SILICONE ROOF COATING RESTORATION (RCR) SYSTEM OVER STRUCTURAL CONCRETE ROOF DECK

Part 1. General Conditions

1.1 Description

A. Scope of Work

Provide all materials, labor and equipment required for the installation of the RCR System over the existing concrete roof deck including all ancillary products.

B. Related Work

1. Repair All Sheet Metal Defects
2. Repair All Flashing Defects
3. Surface Preparation
4. Perform Adhesion Tests
5. Install Silicone RCR Membrane
6. Install Walkway Systems

1.2 Performance Requirements

A. Conform to applicable code for fire resistance ratings of roof system.

B. Underwriters Laboratories, Inc. - UL 790: Class A Fire Hazard Classification.

C. All silicone products must be domestically produced. Products produced outside of the US will not be accepted.

D. Coating manufacturer must produce its own product. Private labeled silicone coating products will not be accepted.

E. The RCR silicone coatings discussed in this specification have a moderate rate of water vapor transmission. They are not recommended for use on cold storage or cryogenic structures. Such structures may have constant high water vapor drive causing long-term accumulation of moisture in the insulation/deck. Consult manufacturer for vapor retardant systems to use on refrigerated structures.

1.3 Submittals

A. Product Data: Product data on silicone coating, physical and chemical properties, preparation of substrate required, product limitations, and cautionary requirements.

B. Safety Data Sheets (SDS)

C. Shop Drawings: Roof plan and details showing extent of roofing, intersections with adjacent surfaces, and details of expansion joints, counterflashing, and other items for a complete roofing system.

D. Manufacturer's Installation Instructions: Indicate installation requirements and procedures.

E. Certificates:

1. Product certificates signed by the manufacturer certifying material is in compliance with the specified performance characteristics and criteria, and physical requirements.

F. Sample copy of PM warranty

G. Maintenance Data: For RCR System to include in maintenance manuals.

H. Final Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.4 Quality Assurance

A. Manufacturer:

1. Company specializing in the manufacturing of the system specified in this Section.
2. A minimum of 10,000,000 square feet of a similar system installed.
3. A minimum of 10 years manufacturing experience.

B. Installer:

1. Installer must be a Certified Licensed Applicator (CLA) by the Manufacturer providing the warranty, and is capable of receiving the specified warranty.
2. CLA to ensure all personnel are properly trained and have a full understanding of all OSHA safety requirements.

1.5 Delivery, Storage, and Handling

A. Deliver and store liquid materials and other products in their original unopened containers or packaging until ready for installation.

B. Materials shall be clearly labeled with the manufacturer's name, product identification, safety information, and lot numbers.

C. Store materials indoors whenever possible.

D. Product should be stored in a range of 40-80 degrees Fahrenheit.

E. Comply with the manufacturer's instructions for handling and safety procedures.

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

1.6 Environmental Requirements

A. Maintain logs of environmental conditions (temperature, humidity, and wind speed) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside of manufacturer's limits.

B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

C. Do not install silicone coating under the following conditions:

1. When ambient temperature is below 35° F.
2. At temperatures less than 5° F above dew point.

1.7 Warranty

A. Provide Manufacturer's (5, 10, 15 or 20 year) labor & material warranty covering leaks due to silicone material failure.

Part 2. Products

2.1 Acceptable Products

A. Insulation Board

1. Match existing material

B. Cleaners and Primers

1. Progressive Materials: P-140 2-Part Epoxy Primer.

C. Silicone Caulk Sealant
   1. Progressive Materials: SS 300 Series Silicone Sealant

D. Flashing Grade Sealant
   1. Progressive Materials: FG 400 Silicone Flashing Grade Sealant

E. Reinforcing Fabric
   1. Progressive Materials: PF 200 Polyester Fabric
      a. PF 206 – 6”
      b. PF 212 – 12”

F. Walkway System
   1. Progressive Materials: Pro-Grip Walkway System
      a. PG 700 Pro-Grip Yellow Walkway Coating
      b. PG 750 Pro-Grip Yellow Walkway Granules

G. Skylight Sealer
   1. Progressive Materials: HS 3220 Clear Silicone Skylight Coating

H. Silicone Coating
   1. Progressive Materials: Pro-EcoSil HS 3200 Series

2.2 Silicone Coating Materials

A. Silicone base and topcoat to be Pro-EcoSil HS 3200 Series Silicone Coating by Progressive Materials, LLC and complying with the following minimum properties:
   1. Tensile Strength: ASTM D412, 247.
   2. Elongation: ASTM D412, 237 percent minimum at break at 75° F.
   3. Water Vapor Permeance: ASTM D-96, 10.7 at 20 mils.
   4. Fire resistance: ASTM E108, UL 790 Class A.
   5. Color: Owner to select standard topcoat color.
   6. Solids Content: 92% ±3%
   7. VOC Content: < 50 grams/liter
   8. Initial Solar Reflectivity: .89
   9. Initial Thermal Emissivity: .90
   10. SRI Value: 113

Part 3. Execution

3.1 Examination

A. Verify roof slope prior to beginning installation. There is to be no single area of standing water on the roof 24 hours after a rain, greater than 100 sq. ft. and more than ½” deep.

B. Identify all deck failures, flashings failures and inadequate sheet metal details.

C. Inspect all roof drains to ensure proper performance.

D. For applications over newly poured concrete, the roof must be fully cured for a minimum of 60 days prior to coating application.

3.2 Preparation

A. Cleaning

1. Thoroughly power wash roof surface and all other areas to receive new coating with a minimum of 2,000 psi water pressure.

B. For roofs less than a year old, P-140 2-Part epoxy primer must be applied at a rate of 150-200 sq. ft./gal.

1. After the surface has fully dried, perform an adhesion test. If the coating does not properly adhere to the surface, contact your PM representative to discuss adhesion solutions.
2. Any areas of grease contamination are to be cleaned with an industrial strength detergent.
3. Any loose roofing or mastic materials must be removed as the warranty will not cover failure of underlying materials.

C. Roof Penetration and Flashing Details

1. Ensure all roof penetrations and flashings provide a watertight condition. Re-flash all areas with one of the following methods:

a. A three-course coating-fabric-coating by applying one coat of HS 3200 Pro-Eco Sil at 1 gallon per square (14 DFT mils), laying PF 200 Polyester Fabric into wet coating, then apply another coat of HS 3200 Pro-Eco Sil at 1 gallon per square (14 DFT mils).

b. Install FG 400 Flashing Grade Silicone Sealant.

D. Sheet Metal

1. Ensure all sheet metal accessories are in good condition and will provide watertight condition. If necessary, replace or repair any sheet metal required to provide a watertight condition.

E. Roof Parapets

1. Seal all roof parapet seams with one of the following methods:

a. Apply FG 400 Flashing Grade Silicone Sealant onto parapets using a stiff-bristled paint brush or putty knife.

b. A three-course coating-fabric-coating by applying one coat of HS 3200 Pro-Eco Sil at 1 gallon per square (14 DFT mils), laying PF 200 Polyester Fabric into wet coating, then apply another coat of HS 3200 Pro-Eco Sil at 1 gallon per square (14 DFT mils).

1) PF 200 Polyester Fabric should extend a minimum of 8” up parapet to ensure proper watertight condition.

F. Cracks and Seams

1. If concrete is newer than 1 year old, then 2-part P-140 epoxy primer shall be used before repairs can be made.

G. For stress cracks smaller than ¼”, apply a heavy coat of FG 400 Silicone Sealant in the crack and 1” on each side of it. Allow coating to dry for 2-4 hours before installing base coat.

H. For stress cracks or control joints larger than ¼”, insert backer rod into the crack. Then, apply a heavy coat of FG 400 over the crack and 1” on each side of it. Ensure the backer rod is completely encapsulated. Allow the FG 400 to dry for 24 hours prior to installing basecoat.

3.3 Silicone Coating Installation

A. Ensure surface is completely dry.

B. Ensure subsequent coats of primer or silicone coating is completely cured.

C. Ensure adhesion tests have been completed and results are satisfactory with the manufacturer's requirements.

D. Note: When installing silicone coating over newly poured concrete, the roof must fully cure for a minimum of 60 days prior to silicone coating application.

E. Install silicone coating over entire roof surface to achieve a final thickness of:
   1. 25 mils minimum for a 5 year warranty
   2. 30 mils minimum for a 10 year warranty
   3. 35 mils minimum for a 15 year warranty
   4. 40 mils minimum for a 20 year warranty

F. Care should be taken to ensure proper coverage on all vertical surfaces which could take multiple coats.

G. NOTE
   1. Any subsequent roof repairs after the coating installation should be done only with silicone products. Repairs should be completed with a three-course coating and fabric if needed.

Walkway System

H. Install the Pro-Grip Walkway System at heavy traffic areas and at high impact areas as directed by the owner.
   1. Walkway Areas
      a. Walkways should be a minimum of 30" wide.
      b. Mask off area to receive walkway system to ensure clean, straight edges.
      c. Install PG 700 Pro-Grip Yellow Walkway Coating at a thickness of 25 mils.
      d. Immediately after the application of the PG 700, broadcast PG 750 Pro-Grip Walkway Granules into the coating at a rate of 40 lbs. per 100 square feet. The granules will settle into the coating. Apply the granules generously, inspect the surface within a few minutes and reapply as needed to obtain a continuous film of granules.
   2. High Impact Areas (around mechanical equipment, etc.)
      a. Mask off area to receive walkway system to ensure clean straight edges. Area should be 30" wide around all identified equipment.
      b. Install PG 700 Pro-Grip Yellow Walkway Coating at a thickness of 40 mils.
      c. Immediately after the application of the PG 700, broadcast PG 750 Pro-Grip Walkway Granules into the coating at a rate of 60 lbs. per 100 square feet. The granules will settle into the coating. Apply the granules generously, inspect the surface within a few minutes and reapply as needed to obtain a continuous film of granules.

I. After the coating has completely cured, remove all loose granules with a small hand blower and a soft bristle broom.

2.3 Field Quality Control

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation upon completion and submit report to Owner/Architect. There shall be no items on the roof that could inhibit the inspection process, such as solar panels, decking systems,

etc.

1. Notify Owner 48 hours in advance of date and time of inspection.

    a. Repair or remove and replace components of roofing system where inspection results indicate that they do not comply with specified requirements.

2.4 Protection of Finished Work

A. Ensure roof surface is free of traffic for minimum of 12 hours after silicone coating application or until coating is completely cured.

B. Ensure any subsequent work does not cause damage to the finished roof system. If necessary, install protection over the finished roof area.

END OF SECTION