COLD FLUID-APPLIED MEMBRANE ROOFING SECTION 07500

SECTION 07-56-01
TRITOFLEX 2K – ROOF MEMBRANE SYSTEM

FOR NEW CONSTRUCTION INSTALLATIONS

This specification works as a guideline and may be modified, as necessary, by the "Designer of Record "to fulfill the needs of the individual project. Any changes or improvements to the content of this specification should be made only with the written consent of the "Designer of Record."

PART ONE - GENERAL

1.1. Description

A. Furnish and install an instant-setting, fluid-applied, roof waterproofing system complete, in place, as shown on the drawings, specified herein, or needed for a complete and proper watertight and warrantable installation. TritoFlex™ 2K Rubber roof system shall be monolithically applied in one spray coat to the field and flashing areas of a bituminous base sheet to create a 2-ply waterproofing system, with a seamless membrane on top. TritoFlex™ 1K Brush-Grade Rubber is used as a patching and flashing reinforcement compound, as needed, to the system after it has cured. An energy efficient, sustainable, and sacrificial elastomeric top coating, TritoCryl™ 1K/2K or TritoTherm™, may then be applied in one or two coats.

1.2. Quality Assurance

A. Standards: Comply with standards specified in this section and as listed in the General Requirements.

B. Qualifications of Manufacturer: The core products used in the roofing work and included in this section shall be manufactured directly by the manufacturer and not through a third-party mixing company or private label. Quality control measures include testing and retaining samples of every product batch by the manufacturer.

C. Qualifications of Installers: The Contractor and his personnel shall be currently approved by the manufacturer and only those spray technicians that have been certified through the manufacturers' training program are to spray apply the roof membrane.

D. Roofing Inspections: Make all required notifications and secure all required inspections by the manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

E. Manufacturer's Pre-Review: The manufacturer shall review and approve the underlying components (i.e. decking, insulation, cover board) to be protected with the TritoFlex 2K system with respect to the appropriateness of the substrate for use of their roofing system on this project.

F. Spray Equipment: The TritoFlex 2K liquid roof membrane and TritoCryl 2K top coat may only be applied with spray equipment specifically manufactured for these products and supplied by Triton Inc.

1.3. Submittals

A. Product Data: Prior to project starting, submit:

i. Complete material list of all items proposed to be furnished and installed under this section along with product data sheets for each.

ii. Manufacturer's pre-review comments and other data required to demonstrate compliance with specified requirements.

iii. Complete architectural drawings, details, and specifications related to this work.

1.4. Product Handling

A. Delivery and Storage:

i. Deliver all packaged materials to the job site in their original, unopened containers with all labels intact and legible at the time of the inspection.

ii. Store all materials in an approved manner and protected from freezing or extreme heat. Storage temperature to be maintained above 50 degrees Fahrenheit (10 degrees C).

iii. Protect materials during handling and application to prevent damage or contamination.

B. Protection: Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of and at no additional cost to the Owner.

1.5. Scheduling

A. Work is to be performed on a daily basis with appropriate scheduling of product applications to prevent contamination of the surfaces between applications. Products shall be installed only if temperatures do not dip below freezing for 72 hours after applying, and daytime temperature reaches 50 degrees Fahrenheit (10 degrees Celsius) or higher.

B. Final completion of work shall be defined as the installation of all specified cover board, roof membrane, top coating, flashings, counterflashings, sheet metal, fasteners, and caulking.

C. Contractor shall complete installation of bituminous base sheet membrane the same day as installation of the cover board. Installation of top coating shall occur no earlier than 12 hours after installation of TritoFlex 2K membrane but/and not before it is fully cured. A light rinsing of the surface to remove dry accelerator is required prior to coating also. If top coating is performed later than three (3) days after completion of TritoFlex 2K membrane, another rinsing may be required to remove dust and dirt accumulations depending on the environment.

1.6. Warranty

A. As part of the work of this section, pay all required fees, secure all required inspections, and complete all items necessary to secure and deliver to the Owner a manufacturer's warranty of 15 years or 20 years as requested. Note that some warranties may be eligible for 10-year extensions.

PART TWO - PRODUCTS

2.1. General

A. Minimum product requirements have been listed. All of these components must be used and bid. Products not supplied by the manufacturer are to be purchased from a manufacturer approved source.

2.2. Products Supplied by Warranty Manufacturer

A. Liquid Membrane – Two-Component, Cold Spray-Applied Rubber (TritoFlex 2K)

Spray-applied instant setting liquid waterproofing manufactured by Triton Inc.™ and applied by a manufacturer certified installer to create a roof membrane. The liquid TritoFlex 2K product is water-based and solvent free, which transforms into an instant-setting seamless rubberized roof membrane as it is spray-applied to the substrate and catalyzed by an accelerator component. The liquid is spray-applied in a single coat to achieve a minimum monolithic membrane thickness of 80 dry mils (2 mm) for a 20-year warranty, and possess physical properties of no less than the values listed below:

Property	Test Method	Value
Solid Content	Vacuum cure	63%
Flame Exposure	ASTM E108	Class A, Self-Extinguishing
Water Vapor Permeability	ASTM E96	.1 perms or less
Elongation	ASTM D412	1200% or greater
Tensile Strength	ASTM D412	500 psi or greater
Hydrostatic Pressure	BS EN 12390-8	Pass – No penetration
Impact and Hail Resistance	ASTM D3746	Pass
Adhesion to Concrete	ASTM D903	42 lbf
Adhesion to Cap Sheet	ASTM D4541	729 psi
UV Exposure (Xenon)	ASTM G155	No effect
Cured to the Touch	After Sprayed	Instantly
VOC Content	--	Zero
Wind, Fire, Hail, Foot Traffic, UV	FM 4470	Pass (1-990, Class A, Severe Hail)

B. Patching and Flashing Membrane – One-Component, Brush-Applied Rubber

i. TritoFlex 1K Brush-Grade Rubber – Brush-applied, flexible waterproofing membrane manufactured by Triton Inc. that is water-based and solvent free. Product is used for touch-up patching and reinforcing of flashing areas in the TritoFlex 2K membrane.

C. Reflective/ Protective Topcoat *(Select the appropriate coating that meets the building requirements)*

i. TritoTherm: Thermal insulating and reflective white top coating that is a water-based acrylic elastomer. Ceramic and glass microspheres within the top coating not only reflect UV rays, but also reduce heat transfer through it, making it a superior energy saving solution used as part of the TritoFlex 2K roof membrane system; manufactured by Triton Inc.

ii. TritoCryl: Highly reflective acrylic elastomeric EnergyStar top coat that is water-based and available in both 1K or 2K instant-set form. Typically provided in white and manufactured by Triton Inc.

D. Catalyst (Accelerator)

i. ACCELERATOR: Specialty Calcium Chloride water mixture used as the catalyst component in conjunction with spraying the TritoFlex 2K and TritoCryl 2K products that produces an instant setting membrane, allowing for the rapid build-up of the membrane to thickness desired in one coat. The dry CaCl pellets are supplied by Triton, Inc. and the applicator mixes with water per the manufacturers' requirements on the job site. Alternative catalysts are in no way allowed, as they will cause damage to the final product and are environmentally unsafe.

2.3. Products Supplied by Others

A. Cover Board (to be installed over insulation assembly)

i. DensDeck Prime, gypsum roof board manufactured by Georgia-Pacific.
ii. Securock, gypsum-fiber roof board manufactured by USG.

B. Base Sheet Membrane

i. Soprema Colphene SBS Stick Self-Adhering Base Ply
ii. Johns Manville DynaBase SBS Self-Adhering Base Sheet
iii. Other approved alternatives *(may include torch-applied base*)

C. Low-Rise Foam Adhesive (for fully-adhered assemblies)

i. OlyBond500 Insulation Adhesive manufactured by OMG Roofing Products

2.4. Equipment Supplied by Manufacturer

A. Spray machine and testing gauges/meters

i. Triton Standard Spray System: two- component spray rig consisting of spray gun, hoses, pumps, and cart, specifically manufactured and supplied by Triton, Inc.

ii. TritoFlex 2K mil gauge for testing wet mil thickness while spraying liquid membrane.

PART THREE - EXECUTION

3.1. Description

A. The latest manufacturer application techniques are to be followed along with the following requirements. These specific minimum requirements must be included in the bid and are not to be altered.

3.2. Inspection

A. Examine the planned roof assembly under which work in this Section will be installed. Correct and rectify conditions detrimental to the proper and timely completion of the work, such as improperly installed insulation, saturated and wet insulation, and poor structural conditions of the decking. Do not proceed until such conditions have been corrected.

3.3. Surface Conditions

A. Surfaces scheduled to receive waterproofing are to be sound, clean, dry and free of any dust, grease, oil, laitance, and other contaminants.

B. Substrate is to be free of sharp projections and free of loose components.

C. If installing over areas of existing insulation, the existing insulation is to be scanned for moisture to located and replace any wet areas. Insulation replacement must be properly attached prior to the application of the TritoFlex 2K system over it.

3.4. Installation – Preparation of Substrate

A. Protect all adjacent surfaces from overspray at all times. Taping off surfaces with painter plastic to prevent overspray onto surfaces and to establish clean straight edge termination lines on the new liquid membrane flashings is required.

B. Installation of approved cover board is to be installed over top of insulation as an acceptable substrate to apply the Base Sheet to prior to application of TritoFlex 2K. Assure the cover board is installed with staggered joints and either properly mechanically-attached or fully-adhered in low-rise foam adhesive.

C. All metal flashings that are specified to be installed must be inspected for water tightness. Any flashing metal such as counterflashing, termination bar, coping caps, edge metal, etc., shall be properly installed to written specifications to achieve a watertight condition.

D. Remove all dirt, debris, and loose materials from the surface of the roof.

E. Verify the substrate is visibly dry on the surface and free of moisture within its components. Moisture meters, infrared scanning, or capillary moisture tested by plastic sheet method according to ASTM D-4263, may be necessary. If moisture is present on the substrate it must be allowed to dry prior to proceeding with TritoFlex 2K application.

3.5 Installation of Self-Adhering or Torch-Applied Base Sheet Membrane

A. Self-adhering or torch-applied base sheet by approved supplier must be installed directly to the cover board immediately after cover board installation.

B. Starting at the low point of the roof, the base sheet should be unrolled and cut-off approximately 12” from the bottom of the sheet so end laps are off-set. After positioning the sheet, fold the top half back lengthwise and remove the release liner. Roll the material into place and ensure not to trap air or cause wrinkles. Hand press the sheet from the center out

C. After the entire sheet is adhered, use a roller to press down on the entire sheet. Positions subsequent sheets to overlap the previous ones by the width of the selvage edge. Overlap in a shingle fashion to ensure raised laps are water shedding towards the low points of the roof.

3.6. Installation of Liquid Membrane

A. General:

i. Stir materials prior to application in accordance with manufacturer's instructions.

ii. Spray two-component TritoFlex 2K instant-setting system as a continuous, monolithic and seamless membrane of uniform thickness, beginning at the lowest point and terminating at the highest point. Final membrane thickness after full cure must be minimum 80 dry mils for 20-year warranty.

iii. TritoFlex 2K is to be sprayed directly over the clean and dry self-adhering base sheet with no primer.

iv. When a spot repair is required during application, re-spray defect area within 15 minutes of initial spray application so entire membrane cures monolithically.

B. Horizontal and Vertical Application:

i. Spray-apply one continuous layer of TritoFlex 2K two-component waterproofing membrane, covering

all areas of the field and flashings to achieve a cured dry mil membrane thickness of 80 mils.

ii. Perform wet mil thickness tests (with a manufacturer supplied mil gauge) at regular intervals while spraying to assure a minimum of 130 wet mils to create a final cured membrane of 80 mils throughout. Immediately re-spray spots checked with gauge to fill in void.

iii. If necessary, chalk-line a grid across the roof prior to application to gauge product use per drum within a particular section of the roof area. One drum of material per section of grid based on the manufacturers' application rates should be used a gauge to lay out the grid sections. To achieve 80 mils dry, the typical gauge shall be 600 sq ft per drum.

iv. Refer to manufacturer's recommendations and details for proper membrane terminations.

C. Accelerator Rinse and Top Coating

i. After the TritoFlex 2K membrane and TritoFlex 1K products have fully dried and are safe to walk on, rinse dried accelerator from all surfaces with water. After dry, apply TritoFlex 1K Brush-Grade to any visible voids or thin spots in TritoFlex 2K membrane prior to applying top coatings. TritoFlex 1K Brush-Grade is to be installed by brush, roller, or trowel at 130 wet mils to achieve 80 mils dry and be allowed to fully cure prior to applying top coatings.

ii. Following the application of TritoFlex2K roof membrane described above, apply the TritoTherm TritoCryl acrylic coating in two or three coats to achieve a final minimum dry film thickness of 30 mils. First coat to be back-rolled if applying by sprayer to assure adhesion to the textured TritoFlex surface. If applying TritoCryl 2K, install in one coat to 45 wet mils to achieve 30 dry mils. This is a total coverage rate of 3 gallons per 100 sq. ft.

iii. Installation of top coating shall occur **no earlier than** twelve (12) hours after installation of TritoFlex 2K membrane and **no later than** ten (10) days after completion of TritoFlex 2K membrane.

3.7. Installation of Liquid Patch & Flashings

A. Transition Detailing and Flashing, including Inside and Outside Corners, Pipes, Vents, Steel Sightscreen Supports, and Curbs: All flashing details and transition changes shall be prepared as follows:

i. After TritoFlex 2K roof membrane installation, accelerator rinsing, and proper cure time, all flashing transitions shall receive an additional brush application of TritoFlex 1K Brush-Grade prior to top coating.

a. Brush apply a 97 wet mil course of TritoFlex 1K Brush-Grade to extend 3" on each side of all curb corner transitions, 90-degree angles, under metal flashings, base and top edge of all pipe penetrations.

b. The field of the roof shall be checked over for imperfections in the TritoFlex 2K spray application and TritoFlex 1K shall be brush applied wherever needed to reinforce suspected thin spots or spray defects. TritoFlex 1K shall be allowed to cure fully prior to top coating applications. Typical cure time allowance is 24 hours with good weather conditions. Use cure meter to determine full cure.

B. Roof Drain Flashing:

i. Drain installation instructions:

a. Apply an 80 mil dry course of TritoFlex 1K Brush-Grade over TritoFlex 2K roof membrane, extending from inside of drain to 3" outside of clamping ring.

3.8. Field Quality Control

A. Use of specialized equipment such as a mil gauge supplied by the manufacturer to check the liquid membrane thickness during application and a good quality digital camera to provide photos to manufacturer of installation is required.

B. Contractor to provide photographs of areas to receive liquid membrane before start of work, during surface preparation, during cover board installation, during base sheet installation, during spray application, and at completion of work for warranty acceptance.

3.9. Clean-Up

A. All debris shall be removed from the premises promptly and the construction area left clean daily.

B. All overspray of products must be cleaned from surfaces not scheduled to receive the waterproofing membrane.

C. At the completion of the contract, Contractor is to remove and dispose of all equipment or temporary facilities related to their contract within 3 days.

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