SILICONE ROOF COATING RESTORATION (RCR) SYSTEM OVER GRAVEL SURFACE BUR

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 gravel surface built-up roof including all ancillary products.

B. Related Work

1. Perform Moisture Survey
2. Replace Wet Insulation
3. Repair All Sheet Metal Defects
4. Repair All Flashing Defects
5. Surface Preparation
6. Perform Adhesion Tests
7. Install Silicone RCR Membrane
8. 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.

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.
2. Provide a copy of Certified Licensed Applicator (CLA) certificate.

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.

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. Protect stored products from freezing.

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-160 Asphalt Bleed Block 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. Moisture Relief Vents
   1. Progressive Materials: MRV 600 One-Way Roof Vent

G. 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

H. Surface Leveling Coating
   1. Progressive Materials: SL 800 Surface Leveling Coating

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

J. Silicone Coating
   2. 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 is not Coal Tar Pitch. When heated from UV Coal Tar Pitch roofs will self-heal meaning it will soften and move in this heated stage it can release/off gas PAHS (polycyclic aromatic hydrocarbons) which can lead to potential adhesion issues**. For these reasons coal tar pitch roofs are not a suitable surface for roof coatings.**

B. 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.

C. Perform infra-red thermal scan of roof to identify any wet insulation.

D. Identify all seam failures, flashings failures and inadequate sheet metal details.

E. Inspect all roof drains to ensure proper performance.

F. Inspect all roof system fasteners for back out.

3.2 Preparation

A. Roof Cleaning:

1. Remove all loose stone by power broom or vacuum.
2. Thoroughly power wash roof surface and all other areas to receive new coating with a minimum of 2,000 psi water pressure. Be sure not to damage existing membrane during this process or clog any roof drains. Roof may also be cleaned by high pressure wet-vac process instead of power washing.
3. Any areas of grease contamination are to be cleaned with an industrial strength detergent.

NOTE: Be certain to confirm that removing the loose rock will not diminish the wind up-lift rating of the current roof system.

B. Existing Wet Insulation Areas:

1. Roof areas containing moisture below the roof surface shall either be replaced, or for areas less than 500 sq. ft. with moderate moisture content, a moisture relief vent shall be installed.

a. Wet Insulation Replacement (wet area is greater than 500 sq. ft.)

1) Remove roof system and wet insulation

2) Replace insulation with identical insulation materials. Fasten new insulation at a rate of 1 fastener per 2 square feet.

3) Roof system is to be replaced with like materials and overlapped a minimum of 12" on to the existing roof system. Remove all rocks at overlap area down to clean/smooth felts.

4) At the leading edges of roof patches, apply a 3-course coating and fabric utilizing the PF 200 Polyester Fabric and HS 3200 Silicone Coating. (Be certain to prime areas to receive the 3-course with P160 to prevent bleed-through)

a) Apply 12 to 15 mils of silicone coating over surface to receive fabric.

b) Embed fabric into silicone coating while still wet. Smooth out fabric and ensure there are no wrinkles or fish mouths.

c) After the base coating has cured, apply a generous coat of HS 3200 silicone coating over the fabric to ensure complete saturation.

b. Moisture Relief Vent Installation (wet area is less than 500 sq. ft.)

1) Locate center of moisture containing insulation.

2) Cut a 4" diameter opening through the membrane and insulation material; remove material to vapor barrier or deck.

3) Remove all embedded stone a minimum of 6" beyond vent flange to ensure a sound substrate.

4) Lay the MRV 600 Roof Vent on top of roof system and attach vent to the roof deck with the appropriate fastener. Install 4 fasteners per vent, evenly spaced.

5) Clean area of vent that is to receive flashing material with clean rag and solvent to remove oil film from vent.

6) Flash in vent:

a) Apply a 3-course coating and fabric utilizing the PF 200 Polyester Fabric and HS 3200 Silicone Coating. (Be certain to prime areas to receive the 3-course with P160 to prevent bleed-through)

b) Apply 12 to 15 mils of silicone coating over surface to receive fabric.

c) Embed fabric into silicone coating while still wet. Fabric should extend at least 2" on to the flange of the vent and at least 4" on to the roof surface.

d) After the base coating has cured, apply a generous coat of silicone coating over the fabric to ensure complete saturation.

C. Flashings Details: Ensure all existing flashings provide a watertight condition. If necessary, re-flash any areas required utilizing a 3-course coating fabric detail as outlined above or utilizing FG400 Flashing grade Silicone.

D. Sheet Metal: Ensure all sheet metal is in good condition and will provide a watertight condition. If necessary, replace or repair any sheet metal required.

E. Primer: Spray apply P160 Asphalt Bleed Blocker over entire roof area and flashings at a rate of 1 gallon per square. Be certain to allow the primer to fully cure prior to installing any additional coatings.

F. Surface Leveling: Upon completion of all repairs outlined above, spray apply the surface leveling coating SL 800 at a rate of 3 to 6 gallons per square, depending on surface texture. After the leveling coating is installed, there should be no rock protruding greater than ¼" maximum out of the coating. Allow the coating to fully cure for 1 to 2 days depending on environmental conditions.

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. Spray apply silicone coating in two passes over entire roof surface to achieve a final thickness of:

1. 30 mils minimum for a 5 year warranty
2. 35 mils minimum for a 10 year warranty
3. 40 mils minimum for a 15 year warranty
4. 45 mils minimum for a 20 year warranty

NOTE:

5. Any subsequent repairs after the coating installation should be done only with silicone products.
6. 30 – 50 mils of top coat shall be applied on top of the 3-6 gallon application of SL-800.

3.4 Walkway System

A. 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.

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

3.5 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.

END OF SECTION