

PVC ROOF RESTORATION

This document provides sample specifications, product data and application guidelines for the installation of thermoplastic rubber coatings for the repair and restoration of reinforced PVC membranes.

Table of Contents

Part 1- General

1.01 Description	Pg. 1
1.02 Quality Assurance	Pg. 1
1.03 Preliminary Roof Inspection	Pg. 2
1.04 Preliminary Project Review	Pg. 2
1.05 Factory Mutual	Pg. 3
1.06 Installation Parameters	Pg. 3
1.07 Product Delivery, Storage & Handling	Pg. 3
1.08 Equipment	Pg. 4

Part 2 - Products

2.01 Roof Coating - Summary of Physical Properties	Pg. 5
2.02 PVC Primer	Pg. 6
2.03 Polyester Membrane	Pg. 6
2.04 Approved Manufacturers	Pg. 6

Part 3 - Execution

3.01 Substrate Preparation	Pg. 7
3.02 Application	Pg. 8

SECTION 07540

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PART ONE - GENERAL

1.01 DESCRIPTION

- A.** General: Provide all labor, materials, equipment and tools as required to repair and coat existing PVC single ply membrane with new materials as specified.

- B.** The installation is understood to include sealing of roof joints, including but not limited to field seams, curbs, and penetrations. All preparatory work will then be encapsulated with two coat's of thermoplastic rubber roof coating.

1.02 QUALITY ASSURANCE

- A.** Qualifications of Manufacturer
 - 1. Provide primary roof coating products from a single manufacturer which has successfully marketed and supplied the products for not less than ten years. Provide secondary accessory materials only as recommended and approved by manufacturer of primary materials.

 - 2. Primary products shall include spray, brush, and trowel grade coatings, polyester membrane, and rust conditioning materials.

 - 2. Products primary and secondary shall be manufactured in United States of America.

- B.** Qualifications of Contractor
 - 1. The Contractor shall use adequate numbers of qualified workers who are thoroughly trained in the crafts and techniques required to properly install the type of roof coating proposed for use and other work required to complete the work specified.

 - 2. A single installer (roofing contractor or industrial painter) will perform the work. The installer must be trained and certified by product manufacturer, and show written evidence of his authorized status.

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3. The installer will own or have access to the equipment necessary, and shall meet all safety, insurance, and technical requirements of the building owner.

C. Warranty

1. The Contractor shall coordinate all necessary inspections, corrections, re-inspections (if any), and certifications with the coating manufacturer as required.

2. Warranty period is for 10 years, and shall start at date of substantial completion.

1.03 PRELIMINARY ROOF INSPECTION

A. Upon award of bid proposal, the roofing installer and manufacturer's representative shall tour the roof area. Manufacturer's representative will record and submit any disputes or concerns governing the installation of the roof system. The installer will complete and submit the manufacturers "Pre-Job Application Report" with photos depicting the overall roof area and details representative of the installation.

1.04 PRELIMINARY PROJECT REVIEW

A. Provide and review the following documentation to all parties directly concerned with the work, including the building owner, property manager, architect or roofing consultant:

B. Specification, including product data, warranty terms, and installation guidelines.

C. Material Safety Data Sheets,

D. Product Liability Insurance, and

E. Safety requirements.

F. Evaluation of the roofing material's physical properties and performance characteristics as verified by an independent, accredited testing agency.

G. Installer's Certificate of Authorization, signed by manufacturer.

H. Roof Inspection Report, including details of special interest and any remedies proposed by manufacturer, its representative, or installer to address unusual requirements beyond the purview of this specification.

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- I. Review Project Contract, including installer's logistical requirements such as water and electrical access, material storage area, designated work areas for ground to roof delivery of materials, personnel, etc. Determine work parameters required for a timely, efficient installation with minimal effect on the facilities normal operations.
- J. Provide a schedule estimating the project's expected completion date. Consider the possibility of a delay due to poor weather conditions or other external factors. Establish provisions for addressing primary waterproofing concerns in lieu of a completed installation when nearing the winter season.

1.05 FACTORY MUTUAL

- A. Upon request, provide component materials which have been evaluated by Factory Mutual for flame-spread and are rated as Class "A" materials on surfaces of 3/12 pitch or less. (Flame spread must be in accordance with ASTM #E108-87, Uniform Building Code test method 32-7)

1.06 INSTALLATION PARAMETERS:

- A. Emergency spot repairs can be made in the winter or during inclement weather. However, extensive repairs or system installations should not be considered unless the following conditions are met:
 - 1. Surface must be clean and dry prior to application of coatings.
 - 2. Do not begin work if surface temperature is above 140 degrees Fahrenheit or below 40 degrees Fahrenheit, or when the dew point is less than 5 degrees Fahrenheit above the surface temperature.
 - 3. Do not begin spray work if wind velocity is above 15 m.p.h.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver only approved materials to the job site. Deliver materials in original sealed containers with seals unbroken and labels legible and intact.
- B. Materials shall be delivered in sufficient quantities so as not to cause delays in work.
- C. Store and handle materials in a manner which will ensure that there is no possibility of contamination. Store in a dry, well-ventilated, weather-tight place, at temperatures between 50 degrees and 80 degrees F. Do not stack pallets more than two (2) high. Do not subject existing roofing to excessive loading. In all cases, the storage

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and handling of materials shall conform to the requirements of the manufacturer and all applicable safety regulatory agencies.

D. Material containers shall not be removed from the job site until final completion and/or until so authorized by the owner. All waste materials and debris shall be cleaned up daily.

E. Any damaged materials or materials not conforming to the specified requirements shall be rejected by the owner. Rejected materials shall be immediately removed from the job site and replaced at no additional cost to the owner.

1.08 EQUIPMENT:

A. Roof coatings are most effectively applied using airless spray systems. Conventional air atomized spray systems can be used, but over-spray and drift are more pronounced. Recommended Airless Spray Equipment, gasoline driven:

Graco GH 733	-	4050 psi and 3 gal/m capacity
Graco GH 533	-	3000 psi and 2 gal/m capacity
Magnum 4000	-	4000 psi and 3 gal/m capacity
Hydra Pro IV	-	3000 psi and 2 gal/m capacity
or equivalent.		

B. Use only approved, high pressure, static grounded, solvent- resistant spray hose with the following minimum inside diameters:

- Maximum material hose length:
1. 50 ft. - 3/8" ID
 2. 150 ft. - 1/2" ID

C. Spray tips - Reversible, self-cleaning tip with an orifice diameter of .025 to .031 with 10" fan pattern; a .035 tip is used when spraying the Brush Grade Seam Sealer.

D. Spray pressure - 3000 psi at pump and 1700 psi min. at spray gun.

PART TWO - PRODUCTS**2.01 RUBBER ROOF COATING**

A. Rubber roof coating products physical specifications and minimum performance criteria shall be in accordance with the following schedules:

1. NEOPRENE FLASHING CEMENT #7174

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<u>TEST</u>	<u>ASTM</u>	<u>RESULT</u>
Elongation at 77 deg. F.	ASTM D412	400%
Recovery from 100% Elongation		100%
Tensile Strength	ASTM D412	600 psi Min.
ADHESIVE BOND Aluminum Q-Panels		
Method A	D3359-90	5-highest rating
Method B	D3359-90	5-highest rating
PLIABILITY @ 0 deg.F.-180 deg. bend	D2823-90	
1 inch mandrel		no cracking or separation
1/4 inch mandrel		no cracking or separation
WATER VAPOR PERMEABILITY	E96-80	0.15 perms

2. **BRUSH GRADE SEAM SEALER #7141**

<u>TEST</u>	<u>ASTM</u>	<u>RESULT</u>
Elongation @ 77 deg. F.	ASTM D412	600%
Elongation @ 32 deg. F.	ASTM D412	300%
Recovery from 100% Elongation		100%
Tensile Strength	ASTM D412	1500 psi
Viscosity	ASTM D562	135-143 K.U.

3. **RUBBER COATING #7140**

<u>TEST</u>	<u>ASTM</u>	<u>RESULT</u>
Water Absorption	ASTM D471-79	.356%
Dry film thickness @ 1 gal/100 sq.ft.		6 mils
Elongation @ 77 deg. F.	ASTM D412	600%
Elongation @ 32 deg. F.	ASTM D412	300%
Recovery from 100% Elongation		100%
Tensile Strength	ASTM D412	1600 psi
Shore A Hardness	ASTM D2240	65
Viscosity	ASTM D562	105-110 K.U.
Low Temp. Brittleness	ASTM D 746-79	-22.6° C
Moisture Permeability	ASTM E96-80	0.2 per sq. ft.
UV Reflectance-initial	Energy Star req.	83%
-aged 7 years		72%
Adhesion-metal (aluminum Q panel)	ASTMD 3359-80	5-highest rating, method A&B

2.02 PVC Primer

A. A thin, moisture cured urethane designed to block plasticizer migration in conventional PVC membranes.

TYPICAL PROPERTIES

Flash Point	100 F
Viscosity at 77 F	42 KU

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Weight/Gallon	7.65 lbs.
Solids Content	25% minimum
Odor	Stong
Coverage	200-300 sq.ft./gal.

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2.03 POLYESTER MEMBRANE

A. Reinforcing membrane shall be composed of warp knit, 100% polyester yarn fibers offering an excellent combination of high strength and elongation to accommodate unusual stress forces from thermal shock or building movement.

TYPICAL PROPERTIES

Tensile Strength	ASTM D1682	90 lbs. (41 kg.)
Elongation	ASTM D1682	45%
Trapezoid Tear Strength	ASTM D1117	22 lbs. (10 kg.)
Ball Burst Strength	ASTM D3787	180 lbs. (82 kg.)

2.04 MANUFACTURER

A. The following roof coating manufacturers have been approved for this project. No substitutions by secondary, indirect manufacturers will be allowed.

1. Truco, Inc.
4301 Train Avenue
Cleveland, OH 44113
(800) 227-4569

B. Other manufacturers requesting approval must submit acceptable information certifying that they are the direct manufacturer from raw material into the specified product and meet the performance criteria required.

PART THREE - EXECUTION

3.01 PREPARATION OF SUBSTRATE

A. Inspect PVC membrane to receive coatings. Determine if insulation or other portions of the roof assembly are wet using non-destructive, infrared thermography in combination with selective core cuts. Use qualified, Truco approved scan technicians that clearly mark the roof areas holding moisture.

B. Determine if re-welding of the PVC material is acceptable per original membrane manufacturer's recommendations. Cut and peel back membrane where roof assembly is wet. Remove wet insulation boards, replace and recover with existing membrane.. Re-

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weld the new to aged PVC if acceptable. Otherwise, use mechanical fasteners and compatible seam tape to seal the perimeter of the repair.

C. Inspect and mark membrane wherever splits, fissures, cold welds or other irregularities are detected. Spot repairs are to be installed to a clean dry surface, using thermoplastic rubber as an adhesive coat. While wet, embed polyester fabric a minimum of 2" beyond the point of repair. . Allow 30 minutes of set time prior to topcoating the exposed fabric with a finish coat of thermoplastic rubber field coating. Any repairs to curbs, flashings and other pitched surfaces may use brush grade mastic or flashing cement to control sagging or runs in the uncured coating.

D. Remove dirt and debris from the surface to be coated using a power blower or roof vacuum. A power washer may also be used provided the membrane is free of fissures and capillaries provided the pressure is minimized. When using a power washing, pressure is not to exceed 800 psi and a wide fan spray is required.

E. Minor chalking is acceptable for coating purposes.

3.02 APPLICATION

A. Prime roof membrane using PVC primer at a rate of 1/3 gallon per 100 square feet. Use a ½ inch nap roller or .016 tip with minimal pressure if applying primer via spray equipment. Allow a minimum of 48 hours of cure time prior to application of field coatings.

B. Install first coat of spray grade rubber coating at a rate of 1.5 (#7145) gallons per 100 square feet. Spray the coating perpendicularly onto the substrate with spray-gun held 18" to 24" from the surface. For best results a continuous linear application of the field coating is recommended to minimize swirl marks.

C. Apply finish coat: After a minimum of 24 hours has elapsed apply a second coat of spray grade rubber finish (#7140) coating at a rate of 1 to 1.5 gallons per 100 square feet.

D. Inform all parties directly concerned with the roof installation upon completion of the work and schedule final inspection with manufacturer's representative.

E. Deliver warranty to owner upon completion of any open punch list items.

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END OF SECTION