Section 07560 Fluid-Applied Roofing

Modified Bitumen Roof Preservation System Master Guide Specification

1 *PART 1 – GENERAL*

1.1 RELATED WORK SPECIFIED ELSEWHERE

A. Rough Carpentry: Section 06100

B. Board-Stock Roof Insulation: Section 07220

C. Flashing & Sheet Metal: Section 07620

D. Roof Accessories: Section 07800

E. Prefabricated Expansion Joints: Section 07860

F. Painting: Section 09900

1.2 QUALITY ASSURANCE

A. Qualifications of Contractor

(1) The Contractor shall be acceptable to the Primary Coating Materials Manufacturer for application of its roof coatings products, and shall have a minimum of three (3) years experience in the application of elastomeric roof coatings.

(2) The Contractor shall provide a list of project references similar in nature to the one proposed, including contact names and telephone numbers.

B. Qualifications of Manufacturer

(1) Manufacturer of the fluid applied elastomeric coating system shall have a proven track record of successful installations of elastomeric technology.

(2) Other Manufacturer's products shall be accepted for use on this project only after submittal of product data files to the Architect or Owner supporting quality, equality and full compliance with specifications herein. The Architect or Owner reserves the right to reject the substitution proposals should it be determined the submittals do not provide all functions required for application.

(3) Approved products shall be manufactured exclusively from 100% advanced acrylic resins.

(4) Manufacturer to be certified ISO 9001:2008

C. Testing and Labeling

(1) The coating system to be U.L. Classified tested in compliance to UL790 Class A fluid-applied system for maintenance and repair of existing Class A, B or C roofing constructions. Products to be subject to Underwriters Laboratory Follow-up Services.

(2) The acrylic coating to be FM Global Approved and listed as an acceptable recoating system over existing roof substrates.

(3) The acrylic coating to be approved by Miami-Dade County Building Code Compliance with as active Notice of Acceptance (NOA).

(4) The Manufacturer shall also provide recognized, third party independent test results confirming the coating system's conformance to ASTM D6083-05.

(5) Individual container labels must include the following information or they will be rejected at the jobsite: Manufacturer's name, product name, type and class of material, all applicable Code and Testing approval logos, batch or lot number, mixing and application instructions, and precautions.

1.3 SUBMITTALS

A. Submit Manufacturer's literature, certificates and samples in a single package to the Architect or Owner in accordance with requirements specified in General Conditions.

B. Manufacturer's Literature: Literature on the protective coating, as well as related primers, sealants, reinforcement, etc., shall be submitted for review before work is started. Literature shall show material specifications, physical properties (including ASTM test methods utilized), and manufacturer's estimated application rate for required dry mil thickness per warranty requirements, current application instructions and SDS.

C. Applicator's Qualifications: Submit a copy of manufacturer's registration or certification as issued by the Manufacturer.

D. Warranty: Submit a copy of Primary Coating Materials Manufacturer's warranty to comply with project requirements.

1.4 PRODUCT DELIVERY, STORAGE & HANDLING

A. Delivery of Materials: Materials shall be delivered to the jobsite in Manufacturer's original, sealed containers with labels legible and intact.

B. Storage of Materials: Materials shall be stored in an area specifically designated for that purpose, in accordance with Manufacturer's recommendations, where temperatures will not be less than 50°F (10°C) or higher than 100°F (38°C). Protect from freezing at all times.

C. Material Handling: Materials shall be handled, stored and installed per Manufacturer's instructions and all applicable safety regulatory agencies.

D. Damaged Materials: Contaminated, damaged or unsealed materials, or materials not conforming to the specified requirements shall not be used in the installation. Rejected containers shall be immediately removed from the jobsite and replaced at no additional cost to the Owner.

1.5 ENVIRONMENTAL CONDITIONS

A. Install all materials in strict accordance with Manufacturer's published safety, weather and temperature precautions.

B. Do not apply elastomeric coating system components when the ambient and/or surface temperature is below 50°F (10°C) or above 110°F (43°C), if surface moisture is present, when the dew point is within 5°F (3°C) of the surface temperature or when there is a possibility of temperatures falling below 32°F (0°C) within a 24 hour period. Do not apply if weather conditions will not permit complete cure before rain, dew, fog or freezing temperatures occur. Do not spray apply if the wind velocity exceeds 10 mph (16 kph) without taking precautions to eliminate overspray.

C. Take all measures necessary to protect unrelated work and other adjacent surfaces from coating overspray or spillage.

1.6 FIELD QUALITY CONTROL

A. The overall weather conditions, including surface temperature, surface moisture, ambient temperature, relative humidity and wind velocity shall be recorded by the Contractor, at designated time intervals, on the Daily Quality Control Report form if so requested by the Architect or Owner.

B. Verification of Protective Coating Thickness: During application of the elastomeric coating, the wet film thickness shall be measured and recorded daily, along with the quantity and batch numbers of the material applied and total square feet coated, on the Daily Quality Control form.

1.7 WARRANTY

A. 10-Year Coating System Warranty

B. 15-Year Coating System Warranty

C. 20-Year Coating System Warranty

2 *PART 2 – PRODUCTS*

2.1 DESCRIPTION: A seamless, fluid-applied membrane system designed for application over modified bitumen membrane roof substrates.

2.2 SUBSTITUTIONS

A. Acrylic coatings extended with styrene, vinyl or other ingredients are not allowed. Materials such as cementitious, ceramic-filled or asphalt modified coatings, moisture-cured urethanes, SBS or SEBS based rubbers, silicone and butyls are not considered acceptable substitutes for materials specified herein.

2.3 MATERIALS

A. Construction Grade Sealant: one-part polyurethane sealant as approved by the Coating Manufacturer for use on termination bars and counterflashing.

B. Acrylic Water-Based Primer: KM MinPrime primer and adhesive

Test Property	Test Value	Test Procedure
Weight/ gal (lb)	8-9	ASTM D2939
VOC (gm/L)	<50	Std. method
Solids Weight (%)	41 $\pm$ 1	ASTM D1683
Flash Point (ºF)	>212	PMCC
Color	Electric Blue	N/A

C. Acrylic Flashing Cement: Acrylicaulk, Premium Grade Acrylic Flashing Compound

Test Property	Test Value	Test Procedure
Accelerated Weathering @ 1000 hr.	Pass	ASTM D 4798
Flash Point (ºF)	>212	PMCC
Fungi Resistance	Pass	ASTM G 21
Elongation (%)	180 $\pm$ 20	ASTM D 2370
Tensile Strength (psi)	325 $\pm$ 25	ASTM D 2370
Viscosity (cP)	>150,000	Brookfield© 4d/5 rpm @ 77ºF
Permeance (perms)	2 – 3	ASTM D1653
Weight per gallon (lb)	12.5 $\pm$ 0.5	ASTM D 2939
Solids Weight (%)	68 $\pm$ 2	ASTM D 1644
Solids Volume (%)	54 $\pm$ 2	ASTM D 2697
VOC (gm/L)	<50	Std. Method
pH (rating)	10 $\pm$ 1	Std. Method

D. Reinforcement Fabric: Stitchbonded polyester fabric, KM Polyester

Test Property	Test Value	Test Procedure
Thickness (in.)	0.018	ASTM D 1777
Tensile Strength	MD: 67 lbs. CD: 59 lbs.	ASTM D5034
Trapezoid Tear	MD: 22 lbs. CD: 21 lbs.	ASTM D 5587

E. Fluid Applied Elastomeric Products:

(1.) Base and Saturation Coat: KM Acryl 40-HS High Quality Elastomeric Roof Coating

Test Property	Test Value	Test Procedure
Accelerated Weathering @ 1000 hr.	Pass	ASTM D 4798
Flash Point (ºF)	>212	PMCC
Fungi Resistance	Pass	ASTM G 21
Elongation (%)	220 ± 25	ASTM D 2370
Tensile Strength (psi)	275 ± 50	ASTM D 2370
Viscosity (cP)	28,000 to 58,000	Brookfield© 4d/5 rpm @ 77ºF
Weight per gallon (lb)	12 ± 0.5	ASTM D 2939
Solids Weight (%)	70 ± 2	ASTM D 1644
Solids Volume (%)	60 ± 2	ASTM D 2697
VOC (gm/L)	<50	Std. Method
pH (rating)	>9	Std. Method

(2.) Surface Coating: KM Acryl 15 Premium Grade Elastomeric Roof Coating

Test Property	Test Value	Test Procedure
Accelerated Weathering @ 1000 hr.	Pass	ASTM D 4798
Flash Point (ºF)	>212	PMCC
Fungi Resistance	Pass	ASTM G 21
Permeance (perms)	27(wet), 13(dry)	ASTM D1653
Elongation (%)	200 ± 25	ASTM D 2370
Tensile Strength (psi)	350 ± 50	ASTM D 2370
Flexibility @ 0ºF mandrel	Pass	ASTM D 522B
Viscosity (cP)	28,000 to 58,000	Brookfield© 4d/5 rpm @ 77ºF
Weight per gallon (lb)	11 ± 0.5	ASTM D 2939
Solids Weight (%)	63	ASTM D 1644
Solids Volume (%)	51	ASTM D 2697
VOC (gm/L)	<50	Std. Method
pH (rating)	>9	Std. Method

3 *PART 3 – EXECUTION*

3.1 SURFACE INSPECTION: Inspect all roof surfaces to receive work specified under this section to ensure that the following conditions exist:

A. Roof surfaces shall be structurally sound, stable and well secured.

B. The roof surface shall be free of ponding water. A roof surface that allows standing water 48 hours after a rain shall be considered unacceptable. Roof must have positive drainage.

C. Inspect condition of flashing details adjacent to protrusions, penetrations, roof mounted equipment, curbs, walls, parapets, drains and roof edge to ensure that details are acceptable and will maintain a weather-tight installation after being properly detailed and coated.

D. All seams must be probed and if found to be deficient, repaired.

E. **Recommended Option:** Determine moisture content of existing substrate, insulation and deck. If excessive moisture is found, work shall not proceed until the cause of the moisture is verified and the condition is corrected.

3.2 SURFACE PREPARATION

A. All surfaces shall be clean and dry, and free of any dirt, dust, gravel, oil, surface chemicals or other contaminants that may interfere with optimum adhesion.

B. Any unsound areas in the roof deck or insulation, including blisters, delamination, deterioration, excessive moisture content, etc., shall be repaired or replaced.

C. Remove heavy deposits of dirt, leaves, pine needles and other debris using a broom or air blower. Any rocks, branches or other large foreign objects should also be removed.

D. Power wash the roof with clean water using a minimum 2,000 psi (13,790 kPa) pressure washer. Begin the power rinse at the lowest point on the roof and work upwards, keeping the pressure washer tip within 12" (30 cm) of the roof surface. Once the highest point of the roof is reached, work down again with a final rinse to remove any excess contaminants from the roof surface. On flat roofs, work away from and then towards the roof drains so that surfaces receive a double rinse.

E. After cleaning, allow roof surfaces to dry thoroughly prior to application of the fluid applied coatings**.** In some cases, additional cleaning may be necessary.

F. Tighten or re-secure all terminations, and caulk termination bars and counterflashing.

G. Repair all loose, torn or open laps in the modified bitumen membrane using Acrylicaulk and KM Polyester Fabric.

H. KM Coatings recommends: Adhesion Test, one (1) test every 10,000 sq. ft.

(1) Procedure: In accordance with ASTM D 903

(a) Clean area at least 12 inches by 12 inches

(b) Prime area and permit to cure

(c) Coat area at specified rate

(d) While coating is still wet, embed 2-inch wide polyester fabric across test patch leaving 6-inch long dry section outside of test patch.

(e) Apply second coat to totally encapsulate flashing fabric and allow to cure for 14 days minimum.

(f) Pull dry end of flashing fabric with calibrated scale at a 180 degree angle to failure of adhesion.

(2) Passing criteria: two (2) pounds minimum resistance prior to failure.

(a) If adhesion test fails, additional cleaning and/or priming may be required.

I. Priming for acrylic applications direct to modified bitumen roof: If the adhesion test results are below 2 pounds, the entire roof surface must be primed with WB 3000 at the approximate rate of 200 s.f. per gallon. For granule surfaced membranes the use of PB 745 may be required at the approximate rate of 200 s.f. per gallon. Actual application rate may vary depending on surface conditions.

J. Entire roof surface to be reinforced with KM Polyester Fabric embed in base coat material applied at a minimum rate of 1.5 gallons per 100 sq. ft., 24 wet mils (.6 l/m²). Immediately apply saturation coat over the polyester at a minimum rate of 1.25 gallons per 100 sq. ft., 20 wet mils (.5 l/m²). Overlap of fabric shall be a minimum of 3 inches.

K. Repair any tears, breaks, holes (including those from fastener relocation or protruding fasteners), or other openings in the roof membrane using Acrylicaulk and KM Polyester Fabric. KM Polyester Fabric must be over-coated before leaving the jobsite.

L. Reinforce detail areas, around the base of all vents, stacks, fans and other protrusions, around all drains and scuppers, and around the base of all HVAC units and other roof-mounted equipment using Acrylicaulk or base coat and KM Polyester Fabric. All flashing reinforcement to cover entire flashing surface and must extend a minimum of three (3) inches onto the horizontal roof surface.

M. At drip edges, re-fasten all metal flanges and reinforce using Acrylicaulk or base coat and KM Polyester Fabric.

3.3 ELASTOMERIC COATING APPLICATION

A. All roof preparation materials shall be allowed to fully dry prior to full roof surface application of the elastomeric coating system.

B. Immediately prior to application of the coating system, all dust, dirt and other contaminants shall be blown off the roof surfaces to be coated using high pressure compressed air.

C. Roof surface should be inspected after application of the first coat for any damage that was not detailed previously.

D. The entire roof substrate shall receive elastomer coating applied as follows:
Note: Airless spray is the preferred method of application. A medium to heavy nap roller may be used for application over flat substrates. Brush or roller may be used for touch-up or detail work or for small areas that are not practical for spray application.

E. 10 Year Warranty Installations:

(1) After allowing the surface to dry, apply two (2) coats of KM Acryl 15 at a minimum rate of 0.75 gallon per 100 sq. ft., 12 wet mils (0.3 l/m²), 6 mil dry film thickness (DFT) per coat. Use a medium-nap roller or airless spray to apply the elastomeric coating. Apply consecutive coats in a perpendicular direction to the previous coat.

(2) Total DFT = 12 mils

or

15 Year Warranty Installations:

(3) After allowing the surface to dry, apply two (2) coats of KM Acryl 15 at a minimum rate of 1.25 gallons per 100 sq. ft., 20 wet mils (0.5 l/m²), 10 mil dry film thickness (DFT) per coat. Use a medium-nap roller or airless spray to apply the elastomeric coating. Apply consecutive coats in a perpendicular direction to the previous coat.

(4) Total DFT = 20 mils

or

20 Year Warranty Installations:

(5) After allowing the surface to dry, apply one (1) coat of KM Acryl 15 at a minimum rate of 1.5 gallons per 100 sq. ft., 24 wet mils (0.6 l/m²), 12.5 mil dry film thickness (DFT), followed by two (2) coats of KM Acryl 15 at a rate of 1.0 gallon per 100 sq. ft., 16 wet mils (0.4 l/m²), 8 mil dry film thickness (DFT) per coat. Use a medium-nap roller or airless spray to apply the elastomeric coating. Apply consecutive coats in a perpendicular direction to the previous coat.

(6) Total DFT = 28.5 mils

F. The topcoat shall extend up and over all roof substrates on vent pipes, parapets and other protrusions to terminate a minimum of 3” above the substrate, creating a self-terminating flashing and so as to provide an aesthetically pleasing appearance.

3.4 CLEANUP

A. Maintain work and work areas in a clean, safe condition at all times during reroofing installation. Remove excess materials, trash and debris from the jobsite daily.

B. At the completion of the project, clean area of any spills and containers, and clean up all roofing debris, leaving jobsite in a clean and orderly condition.

3.5 WARRANTY

A. Upon completion of the roof coating system, the Coating Manufacturer's Representative, Owner's Representative, Architect and Applicator shall make a final roof observation to determine the dry film thickness of the fluid applied membrane and to verify that the system meets the Manufacturer's requirements for warranty. The Contractor shall notify all interested parties in advance of said roof observation.

B. As a condition of the project's completion and acceptance, deliver to the Owner a copy of the fully executed, specified warranty from the Coating Manufacturer, following individual warranty guidelines.