APPLICATION / SPECIFICATION DATA

TUFFLEX SYSTEM AFWM-64 MIL

HIGH PERFORMANCE, ANTI-FRACTURE WATERPROOFING SYSTEM

1. GENERAL

1.1 Scope: This specification covers the installation of an extremely durable, liquid applied, anti-fracture waterproofing membrane system. It is a monolithic, trowel applied, under tile or under mortar bed waterproofing system designed to supply a positive seal from moisture penetration while aiding in the reduction of crack transmission from crack-prone substrates. This system can be applied over sound concrete or sound wood sub-surfaces. It is designed for exterior use under thin set ceramic, terrazzo, quarry and porcelain tile for waterproofing as well as sound deadening qualities.

1.2 Work included: Install waterproofing consisting of caulking and flashing for joints, TUFFLEX TUFF-POXY Primer #1 or TUFF-POXY Primer #3 Primer, TUFFLEX "TUFF" Elastomeric Base Membrane, TUFF-TAPE "PW" Polyester Reinforcing Fabric and TUFFLEX Reinforcing Aggregate. Apply in accordance with these specifications and latest general instructions supplied by TUFFLEX Polymers (TUFFLEX).

1.3 Work Not Included: Work under this section shall not include installation, finishing and corrective work in connection with subsurfaces to receive the liquid-applied waterproofing systems. Nor does it include furnishing and installation of metal flashing, drains, vents, ducts, curbs or any other penetration through the deck.

1.4 Condition of Concrete Surfaces:

1.41 The concrete surfaces shall be of sound structural grade (2,500 psi compressive strength recommended), a minimum thickness of 3 inches and shall have a steel-troweled followed by a fine broom finish, free of fins, ridges, voids or air-entrained holes.
1.42 Concrete shall preferably be cured by the water curing method. If curing agents are used, they shall be of pure sodium silicate base only.
1.43 Concrete shall be cured at least 28 days and until completely dry. Concrete shall be sloped for proper drainage.
1.44 Saw-cut control joints and/or expansion joints shall have been properly installed at strategic points throughout the field of the deck to control cracking caused by deflection and shrinkage.
1.45 Voids, rock pockets and excessively rough surfaces shall be finished with an epoxy grout or sand/cement/acrylic-latex smoothing coat.
1.46 When metal decking is used as the concrete form, it shall be of the 'ventilating type'.
1.47 All concrete decks poured over precast "T's", planks or slabs, shall have control joints placed directly over all corresponding joints or openings in the precast units.

1.5 Condition of Plywood Subsurfaces:

1.51 Plywood substrates at a minimum shall consist of a single layer of 1 1/8 inch thickness, or a double sheeting of ¾ inch thickness, tongue and groove or blocked, exterior grade B/C or better plywood panels and shall be properly supported.
1.52 Plywood panel joints between the top layers and bottom layers of plywood shall be staggered and joints shall be spaced 1/8 inch between adjoining panels on the same plane.
1.53 Plywood shall be nailed with non-corroding 10d annular ring or twist nails. Space nails 6 inches O.C. along panel edges and 12 inches O.C. over intermediate supports.
1.54 All decks shall be designed to eliminate vertical deflection by the proper selection of plywood thickness and the proper spacing and proper quantity of support joists.
1.55 All plywood edges and joints must be securely supported on blocking or primary framing and the plywood panels shall be continuous across two or more spans with face grain across supports.
1.56 All adjacent metal flashing, scuppers, vents, etc. shall be a minimum of 26 gauge galvanized metal, tightly screwed, or nailed with ring shank nails to the plywood at intervals no greater than 4 inches O.C.
1.57 Plywood subsurfaces to be used as heavy traffic areas or which will have a heavy tile or a mortar bed installation should have a double layer of ¾ inch plywood and possibly metal lath reinforcement. (Without this added rigidity, the natural flexure in wood is sufficient to cause tile grout retention problems.)

1.6 Job Conditions:

1.61 Before any waterproofing work is started the waterproofing applicator shall thoroughly examine all surfaces for any deficiencies. Should any deficiencies exist, the architect, owner, or general contractor shall be notified in writing and corrections made.
1.62 Do not proceed with application of materials when deck temperature is less that 40°F or if precipitation is imminent.
1.63 Warn personnel against breathing of vapors and contact of material with skin or eyes. In confined areas without adequate ventilation, workmen shall wear approved respiratory protective gear and protective clothing.
1.64 All gas flames and electrical apparatus shall be shut down prior to the start of and during coating application and curing.

2. QUALIFICATIONS

2.1 Authorized Applicator:
2.11 Shall be experienced in successfully applying the same or similar materials and shall be specifically approved as a factory qualified applicator in writing by TUFFLEX.
2.12 Shall be financially responsible and be ready and able to submit performance bonds, if required.
2.13 Shall submit to the general contractor and the building owner the required certificates of insurance prior to starting the project.

2.2 Sample Submittals: Submit samples not less than 4" x 3" in size, showing the approximate applied thickness and the type and size of reinforcing aggregate. The submittal shall also include the manufacturer's application - specification sheet and a list of materials to be used on this project in order to demonstrate compliance with these specifications.

2.3 Specifications and Standards: The composite TUFFLEX AFWM-64 Mil Waterproofing Membrane System meets or exceeds the performance requirements of ASTM Specification ASTM-C-836-76.

3. MATERIALS

The materials shall be delivered to the job site in the original sealed containers bearing the product name, color, manufacturer's lot number, directions for use and precautionary labels. All products listed are manufactured or supplied by TUFFLEX.
3.1 Caulking Compound: Shall be a TUFFLEX approved one-component, high adhesion, moisture cured, non-staining polyurethane compound.
3.2 Flashing Reinforcement: Shall be TUFF-TAPE "PW" Polyester Reinforcing Fabric, or as recommended by the waterproofing membrane manufacturer.
3.3 Primer: Shall be TUFFLEX TUFF-POXY Primer #1 (solvent-free) or TUFF-POXY Primer #3 (low VOC) Epoxy, low viscosity, two-component primer/sealer.
3.4 Elastomeric Base Membrane: Shall be TUFFLEX "TUFF" water catalyzed, solvent free, high strength, liquid polyurethane membrane and shall meet or exceed the following typical properties:

TUFFLEX "TUFF"

PROPERTY	VALUE	TEST METHOD
Hardness, Shore A	65 + 5	ASTM D-2240
Tensile Strength	1100 + 150psi	ASTM D-412
Ultimate Elongation, %	650 + 100%	ASTM D-412
Tear Resistance	200 + 25pli	ASTM D-1004
Pot Life, @77°F	20-25 minutes	
Gel Time, @77°F	45-60 minutes	
Low Temperature Brittleness @-50°F	Passes	ASTM D-746
Flash Points, Mixed Material	Above 200°F	ASTM D-3278
Water Absorption, 1 month @77°F (% weight gained)	1.5% typical	ASTM D-471

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3.5 Reinforcing Fabric: Shall be one of the TUFF-TAPE "PW" woven polyester, high tensile strength, synthetic reinforcing fabrics.

3.6 Reinforcing Membrane: Shall be TUFFLEX "TUFF" high strength, water catalyzed elastomeric polyurethane.

3.7 Reinforcing Aggregate: Shall be equal to the TUFFLEX blended 16/20 mesh crystalline silica. All aggregates shall be fresh water washed, graded or sized, kiln dried and dust free.

4. SUBSTRATE PREPARATION

4.1 Concrete Surfaces:

4.11 The concrete surface must be thoroughly clean, dry and free from any surface contaminates or cleaning residue.
4.12 All cracks over 1/16 inch in width and all moving cracks under 1/16 inch in width shall be routed out to ¼ inch minimum in width and depth and filled flushed with a TUFFLEX-approved polyurethane elastomeric sealant.
4.13 All cracks shall be striped-coated with 25 mils of TUFFLEX Elastomeric Membrane coating for a distance extending to 2 inches on either side of the crack.
4.14 Any expansion and contraction joints shall be cleaned, primed, fitted with a backing rod and caulked with TUFFLEX-approved elastomeric polyurethane sealants.

4.2 Plywood Surfaces:

4.21 Sweep all plywood joints clean and free of sawdust. Caulk and strike smooth all cracks, splits or joint separations in the plywood. Apply joint reinforcements consisting of a brush coat of TUFFLEX "TUFF" Elastomeric Membrane centered over the joint. Imbed the 3 inch wide reinforcing tape into the wet base membrane. Apply a brush coat of TUFFLEX "TUFF" Membrane over the tape and smooth with a trowel.
4.22 Damaged plywood panels shall be repaired or replaced prior to installation of the elastomeric base membrane.

4.3 Flashing:

4.31 All required plywood joint reinforcement, flashing reinforcement and metal to deck reinforcement shall be installed at this time.
4.32 All metal shall be delivered shop primed and then be field primed with TUFFLEX TUFF-POXY Primer #3 (for metal surfaces which may exhibit adhesion difficulties, first prime with a strontium chromate marine-grade epoxy primer).

5. APPLICATION OF MEMBRANE

5.1 Preparation: Prior to commencing with the application, all surfaces to be coated shall be dry and free from any surface contaminates or cleaning residues.

5.2 Primer: Apply the TUFFLEX TUFF-POXY Primer #1 or TUFF-POXY Primer #3 at the approximate rate of 250-350 square feet per gallon. Allow primer to dry until it is tack free. Within 8 hours of application of the primer, the TUFFLEX "TUFF" Elastomeric Membrane must be applied. If the membrane cannot be applied within 8 hours then lightly reprime.

5.3 Mixing: The properly mixed and properly water catalyzed TUFFLEX "TUFF" Base Membrane shall be trowel, squeegee or roller applied in one uniform coat at the minimum rate of 3 gallons per 100 square feet in order to obtain a minimum thickness of 48 wet mils. Thoroughly and carefully imbed the TUFF-TAPE "PW" reinforcing fabric and leave it relaxed wrinkle free and thoroughly saturated in the TUFFLEX Base Membrane. Allow this installation to cure 24-36 hours before proceeding to next step. Do not apply this waterproofing system over working or control joints greater than 1/8 inch wide. Allow the laminated coating system to cure a minimum of 24 hours before the next application.

5.4 Reinforcing Membrane and Aggregate: The properly mixed and properly water catalyzed TUFFLEX "TUFF" Base Membrane shall be trowel, squeegee or roller applied in one uniform coat at the rate of 100 square feet per gallon in order to obtain a minimum thickness of 16 wet mils. While the coating is still fluid, immediately and uniformly broadcast the proper grade of 16/20 mesh TUFFLEX reinforcing aggregate over the surface at a flood coat rate of 25-50 lbs. per 100 square feet. Allow the membrane and aggregate reinforcement to cure a minimum of 48 hours before applying the thin set adhesive, before performing a water test or before installing the protection board.

5.5 Membrane: (It is the responsibility of the general contractor to protect the finished work from damage by other trades.) As soon as possible after completion of a successful water test or other visual inspection and approval, cover and protect the membrane system with a temporary layer of protective plywood.

5.6 Thickness: The overall dry film thickness of the composite laminated waterproofing system shall be a minimum of 64 mils. This thickness measurement, while including reinforcing fabric, is exclusive of reinforcing aggregate.

6. CONTROL JOINTS

6.1 Control joints must be installed where tile abuts restraining surfaces such as perimeter walls, curbs, columns and directly over all joints in structural subsurfaces and shall conform to ANSI Specifications A108.5 and current Handbook of the Tile Council of America.

6.2 Large areas of tile shall have control joints spaced a maximum of 20' x 20' on center for interior installations and 10' x 10' on center for exterior installations.

7. GUARANTEE / WARRANTY

When this Elastomeric Coating System is installed by a Factory Qualified Applicator, is inspected and approved in accordance with these specifications, and after receipt of the final payment, the Factory Qualified Applicator shall issue the applicator's standard installation guarantee covering defects in material and workmanship.

TUFFLEX Polymers (TUFFLEX) warrants its products to be free of defects in workmanship and materials only at the time of shipment from our factory. If any TUFFLEX materials prove to contain manufacturing defects that substantially affect their performance TUFFLEX will, at its option, replace the material or refund the purchase price.

The dollar value of TUFFLEX'S liability and buyer's remedy under this limited warranty shall not exceed the purchase price of the TUFFLEX materials in question.

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