

# REPAIR & RECOAT OF EXISTING SPF CEMENTITIOUS ROOF SYSTEM – (07 56 50)

1. All applicable parts of the General Roofing Specification (07 30 00) shall be included in this section.
2. Assessment of Spray Polyurethane Foam (SPF) Cementitious Roof System
  - 2.1. A SPF Cementitious Roof System shall be determined as failed when any of the following deficiency conditions exist and removing and correcting the deficiencies would be more than 50% of the cost to overlay the existing SPF Cementitious Roof System with a new roofing system or to remove the existing roof system and install a new roofing system:
    - 2.1.1. The SPF roof insulation and / or Protective Coating have lost adhesion to the substrate to which they were applied.
    - 2.1.2. The SPF roof insulation and / or Protective Coating has any of the conditions described in the four (4) listed items of the “Roof Preparation, Procedures, and Considerations” section of the Spray Polyurethane Foam Alliance (SPFA) technical document SPFA-122.
  - 2.2. Roof Coating Manufacturer shall submit the following documents to the Designer for review prior to having their Roof Coating system being specified:
    - 2.2.1. Product data and safety data sheets.
    - 2.2.2. Sample Copy of Roof Coating Manufacturers’ 20-year no dollar limit (NDL) warranty stating that the roof coating manufacturer will cover all materials and labor to repair or remove and replace any and all the roofing materials that leak or develop failures due to defective coating or faulty installation for the length of the warranty.
    - 2.2.3. Fire classification for the proposed roof coating per ASTM E108, as tested by Underwriters Laboratories or another ASTM E108 accredited testing facility.
    - 2.2.4. A list of five (5) projects in Arizona where the proposed coating has been installed over the cementitious topping, including project name, project size, address, owner contact, and year applied.
3. Roof Slope Use as defined in Part 7, General Roofing Specification (07 30 00)
  - 3.1. A Roof Coating System can be used on any of the following roof slopes:
    - 3.1.1. Low Slope

- 3.1.2. Transitional Slope
- 3.1.3. High Slope, in accordance with the manufacturer's limitations and testing data.
- 3.2. The recommended minimum slope for acrylic coatings is ¼" per vertical unit per 12 inches horizontal when possible. The absolute minimum slope for acrylic coatings shall be "positive roof drainage". Ponding water is not acceptable.
- 4. Repair or replacement of existing roof system not to contradict Part 6, General Roofing Specification (07 30 00).
  - 4.1. If an existing Cementitious SPF Roof System is beyond repair, it shall be either removed or isolated with a recovery board before a new roof system is installed.
  - 4.2. Additional information for what constitutes a failed Cementitious SPF Roof System can be found in Part 2 of this Section.
- 5. Demolition Requirements for Cementitious SPF Roof Systems
  - 5.1. All items as found in Part 10, General Roofing Specification (07 30 00).
  - 5.2. No special demolition requirements for Cementitious SPF Roof Systems
  - 5.3. Remove, transport and dispose of in compliance with OSHA, DOT and EPA requirements, as well as any other prevailing regulations or statutes.
- 6. Back of Parapet Treatment
  - 6.1. Acrylic Roof Coating System shall be applied to the back of parapet walls as required within this section and by the Roof Coating Manufacturer to provide the required warranty.
    - 6.1.1. Height of the new Acrylic Roof Coating to the back of parapet walls shall be determined by the existing SPF roof system height and condition, in addition to the condition of the parapet wall.
    - 6.1.2. At locations where the Acrylic Roof Coating System terminates less than the full height of the parapet wall, the back of the parapet wall surface shall be sealed with water repellent or waterproofing materials compatible with the parapet wall substrate.
- 7. High Wall Treatment

- 7.1. Acrylic Roof Coating shall be spray or roller applied to the high wall as required within this Section and by the Roof Coating Manufacturer.
- 7.2. Height of Acrylic Roof Coating on high wall is unlimited.
- 7.3. If the new Acrylic Roof Coating can be seen from the ground, custom matched color Acrylic Roof Coating shall be installed to match the surrounding substrate color. If a color match is not practical, the Acrylic Roof Coating System shall be terminated at a height that is not visible from the ground.
- 7.4. Areas where the Acrylic Roof Coating System does not extend the full height of the high wall shall be sealed with either a water repellent or waterproof material that is compatible with the existing high wall substrate.
- 8. Components of Acrylic Roof Coating System for Repairing & Recoating existing Cementitious SPF Roof Systems:
  - 8.1. SPF Roof Insulation (Blister Repairs, Replacement Material):
  - 8.2. SPF Roof Insulation shall contain a zero-ozone depleting blowing agent and be specifically formulated for roof insulation. The SPF Roof Insulation shall meet the following:

Density	ASTM D1622	3.0 lbs. per cubic foot
Compressive Strength	ASTM D1621	50 psi minimum
Closed Cell Content	ASTM D2856	90% minimum
R-Value	ASTM C518, C177, C1029	6.4 per inch
Flammability**	ASTM E84	≤ 75 FSI

\*\* This standard is used solely to measure and describe properties of products in response to heat and flame under controlled laboratory conditions. This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

- 8.3. Surface Primer
  - 8.3.1. Surface primer shall be as required by Coating Manufacturer for all Substrates to receive new SPF Roof Insulation, Acrylic Roof Coating and Roof Coating Manufacturer Roof Sealant.
- 8.4. Biodegradable Surface Cleaner

8.4.1. Biodegradable Surface Cleaner to be used where required on existing cementitious traffic topping, protective coating and other non-SPF Roof Insulation surfaces to receive new surface primer.

#### 8.5. Acrylic Roof Coating

8.5.1. Acrylic Roof Coating shall be internally plasticized to provide a permanently flexible waterproof coating that is fire classified to meet ASTM E-108 Class A or Class B as required. The coating shall meet all requirements of ASTM D 6083 and comply with the following physical property requirements:

Property	Results	ASTM Test Method
Volume Solids	>55%	D2697
Initial Tensile Strength	250 psi min.	D2370
Initial Elongation	250 %	D2370
Final % Elongation	100 %	D2370
Tear Resistance	> 100 lbf/in.	D624
Solar Reflective Index	>100 Initial	E1980
Solar Reflective Index	> 85 3 Yr. Aged	E1980
Adhesion	> 2.0 PLI	D903 or C794

8.5.2. No private label coating manufacturers allowed.

8.5.3. The Acrylic Roof Coating System shall have a Minimum 10 Year No Dollar Limit Warranty issued by the Roof Coating Manufacturer. 15 and 20 Year NDL Warranties are available when agreed upon in writing by the Designer and the Roof Coating Manufacturer.

8.5.4. The minimum dry mil thickness of Acrylic Roof Coating required is 35 for a 10-year Warranty, 40 for a 15-year warranty and 45 for a 20-year warranty or greater mil thickness if required by the Roof Coating Manufacturer to receive the Warranty.

#### 8.6. Construction Grade Sealant

8.6.1. Polyurethane or Acrylic Sealant, as approved by the Roof Coating Manufacturer, for use in filling cracks, splits, voids or tears in the existing Cementitious SPF Roof System.

## 8.7. Reinforcement Fabric

8.7.1. Stitch bonded polyester fabric as recommended by the Roof Coating Manufacturer for use in reinforcing SPF blister repairs, drain/scuppers, pipe penetrations or other areas as directed by the Roof Coating Manufacturer.

## 8.8. Roof Coating Manufacturers' Guide Specification & Details

8.8.1. The Roof Coating Manufacturer shall provide a guide specification and details for this project for review by the Designer. The guide specification shall communicate the execution of work required for repairs to the existing roof system, surface preparation and proper installation of all products to be used within this project. If a discrepancy exists between the Designer's and Roof Coating Manufacturers guide specifications or details, the more stringent requirement will prevail when approved by the Designer and accepted as part of the Warranty by Roof Coating Manufacturer.

8.9. Application of any diisocyanate cannot occur while a building is occupied by a teacher or student (A.R.S. §15-156).

## 9. Close Out Documents

9.1. All items found in Part 16 of the General Roofing Specification (07 30 00).

## 10. Preventive Maintenance Criteria

10.1. All items found in Part 17, General Roofing Specification (07 30 00).

10.2. Roof Coating manufacturer shall provide District maintenance personnel training in the proper inspection and housekeeping procedures on an annual basis for the entire warranty period. Any deficiencies observed during the annual inspection shall be documented and reported in writing to the District for either warranty repair or third-party damage repair.

## 11. Budget Cost Range

11.1. This part shall apply only to SFB budgeting and economic projections and analysis. Not to be used for anything else.

11.2. Budget Cost Range Acrylic Roof Coating Repair & Recoat of Existing Cementitious SPF Roof Systems

11.2.1. Low Range	10 Year	\$2.50 - \$3.50 per square foot
	15 Year	\$3.00 - \$4.00 per square foot
	20 Year	\$3.50 - \$4.50 per square foot
Middle Range	10 Year	\$3.00 - \$4.00 per square foot
	15 Year	\$3.50 - \$4.50 per square foot
	20 Year	\$4.00 - \$6.00 per square foot

### 11.3. Budget Life Cycle Cost Estimates

11.3.1. Roof Coating Manufacturer to provide no cost annual inspections for the term of the warranty.

11.3.2. Roof Coating System Maintenance to clear roof of debris and repair SPF insulation or Acrylic Coating defects = .02 per square foot per year.

11.3.3. Acrylic Roof Coatings are sustainable and can be recoated with additional Acrylic Roof Coating at the end of the warranty period to receive an additional Roof Coating Manufacturer NDL Warranty.

## 12. Expected Acrylic Roof Coating End of Service Life

12.1. A properly installed and maintained Acrylic Roof Coating System can be sustained at the end of the warranty period by making any repairs needed and installing additional Acrylic Roof Coating to receive another Roof Coating Manufacturers' 10 Year NDL Warranty.

12.2. Based on local acrylic roof coating performance greater than 30 years, the End of Service Life of Acrylic Roof Coatings is greater than 30 years, with repairs and recoating at the end of warranty periods.

## 13. New system installation requirements

13.1. Components of system, e.g. ASTM, strengths, etc.

13.2. Underlayment

13.2.1. Type 15, type 30, 2 layers of type 15

13.2.2. Stick down vs. stapled

13.3. Roof mounted equipment / accessories

## 14. Closeout Documents

14.1. All items as found in Part 17, General Roofing Specification (07 30 00).

## 15. Preventative Maintenance Criteria

- 15.1. All items as found in Part 18, General Roofing Specification (07 30 00).
- 15.2. Roof coating manufacturer shall provide its roof coating care and maintenance manuals in the closeout documents.
16. Budgeting cost ranges
  - 16.1. This part shall apply only to SFB budgeting and economic projections and analysis. Not to be used for anything else.
  - 16.2. Budget costing for the SPF coating roofing system is as follows:
    - 16.2.1. Low-range: \$4.00 - \$5.00 per square foot.
    - 16.2.2. Mid-range: \$4.00 – \$5.00 per square foot.
    - 16.2.3. High-range: \$4.50 - \$5.50 per square foot.
  - 16.3. Life cycle costing estimates for SPF coating system is \$0.20 per square foot per year with a re-coat at the end of the warranty period is estimated at \$1.00 - \$1.50 per square foot.