

The enclosed specifications are designed to summarize the activities and responsibilities of all the principal parties to a roofing project. Oftentimes, the guide specification will function as the primary bid document when authorizing a roofing contract. These detailed instructions are intended to govern both the application itself and the process of awarding the work and issuing a warranty. Since no two roofs are exactly alike, further adjustment of the specification may be required. The enclosed guide specifications are typically used as a model for initial review purposes, then customized with Truco personnel prior to the solicitation of bids.

FLUID APPLIED ROOFING - HYPALON ROOF RESTORATION

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

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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 hypalon roof membrane with new materials as specified.

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

1.02 QUALITY ASSURANCE

A. Qualifications of Manufacturer

1. Provide primary roof coating product from a single manufacturer which has successfully marketed and supplied the products for not less than five 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 conditioning materials as needed.

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

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 requirements apply to roof coating to be applied to pre-approved reinforced Hypalon (cspe) substrate as described in base bid of this section.
3. 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 "Roof Inspection Report" along with pre-application photos depicting the overall roof area and details representative of the installation.

1.04 PRELIMINARY PROJECT REVIEW

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

- A. Specification, including product data, warranty terms, and installation guidelines.
- B. Material Safety Data Sheets,
- C. Product Liability Insurance, and
- D. Safety requirements.
- E. Evaluation of the roofing material's physical properties and performance characteristics as verified by an independent, accredited testing agency.
- F. Installer's Certificate of Authorization, signed by manufacturer.
- G. Moisture Scans 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.
- H. 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.

I. 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. (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 apply over silicone or PVC coatings. For questionable substrates, contact manufacturer's technical department.

4. Do not atomize coating 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 unnecessary loading. In all cases, the storage 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 or ½ inch, solvent compatible nap rollers. Conventional air atomized spray systems can be used, but over-spray and drift are more pronounced. Recommended Airless Spray Equipment, gasoline driven:

Graco 4030 Roof Rig - 4050 psi and 3.5 gal/m capacity
Magnum 4000 - 4000 psi and 3 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. 250 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 or larger is used when extruding 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

TEST ASTM RESULT

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

TEST ASTM RESULT

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

TEST ASTM RESULT

Dry film thickness @ 1 gal/100 sq.ft. 7 mils
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
Shore A Hardness ASTM D2240 70
Viscosity ASTM D562 105-110 K.U.

2.02 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.)

2.03 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 Hypalon membrane to receive coatings. Determine if insulation or other portions of the roof assembly are wet using non-destructive (infrared thermography or nuclear thermalization) moisture scanning in combination with selective core cuts. Use well qualified, Truco-approved scan technicians. Remove and replace wet insulation and underlayments as necessary.

B. Review Moisture Scan and core cuts with all parties to determine the extent to which pinholing of the membrane may have contributed to entrapped moisture. Areas subject to pinhole leaks will be swept free of dirt and debris using stiff bristle brooms. Mechanically clean algae or fungus with acetone as needed. Do not introduce powerwashing procedure to any areas which show evidence of pinholing.

C. rinse remaining membrane with water to remove excessive chalk, dirt, and other debris. with a fan spread of 10".

D. Allow roof to dry thoroughly before application of rubber coatings. Traces of chalk residue is acceptable for coating purposes.

3.02 APPLICATION

A. Waterproofing Details: Any flashings, including curbs, vertical seams, terminations and potential penetrations shall be flashed with brush grade seam sealer and polyester membrane. Trowel grade flashing cement may be substituted as a base for the fabric on any areas stacks or vertical repairs requiring a heavy, viscous material as a base to apply fabric on to.

Note: A minimum of ½ gallon per square of Seam Sealer is necessary for the following details.

1. Curbs, & Assorted Repairs on to vertical surfaces: Apply trowel grade flashing cement as an adhesive coat, imbed 6" polyester membrane, and topcoat using brush grade seam sealer. Be sure the repair extends for several inches on the horizontal and vertical portions of the repair.

2. Seams: Seal seams with brush grade seam sealer applied in a 4-5" width at the rate of 1 gallon per 50 linear feet. Back-brush 4" polyester membrane into the seam with a nylon bristle brush. All fabric reinforcement is to be applied on-center with the seam. Allow fabric to set in place for 2 hours prior to topcoating with additional seam sealer.

3. Review Prep Work for insufficient mil thickness, fishmouths in the membrane, and other irregularities. Repair deficiencies and install additional material wherever dry film thickness is below required levels.

B. Contact manufacturer's representative when prep work is nearing completion and schedule inspection so as to mitigate or eliminate any delays. Photos depicting prep work are required prior to proceeding with the field coating's installation.

C. Install First Coat of spray grade rubber coating at a rate of 1.5 gallons per 100 square feet. Materials can be delivered to the surface by atomized spray or via nap roller. However, the initial field coat must be back-rolled to assure sealing of pin holes, crevices, and other surface irregularities of the weathered membrane. Overlap the application pattern a minimum of 25%.

D. Apply Finish Coat of spray-grade rubber after a minimum of 24 hours has elapsed at a rate of 1.5 gallons per 100 square feet. Spray or roll application of finish coat is acceptable for warranty purposes.

E. Repair defects and inspect the roof for insufficient dry mil thickness (less than 21 dry mils field, 35 dry mils on seams and flashing details)

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