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## Part 1. General Conditions

### 1.01 Description

- A. Scope of Work
  - Provide all materials, labor and equipment required for the installation of the ARCR Re-Coat System over the existing spray foam roof including all ancillary products.
- B. Related Work
  - 1. IR scan required. Core samples not accepted.
  - 2. Replace Wet Insulation
  - 3. Repair All Sheet Metal Defects
  - 4. Repair All Flashing Defects
  - 5. Surface Preparation
  - 6. Install Acrylic Membrane

### 1.02 Performance Requirements

- A. All acrylic products must be domestically produced. Products produced outside of the US will not be accepted.
- B. Coating manufacturer must produce its own product. Private labeled acrylic coating products will not be accepted.

### 1.03 Submittals

- A. Product Data: Product data on acrylic 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 SPF System to include in maintenance manuals.
- H. Final Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

### 1.04 Quality Assurance

- A. Manufacturer:
  - 1. Company specializing in the manufacturing of the system specified in this Section.
- B. Installer:
  - 1. Installer must be a Certified Licensed Applicator (CLA) by the Manufacturer providing the warranty and must be 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.

**1.05 Delivery, Storage, and Handling**

- A. Deliver and store liquid materials and other products in their original unopened containers or pack aging 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 roofing tools, materials, containers, and equipment in accordance with requirements of local authorities having jurisdiction.

**1.06 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 acrylic coating under the following conditions:
  - 1. When ambient temperature is below 50° F or could fall below 32° F within 24 hours of application.
  - 2. When rain or dew is likely to occur before product dries.
  - 3. In later afternoon, when facing conditions of high humidity, as overnight dew can cause product wash-off.

**1.07 Warranty**

- A. Provide Manufacturer's 10, 15, 20- year labor & material warranty covering leaks due to acrylic material failure.

**Part 2. Products**

**2.01 Acceptable Products**

- A. Spray Foam Insulation
  - 1. Pro Poly HFO 4700
- B. Cleaners and Primers
  - 1. Progressive Materials: Pro-Prime P-100 General Purpose Primer
- C. Caulking Sealant
  - 1. Acrylic caulking sealant meeting the following physical properties shall be approved:
    - a. Elongation: >400%
    - b. Tensile Strength: >350 psi
    - c. VOC: <50g/L
  - 2. Manufacturer, product name and number, and product data sheets must be submitted to PM for approval prior to starting any warranted projects.
- D. Flashing Grade Acrylic Sealant
  - 1. Progressive Materials AM series mastic

- E. Reinforcing Fabric
  - 1. Progressive Materials: PF 200 Polyester Fabric
    - a. PF 206 – 6"
    - b. PF 212 – 12"
- F. Skylight Sealer
  - 1. Progressive Materials: Pro-Seal HS 3220 Clear Silicone Skylight Coating
- G. Acrylic Coating
  - 1. Progressive Materials: Pro-Hydro AC 1200 Acrylic Roof Coating

## 2.02 Acrylic Coating Materials

- A. Approved roof coating is Pro-Hydro AC 1200 Acrylic Roof Coating, manufactured by Progressive Materials, LLC and complying with the following minimum properties:
  - 1. Tensile Strength: ASTM D-2370
  - 2. Elongation: ASTM D-2370 388 ± 25
  - 3. Water Vapor Permeance: ASTM ED-1653 14 ± 2
  - 4. Color: Owner to select standard topcoat color.
  - 5. Solids Content by Weight: 53 ± 2
  - 6. VOC Content: < 250 grams/liter
  - 7. Initial Solar Reflectivity: .84 \* White only
  - 8. Initial Thermal Emissivity: .91 \* White only
  - 9. SRI Value: 106

## 2.03 Polyurethane Foam Insulation

- A. Physical property requirements are as follows for acceptable insulation products with Zero-Ozone Depleting Potential, and complying with the following properties:
  - 1. Density: sprayed-in-place, pcf, min. 2.7-3.2, ASTM D-1622
  - 2. Compressive Strength: 50 psi, ASTM D-1621
  - 3. Closed-Cell Content: percent, min. >90, ASTM D-2856
  - 4. K-factor: 0.158, ASTM C-518
  - 5. Dimensional Stability: 28 days, 0.69%, ASTM D-21266.
  - 6. Flame Spread: max. <75, ASTM E-84

## Part 3. Excution

### 3.01 Examination

- A. Verify roof slope prior to beginning installation.
  - 1. Standing water areas of any size will adversely affect the performance of any roofing system. Care should be taken during examination to identify any areas of standing water present on the roof 24 or more hours after the latest rain event. In standing water areas where positive drainage does not exist, measures such as lowering drains, installing additional drains, etc. must be taken to endure positive drainage and eliminate all instances of standing water on the roof. Any section of the roof exposed to standing water after the completion of the Acrylic Roof Coating Restoration project will be excluded from warranty.
- B. Inspect all roof drains to ensure proper performance.
- C. Verify that all roof penetrations and flashings are properly installed and secured.

### 3.02 Preparation

- A. Existing Coated Polyurethane Foam Roofing System
- Existing roof shall be infra-red scanned for any areas of wet insulation; they shall be plotted on a roof diagram for later inspection and remediation. The company performing the infra-red scan must be approved by PM.
  - Any wet insulation identified, including that within an underlying roof system, shall be removed. Clean and dry the area and install new similar compatible insulation and apply polyurethane foam to the level of adjacent surfaces.
  - Primer - install primer as required by PM.
- B. Recoat
- For existing polyurethane foam roof systems that are deemed acceptable for re-coating, the following surface preparation guidelines shall be followed:
    - Clean existing coated surface with a high-pressure power wash using only clean water. During the power wash operation, the water pressure should be sufficient to remove dirt and debris without damaging the existing coating and polyurethane foam. Power washing with a detergent solution and water is only permitted when power washing with water alone does not sufficiently remove dirt and other contaminants.
    - Scour any areas of accumulated dirt, fungus, mold, grease, oil, etc. with a detergent solution and water. Solvents should not be used for these cleaning purposes.
    - In areas where a detergent solution has been used in the cleaning process, additional power washing with clean water is required to remove all residual detergent.
    - The following minimum work shall be completed:
      - All wet or otherwise substandard polyurethane insulation shall be removed and replaced. Apply the polyurethane foam in strict accordance with the polyurethane foam manufacturer's specifications and application instructions, using spray equipment recommended by the SPF manufacturer. The field of the roof shall be applied, as practical, by a robotic SPF application device. The robotic method shall improve: consistency, slope-to-drain, and visual appearance.
      - Any deteriorated components of the substrate shall be replaced or brought up to acceptable standards of the warranty provider or good roofing practice.
      - The existing coating shall be properly adhered, if not, all loose coating shall be removed. Cracks, flashing details, slope-to-drain, metal edging, penetrations, roof drains, and all other components of the roofing system shall be functional and in accordance with manufacturer's application instructions.
    - Deficiencies outlined in the Certified Licensed Applicator (CLA) Inspection or infrared moisture survey shall be properly repaired prior to the recoat operations. Should any questions exist regarding the proper repair procedures, please contact the PM Technical Department.

### 3.03 Polyurethane Foam Application

- A. Inspection
- Prior to polyurethane foam application, inspect the substrate surface to ensure preparations required in Section 3.02 have been met.
- B. Application
- All objects that require protection from overspray shall be protected; all movable objects shall be moved to an acceptable area. All intake air vents shall be turned off and covered.

2. Apply the polyurethane foam in strict accordance with the polyurethane foam manufacturer's specifications and application instructions, using spray equipment recommended by the polyurethane foam manufacturer. The field of the roof shall be applied, as practical, by a digitally controlled robotic SPF application device. The robotic method shall improve consistency, slope-to-drain, and visual appearance.
3. Polyurethane foam shall be applied in a minimum of ½-inch thick passes. The total thickness of the new polyurethane foam shall be a minimum of 1.0 inches, except where tapering is required to facilitate drainage or areas removed are brought to the existing roof level.
4. Apply the full thickness of polyurethane foam in any area on the same day.
5. Polyurethane foam shall be applied to ensure proper drainage, resulting in no ponding water. Ponding water is defined as "an area of 100 square feet or more which holds in excess of ½ inch of water as measured 24 hours after rainfall."
6. The polyurethane foam shall be terminated neatly a minimum of 4 inches above the finished roof surface at roof penetrations. Foamed-in-place cants shall be applied to allow a smooth transition from the horizontal to vertical surface.
7. The finished polyurethane foam surface texture shall be "smooth to orange-peel", free of voids, pinholes and depressions. "Verge of popcorn" texture is acceptable if it can be thoroughly and completely coated. Popcorn and tree bark textures are not acceptable. Unacceptable foam textures shall be removed and re-foamed prior to coating application.

### 3.04 Acrylic Roof Coating Application

#### A. Inspection

1. Prior to the application of acrylic coating, inspect the polyurethane foam surface to ensure the conditions of Section 3.02 have been met.
2. The polyurethane foam surface shall be free of moisture, dust, dirt, debris and other contaminants that would impair the adhesion of the acrylic coating.
3. If more than 24 hours elapse between the polyurethane foam application and the start of the acrylic coating application, thoroughly inspect the polyurethane foam surface for UV degradation and oxidation. Call PM Technical Department for procedures to proceed if UV damage has affected the foam.

#### B. Application

1. Pro-Hydro AC 1203 Acrylic Coating, gray should be used as the base coat on new polyurethane foam.
2. The acrylic base coat shall be applied on the same day as the polyurethane foam application, after the polyurethane foam has been allowed to cure a minimum of one hour.
3. Apply the base coat in a uniform application to achieve a finished dry film thickness of approximately ½ the total millage required for the roof. (1.5 gallons per square)
4. The base coat shall not be subjected to foot traffic or otherwise disturbed until it is tack-free.
5. After it has cured, inspect the coating for pinholes, cracks, thin areas or other defects. All defects observed shall be caulked with sealant and/or roller coated with additional base coat prior to applying subsequent coats of acrylic.
6. The base coat must be cured, clean and free of all moisture prior to application of topcoat.
7. Apply the topcoat in a contrasting color to the base coat. The topcoat application shall be made at right angles to the base coat application. Surface texture and conditions may require additional quantities of acrylic to insure proper millage. It is the contractor's responsibility to properly coat the insulation regardless of the quantity of acrylic coating required. 1.5 gallons per square.

11. Ensure the surface is completely dry.
12. All passes must be completely cured before applying next pass.
13. Coating passes should be perpendicular to each other. (cross hatched)

### 3.05 Warranty Requirements

10-Year Warranty	15-Year Warranty	20-Year Warranty
10-Year Warranty: 25 dry mils (two passes at 1.5 gal/sq. total 3 gal).	15-Year Warranty: 34 dry mils (three passes for a total of 4 gal).	20-Year Warranty: 42.5 dry mils (three passes for a total of 5 gal).
<b>Base Coat</b>		
<b>1.5 gal/sq.</b>	<b>1.5 gal/sq.</b>	<b>1.75 gal/sq.</b>
<b>Intermediate Coat</b>		
<b>1.5 gal/sq.</b>	<b>1.5 gal/sq.</b>	<b>1.75 gal/sq.</b>
<b>Topcoat</b>		
<b>—</b>	<b>1 gal/sq.</b>	<b>1.25 gal/sq.</b>

### 3.04 Granule/ Aggregate Application

#### C. Application (If applicable)

1. Apply roofing granules in a finish coat of acrylic coating. A minimum of 10 dry mils of acrylic coating is required to hold the granules.
2. Apply the roofing granules, using suitable compressed air equipment, uniformly at a rate of approximately 30-40 pounds per 100 square feet of roof area.
3. Apply the roofing granules immediately after the topcoat application to obtain maximum wet-out and embedment.
4. Bare spots in the granulated surface shall be filled in by applying additional coating and granules in these areas.

**3.05 Skylight Coating Installation**

- A. Skylights should not be coated until after the surrounding roof surface has received Pro-Hydro AC 1200 Acrylic Roof Coating to ensure adequate adhesion to the roof-skylight flashing surface.
  - 1. The skylight surface must be completely clean, dry, and free of loose particles.
    - a. HS 3220 Pro-Eco Lite Skylight coating should be applied to receive a final dry mil thickness of 30 mils (approximately 2.25 gallons/square). It is advised that HS 3220 be applied in multiple coats to eliminate sag or runoff.

**3.06 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.

**3.07 Cleaning**

- B. Remove any overspray from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected construction.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- D. Repair or replace defaced or disfigured finishes caused by work of this section.

**3.08 Protection of Finished Work**

- E. Ensure roof surface is free of traffic for minimum of 12 hours after acrylic coating application or until coating is completely cured.
- F. Ensure any subsequent work does not cause damage to finished roof system. If necessary, install protection over finished roof area.