

SECTION 07 01 50.62

ACRYLIC LIQUID APPLIED SYSTEM OVER EXISTING MODIFIED BITUMEN ROOF

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

- A. The following specification outlines the requirements for a quick curing, cold fluid-applied, low-odor 2 coat reinforced waterproofing membrane and all other ancillary waterproofing work including but not limited to, installation of drains, pipe flashings, penetration flashings, sealants and metal work as specified.
 - 1. All membrane materials shall have a superior coefficient of expansion, to allow for differential movement between the horizontal and vertical surface of the flashed penetration or projection.
 - 2. New membrane system **MUST** provide fast-drying primers to allow substrate preparation, priming and membrane application to be completed the same day.
 - 3. The use of cold fluid-applied low-odor 2 coat membrane materials will be required for all field membrane and flashings.
 - 4. Any areas that pond water **MUST** be waterproofed using a fully reinforced system.

1.2 SECTION INCLUDES

- A. Adhered cold fluid-applied low-odor acrylic waterproofing system including, membrane, penetration flashings, base flashings, and expansion joints.
- B. Substrate preparation, cleaning, leveling and patching
- C. Temporary waterproofing
- D. Waterproofing membrane installation
- E. Flashing installation and expansion joint installation

1.3 RELATED SECTIONS

- A. Supplementary General Conditions
- B. Basic Requirements
- C. Wood Blocking and Nailers
- D. Sheet Metal Flashing and Trim

1.4 REFERENCES

- A. American Society for Testing and Materials (ASTM) C 836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane.
- B. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- C. ACI-308 - Recommended Practice for Curing Concrete
- D. ASTM - D638 - Test Methods for Tensile Properties of Plastics
- E. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings
- F. ASTM - D4259 - Standard Practice for Abrading Concrete
- G. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester
- H. ASTM - E96(A) - Test Methods of Moisture Transmission of Material
- I. ASTM E-108, ANSI/UL 790 for fire resistance
- J. Steel Structures Painting Council (SSPC)

1.5 SUBMITTALS FOR REVIEW

- A. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.
- B. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owner's Representative.
- C. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.
- D. Membrane Shop Drawings: Submit shop drawings of cold fluid-applied reinforced low-odor roof coating membrane showing all a project plan, size, flashing details, and attachment for review and approval by the Owner's Representative and Membrane Manufacturer.

1.6 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in manufacturing the products specified in this section with ten (10) years documented experience. Membrane Manufacturer shall submit the following certifications for review:
 - 1. Substrates and conditions are acceptable for purpose of providing specified warranty.
 - 2. Materials supplied shall meet the specified requirements.

- B. Applicator: Company specializing in performing the work of this section with (3) years documented experience and approved by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:
 - 1. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
- C. Evaluate moisture content of substrate materials. Constructor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.
- D. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.
- E. Mock-up areas shall be used to determine required methods and tools to obtain degree of substrate preparation required by the membrane manufacturer. Conduct tests as required to verify that substrate preparation meets specified requirements. Tests shall include, but are not limited to, tensile bond strength and moisture content of substrate.
 - 1. Prepare and clean a three (3) foot (0.9 m) by three (3) foot (0.9 m) area of each substrate material type.
 - 2. Submit findings in writing to Owner or his designated Representative and Membrane Manufacturer.
 - 3. Mock-up areas shall be maintained for quality control for the entire project.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable building and jurisdictional codes for roofing/waterproofing assembly and fire resistance requirements.
- B. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.
- C. Comply with authority or agency "Confined Space Policy" during and throughout all work to be performed.

1.8 PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting at the job site (1) week before starting work of this section. Require attendance of parties directly affecting work of this section, including but not limited to, Architect, and Owner's Representative, Roofing/Waterproofing Contractor, and Membrane Manufacturer's Representative. Review roofing/waterproofing preparation and installation procedures, coordination and scheduling required with related work, and condition and structural loading limitations of deck/substrate.

1.9 DELIVERY, STORAGE, AND PROTECTION

- A. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer's recommendations and relevant regulatory agencies. Materials shall not be

stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

- B. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the MSDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
- C. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls which are wet, dirty or have damaged ends.
- D. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should not be used as outside storage covers.
- E. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials which have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.
- F. Copies of all current MSDS for all components shall be kept on site. Provide any and all crewmembers with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing/waterproofing membrane during or with the threat of inclement weather.
- B. **Application of cold fluid-applied reinforced low-odor roof coating roofing/waterproofing membrane may proceed while substrate temperature is between 41 °F and 104 °F providing the substrate is a minimum of 5 °F above the dew point.**
- C. When substrate temperatures are at or expected to fall below 41 °F (0 °C) or reach 104 °F or higher, follow Membrane System Manufacturer's recommendations for weather related restrictions and application procedures.
- D. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.
- E. Where required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the roofing/waterproofing materials. Control/elimination measures shall be field tested at off-hours and typically consists of one (1) or a multiple of the following measures:
 - 1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and

- against building exterior walls to prevent leakage of unfiltered air where required due to size of intake opening. Provide track system to secure filters.
2. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/ exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
 3. Placement of odor elimination stations inside and outside of the enclosure(s) as required by field condition, in coordination with the Owner or his designated Representative.
 4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
 5. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.

1.11 COORDINATION & PROTECTION

- A. Coordinate the work with the installation of associated metal flashings, accessories, appurtenances, etc. as the work of this section proceeds.
- B. Building components shall be protected adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Contractor shall be responsible for preventing damage from any operation under its Contract. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.
- C. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or designated Representative.
- D. Protect finished roofing/waterproofing membrane from damage by other trades. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane. Contact membrane manufacturer for further exposure limitation and restrictions.

1.12 WARRANTY

- A. Manufacturer's Premier Warranty: Provide Ten (10) Year NOL manufacturer's warranty under provisions of this section. This warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation ("NDL").
- B. Waterproofing Contractor's Warranty: Provide Two (2) year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.
- C. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods

stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The products herein specified are totally pre-engineered products of the listed manufacturer and establish criteria for this project.

2.2 MANUFACTURERS -MEMBRANE

- A. Membrane: Two coat reinforced liquid applied acrylic roof coating. Provide products manufactured and supplied by the following:
 - 1. R Nova Plus Peach Base Coat and R Nova Plus White Top Coat by Soprema, Inc., Wadsworth, Ohio
 - 2. ASTEC Re-Ply Roof Reinforced Roofing System, Application Specification # AC- 2014-A & MB-15, Inverness Florida
 - 3. Western Colloid's FARR - Fluid Applied Reinforced Roofing Systems, Los Angeles, California

2.3 FLASHINGS

- A. Membrane Flashings: Two coat reinforced liquid applied acrylic roof coating. Provide products manufactured and supplied by the following:
 - 1. R Nova Plus Peach Base Coat and R Nova Plus White Top Coat by Soprema, Inc., Wadsworth, Ohio
 - 2. Re-Ply 2000 Base Coat and Re-Ply 2000 Finish Coat by ASTEC Re-Ply Roof Systems, Inverness Florida.
 - 3. Western Colloid's FARR - Fluid Applied Reinforced Roofing Systems

2.4 ACCESSORIES

- A. Reinforcement Fleece: material shall be 100% polyester non-woven, stitch bonded, heat-set fabric.
- B. Sealants: Must be provided by coating manufacturer and included in the material warranty.
- C. Tools, Accessories, and Cleaners: Supplied and/or approved by membrane manufacturer for product installation.
- D. Topcoat Surfacing Aggregate at Roof Hatches: Kiln-dried Surfacing Silica Sand shall be washed, kiln-dried, and dust-free with the following size specification:
 - 1. Pedestrian Traffic: 0.4 - 0.8 mm in a 4 ft. by 4 ft. area

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck/substrate openings, curbs, and protrusions through deck/substrate, wood cant strips and reglets are in place and solidly set.
- C. Verify deck/substrate is structurally supported, secure and sound.

3.2 PREPARATION OF SUBSTRATE

A. General:

- 1. Prior to beginning any work on roofs, install drain through drain screens in all drains by Roof Top Drain Filters by Guardian or Roof Top Foam filters by TJM Innovations, LLC. All loose granules dirt and debris should be vacuumed from the roof.
- 2. All blisters need to be "X"- cut and patched with a smooth sanded top surface, heat weldable modified bitumen membrane.
- 3. Areas with excessive asphalt bleed out need to be heated and trowel smoothed or removed from the surface.
- 4. All metal penetrations to receive liquid flashings are to be cleaned per coating manufacturer's guidelines.
- 5. Lightning protection penetrations need to be encased in PVC piping utilizing a PVC cap with nut, washer and rubber gasket down to the roof deck. Lightning protection is to be re-certified once this work is complete.
- 6. All overflow drains without strainers are to receive aluminum adjustable Drain Guards by Marathon drains.
- 7. Where equipment is stored i.e. swing arms and where foot traffic is expected install a layer of granulated modified bitumen in that area prior to coating
- 8. Once the above has been completed a light power washing of the surface is required.

B. Steel/Metal:

- 1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. Notch steel surfaces to provide a rust-stop.
- 2. Stainless steel (series 400, 300) shall be abraded to provide a rough open surface.

C. Other Flashing Surfaces:

- 1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by Owner or his designated

Representative.

D. Finish Leveling, Patching and Crack Preparation

1. General: level low areas with a ply of granulated APP modified bitumen prior to installing the coating.

3.3 MEMBRANE APPLICATION

A. Application of 2 Coat Reinforced Acrylic Coating System For Field and Flashing work

1. Apply foundation coat at 2.0 gallons per square. Apply mixed base coating to the prepared surface in accordance with manufacturer's written instructions and details. The coating should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Install 2.0 gallons of base coating per 100 sq. ft. and embed fabric directly into the coating while still wet. Overlap adjacent runs of fabric 3-inches minimum. Immediately follow with an embedment coat, at a rate of 1.5 gallons per square to create a monolithic membrane
2. Over the cured base coat, apply the mixed top coat in accordance with manufacturer's written instructions and details to finish the coating system. The coating should be rolled or brushed liberally and evenly onto the cured base coat using a broad, even stroke.
3. Install 2.0 gallons of finish coating per 100 sq. ft. and allow to cure.

3.4 FLASHING APPLICATION

A. General:

1. Install flashing system in accordance with the requirements/recommendations of the Membrane manufacturer and as depicted on standard drawings and details. Provide system with base flashing, edge flashing, penetration flashing, counter flashing, and all other flashings required for a complete watertight system.
2. Wherever possible, install the flashings before installing the field membrane to minimize foot traffic over newly installed field membrane.
3. All membrane flashings shall be installed concurrently with the waterproofing membrane as the job progresses. Temporary flashings are not allowed without prior written approval from the Membrane manufacturer. Should any water penetrate the new waterproofing membrane because of incomplete flashings, the affected area shall be removed and replaced at the contractor's expense.
4. Provide a minimum vertical height of 8" for all flashing terminations. Flashing height shall be at least as high as the potential water level that could be reached as a result of a deluging rain and/or poor slope. Do not flash over existing through-wall flashings, weep holes and overflow scuppers.
5. All flashings shall be terminated as required by the Membrane Manufacturer.

B. Pipes, Conduits, and Unusually Shaped Penetrations:

1. Flash all penetrations using cold fluid-applied un-reinforced acrylic roof coating.

Flashing material shall be the same as the field coating as specified by membrane manufacturer.

C. Flexible Penetrations:

1. Provide a weathertight gooseneck of round cross-section for each penetration or group of penetrations. Set in Water cut-off mastic and secure to the structural substrate.
2. Acceptable gooseneck material is copper, of a sheet weight appropriate for the application.
3. Flash all penetrations using cold fluid-applied reinforced roof coating roof membrane. Flashing material shall be resin as specified by membrane manufacturer with appropriate fleece reinforcement.
4. Flashing is typically constructed as a two-part assembly consisting of a vertical wrap and a horizontal target patch. There must be a minimum of a two (2) inch (5 cm) overlap between vertical and horizontal flashing components.

D. Walls, Curbs and Base Flashings:

1. Apply mixed base coating to the prepared surface in accordance with manufacturer's written instructions and details. The coating should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Install 2.5 gallons of base coating per 100 sq. ft. and allow to cure.
2. Over the cured base coat, apply the mixed top coat in accordance with manufacturer's written instructions and details to finish the coating system. The coating should be rolled or brushed liberally and evenly onto the cured base coat using a broad, even stroke. Install 2.5 gallons of finish coating per 100 sq. ft. and allow to cure.

E. Drip Edges and Gravel Stops

1. Metal drip edges and gravel stops shall be installed to solid substrate surfaces only. Securement to gypsum-based panels, cementitious stucco, synthetic stucco, wood or metal siding or coping and other similar materials is not acceptable.
2. Flash all drip edges and gravel stops by extending the field membrane all the way to the edge of the exposed face prior to installing the metal edging. Strip in the metal flange with a separate 8-inch wide strip of membrane adhered to both the securement flange and to the field membrane.
3. For conditions where water infiltration behind the exposed drip edge or gravel stop face is possible, install a separate polyester fleece bottom layer positioned behind the face area and

3.6 SURFACING AND FINISHES

A. Approved Finish Surfacing

1. Follow Coating manufacturer's recommendations for coating thickness, application techniques, required primers, environmental limitations, and all other similar considerations.
2. While the finish coat is still wet broadcast sand surfacing into wet surface of coating to provide traction surfacing. Allow finish coat to cure. Once cured seal sand surfacing with an additional coating of finish coat with an application of 1 gallon per 100 square feet.

3.5 TEMPORARY CLOSURES & WATERSTOPS

- A. Contractor shall be responsible to ensure that moisture does not damage any completed section of the new waterproofing system. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition. All temporary closures shall be made as recommended or required by the membrane manufacturer.

3.6 PROTECTION

- A. Upon completion of waterproofing and flashings (including all associated work), institute appropriate procedures for surveillance and protection of roofing during remainder of construction period. Protect all areas where membrane has been installed.

3.7 CLOSEOUT

- A. Correction of Work:
 - 1. Work that does not conform to specified requirements including tolerances, slopes, and finishes shall be corrected and/or replaced. Any deficiencies of membrane application, termination and/or protection as noted during the Membrane manufacturer's inspections shall be corrected and/or replaced at Contractor's expense.
- B. Clean-Up:
 - 1. Site clean-up, including both interior and exterior building areas that have been affected by construction, shall be restored to preconstruction condition.

END OF SECTION