deck to direct water flow to the roof drains and thru wall scuppers.

H. Provision and installation of a layer of ¼ inch glass mat cover board over the insulation layers:

1. All insulation and cover board layers mechanically attached with roof manufacturer's screws and plate system in a pattern to achieve the specified wind uplift requirements as dictated by the furnished wind calculation. Fasteners shall not penetrate through the roof deck where the bottom of the deck is exposed to view.

I. Provision and installation of a custom prefabricated 60 mill high strength, energy efficient, maintenance free PVC based CPA thermoplastic roof system fully adhering with water based adhesive to the cover board layer.

J. Provision and installation of roof manufacturer's prefabricated wall flashings of same membrane to the highest point possible under the reglet base piece. Terminate all wall flashings by the triple seal method.

K. Provision and installation of roof manufacturer's prefabricated vinyl coated metal pitch pans on any line sets.

L. Provision and installation of roof manufacturer's custom factory prefabricated vinyl coated metal scuppers with factory welded attachment skirts in all scupper openings.

M. Provision and installation of roof manufacturer's 30 by 60 inch walk pads with factory welded attachment skirts in areas as designated by the Districts facility management.

N. Provision and scheduling of an intensive post project factory inspection to be performed by a trained quality assurance technician employed by the roofing system manufacturer. The installing contractor shall have his own technicians on site during the inspection to perform any punch list corrections at that time.

O. Provision of a standardly published roof system manufacturer's twenty (20) year NDL (no dollar limit) warranty with the first fifteen years also featuring consequential damage coverage.

1.2 SYSTEM COMPONENTS

A. PVC thermoplastic membrane adhered with water-based adhesive.

B. Glass Mat Cover Board.

C. Roof Manufacturer's polyisocyanurate rigid insulation board, tapered.

D. Roof Manufacturer's polyisocyanurate rigid insulation board, flat.

E. Prefabricated flashings, corners, parapets, stacks, vents, and related details.

F. Fasteners, adhesives, and other accessories required for a complete roofing installation.

G. Traffic Protection.

1.3 REFERENCES

A. NRCA - The NRCA Roofing and Waterproofing Manual.

B. ASCE 7 - Minimum Design Loads For Buildings And Other Structures.

C. UL - Roofing Materials and Systems Directory, Roofing Systems (TGFU.R10128).

1. UL 790 - Standard Test Methods for fire Tests of Roof Coverings

2. ANSI/UL 1256 - Fire Test of Roof Deck Constructions

D. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

E. ASTM D 751 - Standard Test Methods for Coated Fabrics.

F. ASTM D 4434 - Standard Specification for Polyvinyl Chloride Sheet Roofing.

G. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.

H. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.4 SYSTEM DESCRIPTION

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

C. Physical Properties:

1. Roof product must meet the requirements of Type III PVC sheet roofing as defined by ASTM D 4434 and must meet or exceed the following physical properties.

2. Thickness: 60 mil, nominal, in accordance with ASTM D 751.
3. Thickness Over Scrim: ≥ 28 mil in accordance with ASTM D 751.
4. Breaking Strengths: ≥ 390 lbf. (MD) and ≥ 438 lbf. (XMD) in accordance with ASTM D 751, Grab Method.
5. Elongation at Break: ≥ 31% (MD) and ≥ 31% (XMD) in accordance with ASTM D 751, Grab Method.
6. Heat Aging in accordance with ASTM D 3045: 176 °F for 56 days. No sign of cracking, chipping or crazing. (In accordance with ASTM D 4434).
7. Factory Seam Strength: ≥ 431 lbf. in accordance with ASTM D 751, Grab Method.
8. Tearing Strength: ≥ 132 lbf. (MD) and ≥ 163 lbf. (XMD) in accordance with ASTM D 751, Procedure B.
9. Low Temperature Bend (Flexibility): Pass at -40 °F in accordance with ASTM D 2136.
10. Accelerated Weathering: No cracking, checking, crazing, erosion or chalking after 5,000 hours in accordance with ASTM G 154.
11. Linear Dimensional Change: < 0.5% in accordance with ASTM D 1204 at 176 ± 2 °F for 6 hours.
12. Water Absorption: < 2.6% in accordance with ASTM D 570 at 158 °F for 166 hours.
13. Static Puncture Resistance: ≥ 56 lbs. in accordance with ASTM D 5602.
14. Dynamic Puncture Resistance: ≥ 14.7 ft-lbf. in accordance with ASTM D 5635.

D. Cool Roof Rating Council (CRRC):
   1. Membrane must be listed on CRRC website.
      a. Initial Solar Reflectance: ≥ 88%
      b. Initial Thermal Emittance: ≥ 87%
      c. Initial Solar Reflective Index (SRI): ≥ 111
      d. 3-Year Aged Solar Reflectance: ≥ 68%
      e. 3-Year Aged Thermal Emittance: ≥ 84%
      f. 3-Year Aged Solar Reflective Index (SRI): ≥ 82

E. Insulation
   1. Roof manufacturer supplied polyisocyanurate rigid insulation board, LTTR 5.7 per inch of thickness.
      a. Facings to be compatible with roof system materials and methods of installation.
   2. Tapered Insulation Slope: 1/2 inch per foot or twice the rate of the deck slope at crickets.
   3. Configuration as indicated on the Drawings.

1.5 SUBMITTALS

A. Submit under provisions of Section 0133 00.

B. Submit data on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.

3. Installation methods.
4. Maintenance requirements.
5. Product test reports for roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirement.
6. Product Data for adhesives and sealants used inside the weatherproofing system, documentation including printed statement of VOC content.
7. Laboratory Test Reports for adhesives and sealants used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of California Department of Public Health's "Standard Method or the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environnmental Chambers."
8. Roof deck fastener pullout test.
9. Research/ Evaluation Reports:
    a. For components of membrane roofing system, from ICC-ES.
    b. UL Certifications demonstrating roof classification in accordance with UL 790 for roof assembly that satisfactorily passes UL 1256.

C. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, walkway pad layout and location of fasteners.

D. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system with manufacturer's warranty.

E. Manufacturer's letter of intent to warrant the completed project.

F. Maintenance Manual and training to Owner at project completion. Manuals shall include recommendations for periodic inspection and maintenance of all roofing work.

G. Manufacturer's Sample Warranty.

H. For Prior-Approvals during the bidding phase, provide the following:

1. Manufacturer's technical data and tested physical and performance properties. Submissions that do not clearly demonstrate adherence to 1.4 SYSTEM DESCRIPTION above will be rejected.
2. Submit listing from the Cool Roof Rating Council website (coolroof.org) to indicate initial and 3-year Solar Reflectance values for the roofing system.
3. Product Data: For adhesives and sealants, indicating VOC content.
4. Product Certificates: For each component of the roofing system, certifications that products meet or exceed specified requirements.
5. Submit UL Classification Label as proof of registration to Underwriters Laboratories Follow Up Inspection Service and proof of UL 790 Class A fire listing of the polyvinyl chloride membrane roofing system over existing wood roof deck.
6. Manufacturer's Sample Warranty.
7. Manufacturer's letter of intent to warrant the completed project.

8. Manufacturer's letter indicating they will provide field inspection no less than one (1) day each week during construction until all work is completed and accepted by the Architect and Owner.

B. Products will not be considered if:
   1. Product or method of major waterproofing field components to be considered do not have a minimum of five (5) years of successful performance in roofing and reroofing applications in Arizona.
   2. The independent test data does not meet or exceed the minimum performance standards specified.
   3. Acceptance will require substantial revision of Contract Documents.
   4. Architect/ Owner reserves the right to be the final authority on the acceptance or rejection of any and all products.

1.6 QUALITY ASSURANCE

A. Perform work in accordance with manufacturer's installation instructions.

B. Manufacturer Qualifications: A manufacturer specializing in the production of PVC membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.

C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.

D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.

E. Test Reports:

   1. Roof deck fastener pullout test.

F. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.

B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

   1. Exterior Fire-Test Exposure: Roof system submitted shall achieve a UL, Intertek-WH or FM Class rating. Rating must meet state and local codes.

      a. Class A; ASTM E 108/ UL 790, for application and roof slopes indicated.

   2. Fire-Resistance Ratings: Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.

   3. Conform to applicable code for roof assembly fire hazard requirements.

C. Wind Uplift:

   1. Roofing System Design: Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*. Calculations are to be prepared and sealed by an

engineer registered in Arizona. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins.

2. Roofing system shall be identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressure calculated in accordance with ASCE-7.

    a. Field-of-Roof Uplift Pressure: -**31** lbf/sq. ft.
    b. Perimeter Uplift Pressure: **-45** lbf/sq. ft.
    c. Corner Uplift Pressure: **-60** lbf/sq. ft.

1.8 PRE-INSTALLATION MEETING

A. Convene meeting not less than one week before starting work of this section.

B. Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following.

1. Meet with Owner, Architect, Owner's insurer if applicable, School Facilities Board representative, roofing installer, roofing system manufacturer's representative, and any installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.

2. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

4. Review structural loading limitations of roof deck during and after roofing.

5. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

6. Review governing regulations and requirements for insurance and certificates if applicable.

7. Review temporary protection requirements for roofing system during and after installation.

8. Review roof observation and repair procedures after roofing installation.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components. Manufacturer applied labels shall provide sufficient information to match the delivered materials with approved submittal data.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Store roof materials and place equipment in a manner to avoid permanent deflection of deck.

E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.10 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when current and forecasted weather conditions permit roofing system to be installed in accordance with manufacturer's written instructions and guarantee requirements.

1.11 WARRANTY

A. Contractor's Warranty: The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.

B. Manufacturer's Warranty: Must provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition the warranty must meet the following criteria:

1. Warranty Period: 20 years from date issued by the manufacturer.
2. No exclusion for damage caused by ponding water.
3. No exclusion for damage caused by biological growth.
4. Issued direct from and serviced by the roof membrane manufacturer.
5. Transferable for the full term of the warranty.
6. The maximum wind speed coverage shall be peak gusts of 120 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.
7. Warranty shall also cover leaks caused by hail:
    a. Hail up to 1" diameter when 60-mil PVC membrane is installed over 1/4 inch glass mat cover board.
8. Other warranted failures include roof leaks, blisters, ponding and sliding materials in accordance with Arizona School Facilities Board guidelines.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Product: Subject to compliance with requirements, provide a single ply membrane roofing system as described below:

1. All proposed materials must be submitted for prior approval.

B. All roofing system components to be provided or approved by the selected roofing manufacturer. Obtain all components including roof insulation, cover board, fasteners, adhesives, coatings and sealants for roofing system from the same manufacturer as the membrane roofing or a manufacturer approved by the membrane roofing manufacturer.

C. Requests for approval will be considered in accordance with provisions of the "Special Terms and Conditions of the IFB." Comply with "Request for Approved Equal."

2.2 ROOFING SYSTEM COMPONENTS

A. Roofing Membrane: PVC thermoplastic membrane conforming to ASTM D 4434, type III, fabric-reinforced, PVC, NSF/ANSI 347 Gold or Platinum Certification, and a product-specific third-party verified Environmental Product Declaration. Membrane properties as follows:

1. Thickness:
    a. 60 mil.
2. Exposed Face Color:

a. White.

3. Minimum recycle content 7% post-industrial and 0% post-consumer.
4. Recycled at end of life.

B. Glass Mat Cover Board: PVC manufacturer approved FA Glass Mat Roof Board.
   1. Physical Characteristics
      a. Core: Enhanced Moisture and Mold Resistant Gypsum Core resistance to mold growth on the board per ASTM D 3273
      b. Surfacing: Heavy Duty Coated Fiberglass Facer
      c. Overall thickness: 1/4 inch
      d. Board conforms with requirement of ASTM C 1177
      e. Minimum Flexural Strength, Parallel 40 lbf per ASTM C 473
      f. Flute Spanability: 2-5/8 inches when tested in accordance with ASTM E 661
      g. Compressive Strength, Nominal: 900 psi when tested in accordance with ASTM C 473.
      h. Permeance: 25 perms when tested in accordance with ASTM E 96, Dry cup method
      i. Meets UL Class B fire rating as a component of the specified roofing system up to existing building's roof slope per UL 790
      j. Classified in roof deck construction in accordance with ANSI/UL 1256.
      k. Flame Spread/Smoke Developed: 0/0 in accordance with ASTM E 84, UL 723

C. Accessory Materials: Provide accessory materials supplied by or approved for use by the PVC manufacturer.
   1. Sheet Flashing: Manufacturer's standard reinforced PVC sheet flashing.
   2. Factory Prefabricated Flashings: manufactured using Manufacturer's standard reinforced PVC membrane.
      a. Stack Flashings.
      b. Curb Flashings.
      c. Inside and Outside Corners.
      d. Vinyl Coated Pitch Pans.
   3. Sealants and Adhesives: Compatible with roofing system and supplied by PVC manufacturer.
      a. Insulation Adhesive.
      b. PVC Compatible Caulk.
      c. Strip Mastic.
      d. Pitch Pocket Filler.
   4. Slip Sheet: Compatible with roofing system and supplied by PVC manufacturer.
   5. Fasteners and Plates: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane and insulation to substrate. Supplied by PVC manufacturer. Fasteners shall not penetrate bottom of roof deck.
      a. #14 Heavy Duty Fasteners.
      b. Zinc Plated Metal Anchors.

c. 3 inch Metal Plates.

6. Termination and Edge Details: Supplied by PVC manufacturer.
   a. Termination Bar.
   b. Flat Coping.
   c. Two Piece Compression Edge with vinyl coated edge metal and factory finished compression piece.
7. Vinyl Coated Metal: Supplied by PVC manufacturer, 24 gauge, hot-dipped galvanized, grade 90 metal with a minimum of 17 mil of PVC membrane laminated to one side.
8. Two-Way Roof Vents: Supplied by PVC manufacturer. Install a minimum of 1 vent for each 1,000 ft² (93 m²) of roof area on the mechanically attached area only.

D. Walkpads:
1. Provide non-skid, maintenance-free walkway pads at areas adjacent to service points of mechanical equipment. Indicate layout on Shop Drawings.
   a. PVC manufacturer's standard walk pad.

2.3 ROOF INSULATION

A. General:
1. Provide preformed roof insulation boards that comply with requirements and referenced standards, as selected from manufacturer's standard sizes.
2. Provide preformed saddles, crickets, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

B. Polyisocyanurate Board Insulation: Complying with ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Material as supplied by PVC manufacturer.
1. Flat: Two layers; total thickness of the assembled layers to be 3-1/2"
2. Tapered: Tapered to form crickets.

2.4 ROOF INSULATION ACCESSORIES

A. General: Provide roof insulation accessories approved by the roof membrane manufacturer and as recommended by insulation manufacturer for the intended use.

B. Insulation Adhesive: Provide PVC manufacturer approved insulation adhesive for attaching insulation and/or insulation cover boards in conformance to specified design requirements.

C. Fasteners: Provide factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening insulation and/or insulation cover boards in conformance to specified design requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that the surfaces and site conditions are ready to receive work.

B. Verify that the deck is supported and secured.

C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.

D. Verify that the deck surfaces are dry and free of standing water, ice or snow.

E. Verify that all roof openings or penetrations through the roof are solidly set.

F. If substrate preparation is the responsibility of another contractor, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Tear out all base flashings, counter flashings, pitch pans, pipe flashings, vents and like components necessary for application of new membrane.

B. Remove existing roofing system per manufacturer's written instructions.

C. Remove and replace wet, deteriorated or damaged decking.

D. Where required, raise, (disconnect by licensed craftsmen, if necessary) all HVAC units and other equipment supported by curbs to conform with the following:

1. Modify curbs as required to provide a minimum 8" base flashing height measured from the surface of the new membrane to the top of the flashing membrane.
2. Secure top of flashing and install new metal counterflashing prior to re-installation of unit.
3. Perimeter nailers must be elevated to match elevation of new roof insulation.

E. Immediately remove all debris from roof surface. Demolished roof system may not be stored on the roof surface.

F. Proceed with installation only after unsatisfactory conditions have been corrected.

G. Clean surfaces thoroughly prior to installation.

H. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

I. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

3.3 INSTALLATION

A. Insulation, Mechanically Fastened: Flat polyisocyanurate rigid insulation board.

1. Install insulation in accordance with the roof manufacturer's requirements.
2. Insulation shall be adequately supported to sustain normal foot traffic without damage.
3. Where field trimmed, insulation shall be fitted tightly around roof protrusions with no gaps greater than ¼ inch.
4. Tapered insulation boards shall be installed in accordance with the insulation manufacturer's shop drawings.
5. No more insulation shall be applied than can be covered with the roof membrane by the end of the day or the onset of inclement weather.
6. If more than one layer of insulation is used, all joints between subsequent layers shall be offset by at least 6 inches.
7. Mechanical Attachment: Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements. Use shortest screws acceptable to manufacturer at areas where the bottom of the deck is visible.
8. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected.
9. Mechanically attach base layer(s) of polyisocyanurate (flat) insulation and adhere subsequent layer(s) with insulation adhesive. Install all layers in parallel courses with end joints staggered

50% and adjacent boards butted together with no gaps greater than ¼ inch.

B. Cover Board, Mechanically Fastened: Glass Mat Cover Board.
    1. Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
        a. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected. Use shortest screws acceptable to manufacturer at areas where the bottom of the deck is visible.
        b. Attach boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.

C. Roof Membrane: 60 mil, PVC thermoplastic membrane.
    1. Use only membrane adhesive acceptable to the roof manufacturer's that meets the applicable design requirements.
        a. Water-based membrane adhesive.
    2. Cut membrane to fit neatly around all penetrations and roof projections.
    3. Unroll roofing membrane and position with a minimum 6 inch overlap.
    4. Apply adhesive in accordance with the roof manufacturer's requirements.
        a. Apply at the required rate in smooth, even coatings without voids, globs, puddles or similar irregularities. Use care not to contaminate the area of the membrane where hot air welding will occur.
    5. Follow guidelines outlined in the adhesive's Product Data Sheet.
    6. Read the adhesive's Material Safety Data Sheet (MSDS) prior to using the adhesive.

D. Seaming:
    1. Weld overlapping sheets together using hot air. Minimum weld width is 1-1/2 inches.
    2. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.

E. Membrane Termination/Securement: All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.
    1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, and other similar condition.
    2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.

F. Flashings: Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.
    1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, and other similar condition.
        a. Do not apply flashing over existing thru-wall flashings or weep holes.
        b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
        c. Extend flashing membrane a minimum of 6 inches (152 mm) onto the main roof sheet beyond the mechanical securement.
        d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).

2. Penetrations:
    a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing through the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.
    b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
    c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.
3. Pipe Clusters and Unusual Shapes:
    a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl-coated metal pitch pan and sealant supplied by the membrane manufacturer.
    b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
    c. Pitch pans shall not be used where prefabricated or field fabricated flashings are possible.

G. Edge Details:
1. Provide edge details as indicated in this scope and on drawings.
2. Coordinate installation of metal flashing and counter flashing specified in Section 07620.
3. Join individual sections in accordance with the membrane manufacturer's requirements.
4. Manufactured Roof Specialties: Coordinate installation of copings, downspouts and roof blocks specified in other sections.

H. Walk pads:
1. Install walk pads in accordance with the membrane manufacturer's requirements.
2. Provide walk pads where indicated on the Drawings.
3. Do not install walkways over flashings or field seams until manufacturer's warranty inspection has been completed.

I. Water cut-offs:
1. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
2. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
3. Remove water cut-offs prior to the resumption of work.
4. The integrity of the water cut-off is the sole responsibility of the roofing contractor.
5. Any membrane contaminated by the cut-off material shall be cleaned or removed.

3.4 FIELD QUALITY CONTROL

A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

3.5 PROTECTION

A. Protect installed roofing products from construction operations until completion of project.

B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.

C. Repair or replace damaged products after work is completed.

3.6 PROJECT CLOSEOUT

A. Submit warranty. Warranty shall be signed by Manufacturer and shall indicate the start date of the warranty.

B. Submit as-built documents, hard copy and pdf format.

C. Submit copies of written field records of all inspections, testing, construction administration and quality assurance/ quality control site visits conducted during system installation.

D. Provide Manufacturer's Polyvinyl Chloride Roofing Maintenance Manuals to Owner along with training on how to inspect the new roof system and complete minor repairs with Manufacturer's materials per the Maintenance Manual.

END OF SECTION 07 54 19

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 PRIOR APPROVALS

A. Prior Approval requests shall include item B from Section 1.3 SUBMITTALS and sample warranty for Parapet Coping.

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.
D. Parapet Coping: Manufacturer to be a firm specializing in metal fabrications including those for perimeter/ roof edge systems. Snap-on design with 16 gauge, 12” wide, galvanized steel anchor clips at 3’-0” on center and factory applied stainless steel springs. Custom fabricated in sizes to meet the specific job requirements. Incorporate 8” wide concealed splice plates with factory applied, dual, non-curing, iso-butyl sealant strips at each joint. Coping cap to be 12 foot continuous sections of Kynar finished 24 gauge steel. Width as required for existing parapet. Include stainless steel fasteners, end caps and pre-formed coping corners. Metal coping cap color shall be as designated by the Owner's Representative. Shall be certified to meet design pressures as indicated in current edition of SPRI’s Wind Resistance Standard for Edge Systems Used with Low Slope Roofing Systems and to comply with requirements of IBC. Includes 120 mph, 20 Year NDL Warranty.

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. Tum 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 0

PART 1 GENERAL

1.1 SCOPE

A. All labor, material, equipment and services necessary to furnish and install roof accessories as shown on plans or specified herein. The scope of work includes, but may not be limited to: curbs, blocking, vents, and various supports.

1.2 PRIOR APPROVALS

A. Prior Approval requests shall include item B from Section 1.3 SUBMITTALS.

1.3 SUBMITTALS

A. Submittals are required in accordance with Section 01 33 00.
B. Submit Product Data for all roof accessories proposed for use.
C. Submit layouts and details of all accessories.

PART 2 PRODUCTS

A. Roof Blocks, Channel Support:

1. Support blocks for piping, conduits, duc twork.
2. Recycled rubber, UV resistant.
3. Galvanized metal channel, non- corrosive hardware.
4. 10 year manufacturer's warranty.

B. Slipsheet support, wide base:

1. Support pads for piping, conduits.
2. Superior stability.
3. Provide slipsheet gasket to match roofing material (white PVC).
2. Recycled rubber, UV resistant.
3. 14 gauge galvanized channel strut.
4. 10 year manufacturer's warranty.

C. Extendable Channel Support:

1. Support channels for piping, conduits, duct work.
2. Recycled rubber, UV resistant.
3. Galvanized metal channels, non-corrosive hardware.
4. Minimum height 5-1/2"
5. 10 year manufacturer's warranty.

G. Roof Curbs:

1. Roof Products, Inc. Phoenix, AZ, or pre-approved equal.
2. ASTM A 653 G90 hot-dipped galvanized steel, min. 18ga where supporting HVAC units.
3. Mitered and welded corners. Bolted connections not acceptable.
4. Internally reinforced for curbs exceeding 3 foot length.

5. Wood nailers, factory installed, pressure treated.
6. Insulation factory installed 1-1/2” thick three pound density.

PART 3 EXECUTION

3.1 INSTALLATION

A. Materials to be used on the exterior of the structure are to be installed in a watertight and weather-tight manner.
B. All items to be installed per material manufacturer’s instructions.
C. Install or adjust roof curbs to match roof slope with top surface plumb and level.
D. Curb height to be minimum 8” above finished roof level.
E. Blocks are to be installed per manufacturer’s printed instructions, unit selected based on weight to be supported.
F. Curbs and vents to be flashed in per roof coating manufacturer’s requirements.
G. Materials are to be installed plumb and level without bulges, waves or sags.

END OF SECTION 07 72 00

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Joint sealants designed for interior and exterior above grade applications.
B. Related Sections:
   1. Section 07 62 00 – Sheet Metal Flashing and Trim.
   2. Section 09 96 53 – Elastomeric Coatings.

1.2 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Design number of joints and joint widths for maximum of plus or minus 50 percent movement.
   2. 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:
   1. 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.
   2. 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.
F. Submit warranty with Project Closeout documents at completion of project.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company regularly engaged in manufacturing and marketing of products specified in this Section.
   1. 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:
   1. 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.
   2. Install mock-ups and test in presence of sealant manufacturer’s authorized representative and Architect to assure installation procedures are consistent with warranty requirements.

3. 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.
4. 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 10 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. A Manufacturer specializing in the production of Construction Sealants as described in this specification.

B. Prior Approvals: Comply with "Request for Approved Equal" in the "Special Terms and Conditions of the IFB".

2.2 MATERIALS

A. SILYL-TERMINATED POLYETHER (STPE), S, NS, 50, NT: A premium, very low-modulus, high-movement, non-sag, fast-curing, ready-to-use, silyl-terminated polyether sealant. ASTM C 920 compliance:

1. Type and Grade: S (single component) and NS (non-sag).
2. Class: 100/50 for vertical joints.
3. Use Related to Exposure: NT (non-traffic).
4. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
5. For use with EIFS per ASTM C1382.

B. Accessories:
1. Soft Backer Rod: as recommended and provided by sealant manufacturer.
2. Closed Cell Backer Rod: as recommended and provided by sealant manufacturer.
3. Porous Substrate Primer: as recommended and provided by sealant manufacturer.
4. Cleaner: as recommended and provided by sealant manufacturer.

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:
1. Clean by grinding, sandblasting, or wire brushing to expose sound surface free of contamination and laitance.
2. Prime masonry.
E. Wood:
1. Do not apply over freshly treated wood; treated wood must have weathered for at least 6 months.
2. 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:
1. Remove scale, rust, and coatings from metal to expose bright white surface. Remove protective coatings as well as chemical residue or film.
2. 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.
3. Prime the following surfaces with primer recommended by joint sealant manufacturer:

a. Copper.
b. Galvanized steel.
c. Fluorocarbon (Kynar) coatings.

4. Remove other protective coatings or finishes that could interfere with adhesion.

G. Glass:
1. Remove all oil and grease with xylene.
2. 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:
1. 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.
2. Allow primer to dry before applying joint sealants. Depending on temperature and humidity, primer will be tack free in 15 to 120 minutes.
3. Prime and seal on same workday.

3.4 INSTALLATION

A. Back-Up Material:
1. Install appropriate size backer rod, larger than joint per manufacturer's recommendations, and in manner to provide concave sealant profile.
2. 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:
1. Verify that temperature and moisture conditions are within manufacturer’s acceptable limits.
2. Using fresh sealant and equipment that is in proper working order, completely fill joint with sealant, filling from bottom up to avoid entrapping air.
3. 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.
4. 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).
1. Skins: Within 1 hour.
2. Functional: Within 3 days.
3. 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.

1. Refer to latest revision of ASTM C1521 for test methods and frequency.
2. 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

1.01 Summary

A. This specification describes the sealing of joints and cracks with a one-component, self-leveling, elastomeric polyurethane sealant.

1.02 Quality Assurance

A. Manufacturing qualifications: The manufacturer of the specified product shall be ISO 9001:2008 certified and have in existence a recognized ongoing quality assurance program independently audited on a regular basis.

B. Contractor qualifications: Contractor shall be qualified in the field of concrete repair and protection with a successful track record of 5 years or more. Contractor shall maintain qualified personnel who have receivced product training by a manufacturer's representative.

C. Install materials in accordance with all safety and weather conditions required by manufacturer or as modified by applicable rules and regulations of local, state and federal authorities having jurisdiction. Consult Safety Data Sheets for complete handling recommendations.

1.03 Delivery, Storage, and Handling

A. All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately.

B. Store all materials off the ground and protect from rain, freezing or excessive heat until ready for use.

C. Condition the specified product as recommended by the manufacturer.

1.04 Job Conditions

A. Environmental Conditions: Do not apply material if it is raining or snowing or if such conditions appear to be imminent. Minimum application temperature 40ºF (5ºC) and rising.

B. Protection: Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified sealant.

1.05 Submittals

A. Submit two copies of manufacturer's literature, to include: Product Data Sheets, Color Samples and appropriate Safety Data Sheets (SDS).

1.06 Warranty

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

Part 2 - Products

2.01 Manufacturers

A. Subject to compliance with requirements, Sikaflex-1c SL, as manufactured by Sika Corporation, is considered to be an acceptable product.

B. Pre-Approved Equal.

2.02 Materials

A. Polyurethane sealant:

1. The joint sealant shall be a one-component, self-leveling, polyurethane-base material. It shall be applicable in horizontal joints. The sealant shall principally cure under the influence of atmospheric moisture to form an elastomeric substance.

B. Backer rod or bond breaker tape as approved by Architect.

2.03 Performance Criteria

A. Properties of the uncured polyurethane sealant:

1. Initial Cure (Tack-Free Time): 1-2 hours
2. Consistency: Self-leveling
3. Color: As selected by Architect

B. Properties of the cured polyurethane sealant:

1. Tensile Properties (ASTM D-412) at 21 days Self-Leveling
   a. Tensile Strength at break: minimum 150 psi
   b. Tensile Elongation: minimum 320%
   c. Modulus of Elasticity - 100% Elongation 110 psi, min.

2. Shore A Hardness (ASTM D-2240) at 21 days:
   a. Self-leveling: 40 +/-5

3. Adhesion in Peel (ASTM C-794)

   a. Mortar > 28 pli 0% Adhesion Loss
   b. Aluminum > 30 pli 0% Adhesion Loss
   c. Glass > 37 pli 0% Adhesion Loss

4. Service Range: -40^{o} to 170^{o}F (-40^{0} to 77^{0}C)
5. The sealant shall conform to Federal Specification TT-S-00230C, Type I, Class A.
6. The sealant shall conform to ASTM C-920, Type S, Grade P, Class 25.
7. The sealant shall be capable of ± 25% of the average joint width when tested in accordance to the durability bond test of Federal Specification TT-S-00230C and ASTM C-719.
8. The sealant shall be non-staining.
9. Final Cure: 3 to 5 days.
10. VOC Content: 40 g/L

Part 3 - Execution

3.01 Surface Preparation

A. The joint and adjacent substrate must be clean, sound and free of standing water or surface contaminants. Remove all traces of the old sealant, dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. – sandblasting, etc., as approved by the Architect. Blow joint free of dust using compressed air line equipped with an oil trap. Can be applied to green or damp concrete 24 hours after pour or 1 hour after getting wet.

3.02 Mixing and Application

A. Joints:

1. Install approved backer rod or bond breaker tape in all joints subject to thermal movement to prevent three-sided bonding and to set the depth of the sealant at a maximum of 1/2 in., measured at the center point of the joint width. Approval of the backer rod or bond breaker tape shall be made by the Architect.
2. Joints shall be masked to prevent discoloration or application on unwanted areas, as directed by the Architect. If masking tape is used, it shall not be removed before tooling, yet must be removed before the initial cure of the sealant. Do not apply the masking tape until just prior to the sealant application.
3. Install sealant into prepared joints when the joint is at mid-point of its expansion and contraction cycle.
   Self-leveling sealant: Pour or extrude the sealant into the prepared joint in one direction and allow it to flow and level as necessary. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the joint.
4. Adhere to all limitations and cautions for the polyurethane sealant in the manufacturer's printed literature.

B. Cracks:

1. Pour or extrude the sealant into the prepared crack in one direction and allow it to flow and level as necessary. Avoid overlapping the sealant to eliminate the entrapment of air. Tool as required to properly fill the crack.
2. Adhere to all limitations and cautions for the polyurethane sealant as stated in the manufacturers printed literature.

3.03 Cleaning

A. The uncured polyurethane sealant can be cleaned with an approved solvent. The cured polyurethane sealant can only be removed mechanically.

B. Leave work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Vinyl Composition Tile

1.3 SUBMITTALS

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

B. LEED Submittals:

   1. Product Data: For adhesives, include printed statement of VOC content and chemical components.

C. Samples for Initial Selection: For each type of product indicated.

D. Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.

E. Product Schedule: For resilient products. Use same designations indicated on Drawings**.**

1.4 QUALITY ASSURANCE

A. Installation Qualification: Contractors for floor covering installation should be experienced in managing commercial flooring projects and provide professional installers, qualified to install the various flooring materials specified. An installer is “qualified” if trained by the Manufacturer or a certified INSTALL (International Standards & Training Alliance) resilient floor covering installer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by the Manufacturer, but not less than 55 deg F or more than 85 deg F.

1.6 PROJECT CONDITIONS

A. Install resilient products after other finishing operations, including painting, have been completed.

B. Maintain ambient temperatures within range recommended by the Manufacturer, but not less than 65 deg F or more than 85 deg F in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

C. Maintain the ambient relative humidity between 40% and 60% during installation.

D. Until Substantial Completion, maintain ambient temperatures within range recommended by the Manufacturer, but not less than 55 deg F or more than 85 deg F.

PART 2 - PRODUCTS

2.1 RESILIENT FLOORING

A. Manufacturer:
   1. Match Existing

B. Resilient Vinyl Composition Tile Flooring:
   2. Match Existing

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.

B. Adhesives: As recommended by the Manufacturer to meet site conditions and to comply with VOC regulations.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to Manufacturer's written instructions to ensure proper adhesion of Resilient Flooring.
   1. Prepare concrete substrates in accordance with ASTM F 710.
      a. Concrete floors must be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, film-forming curing compounds, silicate penetrating

curing compounds, sealing, hardening or parting compounds, alkaline salts, excessive carbonation or laitence, mold, mildew, and other foreign materials that may affect dissipation rate of moisture from the concrete, discoloration or adhesive bonding.

b. Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.

c. Perform moisture testing as recommended by manufacturer. Proceed with installation only after substrates have been tested and meet the minimum requirements from the manufacturer in accordance with ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride or ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

d. A pH test for alkalinity must be conducted on the concrete floor prior to installation with results between 7 and 9. If the test results are not within the acceptable range, then installation must not proceed until the problem has been corrected.

B. Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Floor covering shall not be installed over expansion joints.

D. Do not install resilient products until they are same temperature as the space where they are to be installed.
   1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT TILE FLOORING INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient tile flooring.

B. Vinyl Composition Tile Flooring:
   1. Install with Manufacturer’s adhesive specified for the site conditions and follow adhesive label for proper use.
   2. Follow Manufacturer’ recommendation for Quarter Turn tiles.
   3. Open enough cartons of floor tiles to cover each area, and mix tile to ensure shade variations do not occur within any one area.
   4. Roll the flooring in both directions using a 100 pound three-section roller.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing resilient product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum surfaces thoroughly.
   3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

1. No traffic for 24 hours after installation.
2. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.

D. Wait 72 hours after installation before performing initial cleaning.

E. A regular maintenance program must be started after the initial cleaning.

END OF SECTION 09.65.19

SECTION 099113 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems substrates.

B. Related Requirements:
1. Section 09 96 53 "Elastomeric Coatings" for acrylic elastomeric coatings.

1.3 DEFINITIONS

A. MPI: Master Painters Institute.

B. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

C. Gloss Level 2: Not more than 10 units at 60 degrees and 35 units at 85 degrees, according to ASTM D 523

D. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

E. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

F. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

G. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

H. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

I. EG: Ethylene Glycol. Ethylene glycol is listed as a hazardous air pollutant (HAP) by the U.S. EPA.

J. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.

K. RAVOC: Reactivity adjusted VOC ‘Reactivity’ means the ability of a VOC to promote ozone formation.

L. PDCA: Painting & Decorating Contractors of America www.pdca.org

M. SSPC: Scopes of SSPC Surface Preparation Standards and Specifications. www.sspc.org.

N. Green Wise: Green Wise products are tested in an ISO accredited laboratory to meet environmentally determined performance standards established by Coatings Research Group,

1.4 PRIOR APPROVALS

A. Prior Approval requests shall include items A and D from Section 1.5 SUBMITTALS.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include manufacturer, preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials**,** from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: Provide not less than 1 gallon of each material and color applied.

1.7 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft.
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 degrees F or more than 120 degrees F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 90 deg F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Painting contractor should follow proper painting practices and exercise judgment based on his or her experience and project specific conditions as to when to proceed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. A manufacturer specializing in the production of premium quality painting systems as described in this specification and as approved by MPI.

B. Products: Subject to compliance with requirements, provide products listed in the Exterior Painting Schedule for the paint category indicated.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: For field applications, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 50 g/L.
3. Dry-Fog Coatings: 150 g/L.
4. Primers, Sealers, and Undercoaters: 100 g/L.
5. Rust-Preventive Coatings: 100 g/L.
6. Zinc-Rich Industrial Maintenance Primers: 100 g/L.
7. Pretreatment Wash Primers: 420 g/L.
8. Shellacs, Clear: 730 g/L.
9. Shellacs, Pigmented: 550 g/L.

D. Colors: As selected by Owner from manufacturer's full range.

2.3 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Portland Cement Plaster: 12 percent.
6. Gypsum Board: 12 percent.

C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

D. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2.
2. SSPC-SP 3.
3. SSPC-SP 11.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint entire surface, corner to corner, where touch up is applied.
4. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
5. Paint entire exposed surface of window frames and sashes.
6. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
7. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Equipment, but not including panelboards and switch gear. Mask all data plates from being coated.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Steel and Iron Substrates:

1. Water-Based Light Industrial Coating System **MPI EXT 5.1B:**

a. Prime Coat: Primer, zinc rich, inorganic, **MPI #19**.

b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5)**, MPI #163**.

B. Galvanized-Metal Substrates:

High Performance Architectural Latex System **MPI EXT 5.3M**:

a. Prime Coat: Primer, galvanized, water based**, MPI #134**.

1) Surface preparation: Manufacturer's recommended cleaning/ etching solution for galvanized steel.

b. Intermediate Coat: High Performance Architectural Latex, exterior, matching topcoat.

c. Topcoat: High Performance Architectural Latex, exterior, velvet (MPI Gloss Level 3/4)**, MPI #315**.

C. Wood Substrates: Exposed framing, deck:

1. Latex over Latex Primer System **MPI EXT 6.2M**:

a. Prime Coat: Primer, latex for exterior wood**, MPI #6**.

b. Prime Coat: Bonding Primer, latex for previously painted exterior wood, **MPI #17**.

c. Intermediate Coat: Latex, exterior, velvet like, matching topcoat.

d. Topcoat: Latex, exterior, velvet like (MPI Gloss Level 2)**, MPI #214**.

1) Manufacturer's ultra-premium line.

D. Exterior Gypsum Board Substrates:

1. High Performance Architectural Latex over Latex Primer/ Sealer System **MPI EXT 9.2B**:

a. Prime Coat: Primer, latex primer sealer**, MPI #50**.

1) Manufacturer's premium line.

b. Intermediate Coat: Latex, exterior, high performance architectural, matching topcoat.

c. Topcoat: Latex, exterior, low sheen, high performance architectural, (MPI Gloss Level 1)**, MPI #315**.

1) Manufacturer's ultra-premium line.

3.7 INTERIOR PAINTING SCHEDULE

A. Plaster and Gypsum Board Substrates:

1. High Performance Architectural Latex over Latex Primer System **MPI INT 9.2B**:

a. Prime Coat: Primer Sealer**,** Latex, Interior **MPI #50** on unpainted substrate

1) Manufacturer's premium line.

b. Intermediate Coat: Latex, interior/ exterior, high performance architectural, matching topcoat.

c. Topcoat: Latex, exterior, low sheen, high performance architectural, (MPI Gloss Level 3 – match existing)**, MPI #139**.

1) Manufacturer's ultra-premium line.

END OF SECTION 099113

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Elastomeric Coating system for exterior concrete unit masonry and concrete.

1.2 RELATED REQUIREMENTS

A. 07 62 00 – Sheet Metal Flashing and Trim

B. 07 92 00 – Joint Sealants

1.3 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1. Review preparation and installation procedures and coordinating and scheduling required with related work.

2. Attendees to include:

a. Owner's Representative
b. Contractor
c. Installer
d. Manufacturer's Technical Representative

3. Agenda:

a. Review schedule
b. Review substrates
c. Review locations

1.4 PRIOR APPROVALS

A. Prior Approval requests shall include items A, B, F and J from Section 1.6 SUBMITTALS and items A and B of Section 1.8 QUALITY ASSURANCE.

1.5 SUBMITTALS

A. Qualification Data: For Manufacturer and Installer.

B. Product Data: Provide product criteria, characteristics, accessories, spreading rate, cured to uncured seaming methods, and termination conditions.

C. Color charts for the Architect's and Owner's color selections.

D. Sample at Masonry: Stepped sample on a face shell of the concrete masonry unit no smaller than 8 x 8 inches showing each coat including primers, fillers and intermediates.

E. Sample Concrete: Stepped sample on a concealed location no smaller than 8 x 8 inches showing each coat including primers, fillers and intermediates.

F. For components of this section submit the following

1. For paints and coatings, documentation printed statement of VOC content.

G. Manufacturer's Installation Instructions: Indicate special preparation of substrate, installation and attachment methods, and perimeter conditions requiring special attention.

H. Manufacturer’s Field Service Reports: Submit site reports on periodic visits indicating system observation before, during and after installation by manufacturer’s authorized representative.

I. Pre-Installation Conference Report: Submit report verifying project site conditions and acceptance of mock-up panels prior to installation, including special manufacturer’s instructions and requirements. Include review of protection plan for surrounding areas and adjacent surfaces with report

J. Warranty: Submit intent to warranty document from manufacturer of elastomeric coating. Prior to project closeout, ensure warranty forms have been completed in Owner's name and registered with manufacturer.

K. Maintenance Data: For users operation and maintenance of system including:

1. Methods for maintaining system's materials and finishes.

2. Precautions about cleaning materials and methods that could be detrimental to components, finishes, and performance.

1.6 MAINTENANCE MATERIAL

A. Furnish extra materials that are from same production run (batch mix) as materials applied and that are packaged for storage in unopened, factory-sealed containers and identified with labels describing contents.

1. Quantity: Furnish an additional 1 gal. of each material, color, and texture applied

1.7 QUALITY ASSURANCE

A. Manufacturer Qualification: Company specializing in the manufacture of work specified in this section with minimum 15 years of experience manufacturing specified materials. Company shall be ISO 9001:2000 Certified.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum of 5 years of experience and authorized by the manufacturer to apply the elastomeric coating to walls.

C. Notify manufacturer’s authorized representative a least two weeks before start of work. Schedule minimum of three job site inspection by manufacturer’s authorized representative, the first scheduled before application of product.

1.8 MOCK-UP

A. Visual Mock-up:

1. Construct Visual Mock-up.

2. Required area 25 square feet.

3. Obtain approval of final color and texture selection.

a. Prepare additional mockups if not approved until approval given at no additional cost to the Owner.

4. Obtain the manufacturer's approval of joint treatments, repairs and coating system color, appearance and workmanship standard. Manufacturer or their designated representative to perform necessary mock-up testing and analysis, as required for warranty, prior to coating installation for completed system.

B. Performance Mock-up:

1. Construct Performance Mock-up and testing.

2. Manufacturer to conduct adhesion testing in accordance with ASTM D3359, method A to confirm substrate preparation. Minimum adhesion rating of 4A required on 0 to 5 scale.

3. Manufacturer to conduct RILEM tube testing. Testing to be witnessed by Architect. Result to be presented to Owner.

C. Locate where directed.

D. If approved, mockup may remain as part of the Work.

1. Obtain Architect/ Owner written approval of field sample before start of material application, including approval of aesthetics, color texture and appearance.

2. Maintain mock-up during construction for workmanship standard

1.9 DELIVERY, STORAGE, AND HANDLING

A. As required by the manufacturer for a warrantable installation of the installed products to meet the Performance and Design Criteria.

B. Comply with manufacturer's ordering instructions for custom colors and lead-time requirements to avoid construction delays.

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

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

1.10 PROJECT CONDITIONS

A. Verify substrates and ambient air temperature at project site before, during and after application to ensure compliance with manufacturer’s recommendations.

B. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 90 deg F unless otherwise permitted by manufacturer's written instructions.

C. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces. Avoid freezing temperatures. Do not apply aterial if rain is expected within 24 hours of application.

D. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

1.11 WARRANTY

A. Manufacturer’s Finish Warranty: Correct defective work within a ten year period after Substantial Completion for elastomeric coating system failure including but not limited to:

1. Weathering beyond that normally expected for the coating in the climate in which it is applied.

2. Failure to resist penetration of water.

a. Exception: Where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

3. Adhesion failure.

B. In the case of defect, manufacturer shall provide necessary replacement material and labor at no cost to the Owner.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Provide an elastomeric coating system:

1. Formulated for above-grade vertical wall protection

2. That will provide a flexible, breathable membrane

3. Handle normal thermal movement

4. Repel wind-driven rain without penetration

5. Allow moisture vapor in the substrate to escape

6. Will not blister or delaminate due to water or vapor action.

2.2 BASIS OF DESIGN REPAIR AND COATING SYSTEM

A. High-build, water-based elastomeric, 100 percent acrylic, waterproof coating.

2.3 MATERIALS

A. Obtain each component of the elastomeric coating system, including associated accessories, through one source from a single manufacturer. All components and accessories shall be covered by the Manufacturer's warranty.

B. Acrylic Elastomeric Coating System: Exterior Flat Waterborne, Pigmented Elastomeric Coating:

1. Surface Profile:

   a. Concrete and CMU Substrate – Smooth

2. Performance Requirements, applied at 16 mils DFT:

   a. Two-coat application at total 16 mils DFT minimum.
   b. Density, ASTM D1475: 11.2 to 12.2 lbs per gal (1.34 to 1.46 kg/L).
   c. Solids Content, white, ASTM D5201:
      1) By Weight: 64.2 percent.
      2) By Volume: 50 percent.
   d. Viscosity, ASTM D562: 127 to 135 KU.
   e. VOC Content, ASTM D3960: 0.32 to 0.42 lbs per gal (38 to 50 g/L), less water and exempt solvents.
   f. Ultimate Elongation, ASTM D412: 344 percent.
   g. Elongation Recovery, ASTM D412:
      1) After 10 Minutes: 96.9 percent.
      2) After 24 Hours: 98.4 percent
   h. Ultimate Tensile Strength, ASTM D412: 220 psi (1.5 MPa).
   i. Crack Bridging, PR EN 1062-7:
      1) At minus 77 degrees F (minus 60 degrees C): 12 mils (0.3 mm).
      2) At 32 degrees F (0 degrees C): 19.5 mils (0.5 mm).
      3) At 73 degrees F (23 degrees C): 27.5 mils (0.7 mm).
   j. Low-Temperature Flexibility, ASTM D522: Pass 1/8-inch mandrel at -30 degrees F.
   k. Adhesion, ASTM D4541: 210 psi (1.4 MPa).
   l. Wind-Driven Rain, Federal Specification TT-C-555B: Passes.
   m. Water-Vapor Permeance, ASTM D1653: 12 perms.
   n. Accelerated Weathering, ASTM G23, Type D, 5,000 hours: Passes.
   o. Visual Color Change, ASTM D1729, 5,000 hours: Passes.
   p. Dirt Pick-Up, ASTM D3719, after 6 months exposure: 94.33 percent.
   q. Mildew Resistance, ASTM D3273 and 3274: No growth.

3. Approximate Coverage Rate: 50 to 100 sq ft per gal (4.6 to 9.3 m2/L).

4. Wet Film Thickness (WFT):

   a. At Smooth Textures: 16 to 32 mils (406 to 813 microns).

5. Dry Film Thickness (DFT):

   a. At Smooth Textures: 16 to 20 mils (203 to 406 microns).

6. Colors: As selected by Architect/ Owner.

7. Texture:

a. Smooth

C. Block Filler/ Primer:

1. Provided and warranted by Elastomeric Coating Manufacturer.

D. Patching Compound:

1. Provided and warranted by Elastomeric Coating Manufacturer.

E. Biodegradable Cleaner:

1. As approved by the Elastomeric Coating Manufacturer.

F. Cementitious Repair Material:

1. As approved by the Elastomeric Coating Manufacturer.

G. Bonding Adhesive:

1. As approved by the Elastomeric Coating Manufacturer.

2.4 ACCESSORIES

A. All accessory materials required by the manufacturer for a warrantable installation of the installed products in a manner that meets the Performance and Design Criteria.

1. Crack filler, sealants and repair materials as recommended by the manufacturer to achieve the surface profile listed above.

2.1 MIXES

A. Mix elastomeric coating materials in accordance with manufacturer’s printed recommendations.

1. The addition of additional water is prohibited unless manufacturer grants prior written permission

B. Mix Mortar in accordance with manufacturer’s printed instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions meet the manufacturer's requirements before starting work.

3.2 PREPARATION

A. Prepare surfaces to receive work in accordance with manufacturer's instructions.

1. Determine acceptable removal techniques for contaminants harmful to coating system performance, such as dust, dirt, grease, oils, curing compounds, form release agents, laitance and previous films or water repellent coatings. All surfaces must be clean, dry, frost-free and dust-free.

B. Cleaning Concrete Masonry, Concrete and Mortar:

1. General light cleaning: to remove ordinary dirt and environmental contaminants, finishes may be cleaned with a mild detergent solution or gentle commercial-grade cleaner.

   a. Prepare the surface for cleaning by thoroughly rinsing the wall with clean water to remove surface particles.
   b. Apply the cleaning solution to the entire area using a soft bristle brush.
   c. Do not allow the cleaning solution to dry on the wall.
   d. Rinse the wall thoroughly with clean water to remove all traces of loosened dirt and cleaning solution.

2. Power(pressure)-Washing

   a. Pressure wash surfaces with care
   b. Power-washing using a low-pressure (300-500 psi) power-washing using cold water.
   c. Direct nozzle only at right angles no closer than 2 feet from the wall surface.
   d. Do not spray water directly at windows or doors
   e. Do not spray water directly at flashing ends and terminations.

3. Mold and Mildew

   a. At locations where mildew has occurred, the root system and bloom must be killed to stop growth. To do this use a fungus and algae remover in conjunction with low-pressure power-washing.

4. Rinse the wall thoroughly with clean water to remove all traces of cleaning products or solution

C. Protect adjacent work areas and finished surfaces from damage during coating system installation.

D. Remove and protect building appurtenances and hardware if possible prior to application. Protect if not possible

1. Replace after coating cure period.

E. CMU and Concrete Substrate Repair:

1. Repair per manufacturer’s recommendations if they differ from those below.

2. Prepare an example of the crack repair methods described below for review and approval by the Manufacturer and Architect prior to undertaking work.

3. Inspect all wall areas, identify and mark all cracks in existing substrate.

4. Use mechanical abrasion/ wire wheel and wire brush to remove all loose paint and punky mortar.

5. For hairline cracks identified as 1/16 inch wide or less, pre-treat or pre-strip with elastomeric coating materials using heavy-brush application per coating manufacturer's recommendations.

6. For cracks that are 1/16 inch wide and less than 1/8 inch wide that are not dynamic:

    a. Gently clean cracks and crack edges to remove loose or flaking material
    b. Apply or pack sealant materials into crack and beyond edges of the crack margin. Use a small flexible trowel or spatula capable of working in small areas.
    c. Feather out all edges of crack repairs to avoid telegraphing of the repairs through the elastomeric coating.
    d. Pre-treat or pre-strip packed cracks with elastomeric coating using heavy-brush application per coating manufacturer's recommendations.

7. For dynamic cracks, repair with flexible sealant.

    a. All cracks and joints larger than hairline shall be treated and caulked. Thoroughly clean and blow out the joint with compressed air or flush the joint with clean water to remove all grinding dust. Routed surface must be clean, dry, sound and square.
    b. Remove all failed caulking material previously applied over cracks and clean thoroughly.
    c. Apply bond breaker along entire length at the bottom of all routed joints, taking care to avoid applying bond breaker to the sides of the joint. Fill the full length and depth of the joint with sealant. Tool the sealant as recommended by the Manufacturer to ensure bonding, consolidation and uniform appearance. The sealant must be completely cured prior to application of the block filler, primer or elastomeric membrane.

8. For non-dynamic mortar joint and cementitious surface repairs, prime area with Bonding Adhesive and repair with Mason Mix. Use wet brush to smooth repair areas and blend. Prime repaired surface with coating manufacturer's primer. Cementitious repair materials shall only be used at joints and cracks that are not dynamic.

9. At surfaces exhibiting poor or marginal adhesion, prime in accordance with coating manufacturer's printed instructions.

F. Through Wall Penetrations:

1. Inspect all through wall penetrations, including electrical, lighting, signage, plumbing, HVAC and fire protection.

2. Repair all deficiencies with approved, compatible sealant for a watertight installation.

3.3 INSTALLATION

A. General: Install all materials in accordance with manufacturer's instructions based on conditions present.

B. Prior to application over masonry block or other porous and/or highly textured surfaces, elastomeric coating manufacturer's acrylic block filler must be utilized to fill the pores and achieve a pinhole-free surface. Block filler should be applied at a rate sufficient to fill the porosity of the substrate. If spray applied, the block filler shall be back-rolled into the surface.

C. Apply a sample application of elastomeric coating in an inconspicuous location to test for adhesion.

D. Match the finish supplied as a sample and as constructed in the mock-up.

E. Do not apply coating by spray methods in windy conditions or when application is deposited on surfaces beyond those that have been masked.

3.4 ELASTOMERIC COATING APPLICATION

A. All containers shall be thoroughly mixed prior to application in accordance with the Manufacturer's directions using a power mixer capable of mixing the entire container. Mix to ensure uniform color and aggregate disbursement and to minimize air entrapment. **Do not thin the material**.

B. In multi-pail applications, mix contents of each new pail into partially used pail to ensure color consistency and smooth transitions from pail to pail.

C. Apply block filler to all surfaces to be coated in accordance with manufacturer's instructions to prime and fill.

D. Apply coating in accordance with manufacturer's printed instructions as a 2-coat system.

E. Roll Apply or spray and back roll the first coat at the rate of 80 to 100 square feet per gal. The second coat can be spray applied only at 80 to 100 square feet per gal to achieve a final minimum thickness of 16 to 20 dry mils.

F. Maintain proper uniform wet-film thickness during application to ensure performance characteristics desired.

G. Apply coating to achieve pinhole-free, consistent film build on coated surfaces.

3.5 FIELD QUALITY CONTROL

A. Field Testing and Inspection: The Owner may engage the services of a qualified testing agency to verify installed thickness and water resistance of the elastomeric coatings.

1. Provide manufacturer's field service consisting of periodic site visits by manufacturer's representative for observation of coating system application including the following as a minimum:

    a. Preinstallation meeting
    b. Review and approval of substrate preparation

        1) Field adhesion testing (Pull Test)

    c. Review of crack repair methods
    d. Review of mock up

2. The Owner may complete or duplicate recommended testing required by the manufacturer at completion of work to ensure warranty requirements and contract compliance are met.

B. Field-Adhesion Testing:

1. Document and perform field-adhesion testing in accordance with manufacturer's recommended field-adhesion testing requirements to qualify for coating manufacturer's specified warranty program.

2. Inspect and note the percent cohesive failure (percent of coating material left on the wall surface).

    a. At least 80 percent of the coating should remain on the wall surface. If this is not achieved, clean wall surface again and retest.

C. Final inspection: RILEM Tube Testing is to be conducted by Manufacturer and witnessed by the Architect once the final application has been fully cured. Result to be presented to Owner.

D. Warranty Request: Manufacturer's representative will inspect finished surface preparation, application and finished coating and may require further preparation or application to achieve appropriate result. In no case will manufacturer's representative approve surface or finish if any of the following conditions are found: excessive pinholes, insufficient coating thickness, loose paint, paint with curled edges, crack treatments with loose edges, loose stucco (to be determined by sounding method), or any other condition, which, in manufacturer's representative's opinion, may cause failure of installation. Warranty applications require a minimum 15 mils film thickness.

3.6 PROTECTION

A. Protect installed work as required by the manufacturer to maintain product performance, design criteria and warranty.

B. At completion of the work, remove temporary coverings and protection of adjacent work areas.

C. Immediately remove over-spray coating from areas that were not to be coated.

D. Remove construction debris from project site and properly dispose of debris on a planned daily basis.

E. Touch up and restore damaged or defaced coated surfaces.

END OF SECTION 09 96 53