



# INSTALLATION / SPECIFICATION DATA

## ELASTA-TUFF SYSTEM #5000/6000 X-2

### HIGH PERFORMANCE ELASTOMERIC URETHANE WATERPROOFING SYSTEM

#### 1. GENERAL

**1.1 Scope:** This specification covers the installation of a durable, abrasion resistant, elastomeric urethane waterproofing system designed for pedestrian and roof surfaces which require high performance waterproofing. It is a monolithic system, designed to positively waterproof concrete and plywood surfaces by excluding moisture penetration during low temperature freeze-thaw cycling or high temperature, high humidity thermal cycling. This waterproofing system has outstanding adhesion, impact and abrasion resistance, while exhibiting superior flexibility and weather resistance.

**1.2 Work Included:** Install waterproofing consisting of caulking and flashing for joints, LOW VOC TUFF-POXY Epoxy Primer, ELASTA-TUFF 5000 Polyurethane Base Membrane, selected aggregate texture and ELASTA-TUFF 6000-AL Aliphatic Urethane Top Coat. 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 finishing and corrective work in connection with the surfaces which are to receive the liquid-applied coating system. 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 (3000 psi compressive strength recommended), of adequate structural design and thickness, 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 be cured by water curing method or by water based pure sodium silicate solution. Curing compounds or curing agents of any type shall not be used unless they have prior approval from TUFFLEX.

1.43 Concrete shall be cured at least 28 days and 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 Any required crickets or drains should be installed at the time the main deck is poured (i.e. monolithic).

1.46 Voids, rock pockets and excessively rough surfaces shall be repaired with epoxy grout or ground to match the unrepaired areas.

1.47 When metal decking is used as the concrete form, it shall be of the "ventilating type".

1.48 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 Surfaces:

1.51 The plywood shall be identified as conforming to APA Product Standard PS 1-66 and shall be 3/4 inch minimum thickness, tongue and groove, exterior grade B/C, or better. Install with B side up.

1.52 The tongue and groove plywood panels shall be tightly butted while leaving 1/16 inch separation between panels.

1.53 Plywood shall be fastened with non-corroding screws, 10d annular ring or twist shank nails. Space fasteners 6 inches on center along panel edges and 12 inches on center 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 thickness of supporting joists.

1.55 All plywood edges must be supported on blocking or primary framing with plywood panels continuous across two or more spans.

1.56 All adjacent metal flashing, scuppers, vents, etc. shall be galvanized or non-ferrous metal tightly screwed or nailed with ring shank nails, at intervals no greater than 4 inches on center.

1.57 The plywood deck shall be properly sloped so as to freely drain.

#### 1.6 Job Conditions:

1.61 Before any waterproofing work is started the waterproofing installer shall thoroughly examine all surfaces for any deficiencies and waterproofing application shall not begin until corrections are made.

1.62 Do not proceed with application of materials when deck temperatures are less than 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, workmen shall wear the appropriate MSHA/NIOSH 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.

1.65 Protect plants, vegetation, and animals which might be adversely affected by the coating operation.

1.66 This coating system should not be installed onto on-grade slabs, onto split slabs with buried membrane or onto slabs over unvented metal pans without prior approval from TUFFLEX.

#### 2. QUALIFICATIONS

##### 2.1 Professional Installer:

2.11 Shall be experienced in successfully applying the same or similar polyurethane waterproofing materials, shall be properly licensed for this type of work 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 payment bonds and project guarantees as 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 3" X 4" in size, showing the approximate applied thickness, texture and color. The submittal shall also include the manufacturer's installation specification sheet and a list of materials by name and quantity to be used on the project.

#### 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 non-staining one-component or two-component polyurethane compound.

**3.2 Flashing Reinforcement:** Shall be non-staining, uncured neoprene sheet at 45-60 mils thickness, woven polyester or woven fiberglass reinforcing fabric, or as recommended by TUFFLEX.

**3.3 Primer:** Shall be TUFF-POXY 607-WB (water-based) or TUFF-POXY Primer #2 or #3 (solvent-based) Epoxy-Polyamine, low viscosity, two-component primer/sealer.

**3.4 Base Membrane:** Shall be ELASTA-TUFF 5000 single-component, high adhesion, moisture cured, polyurethane membrane and shall meet or exceed the following typical properties:

#### ELASTA-TUFF 5000 Base Coat

| PROPERTY                    | TYPICAL VALUE                | TEST METHOD |
|-----------------------------|------------------------------|-------------|
| Composition                 | Aromatic Urethane            |             |
| Weight Solids               | 85 ± 2%                      |             |
| VOC Content                 | Less than 200 gm/l           |             |
| Hardness, Shore A           | 65 ± 5                       | ASTM D-2240 |
| Tensile Strength            | 900 ± 100 psi                | ASTM D-412  |
| Ultimate Elongation         | 550 ± 100%                   | ASTM D-412  |
| Tear Resistance             | 150 ± 25 lb./in.             | ASTM D-1004 |
| Weather Resistance          | Slight Checking at 500 hours | ASTM D-822  |
| Adhesion to Primed Concrete | 30 pli                       | ASTM D-903  |

**3.6 Abrasion-Resistant Top Coat:** Shall be **ELASTA-TUFF 6000-AL** single component, high tensile strength, abrasion resistant and weather-resistant aliphatic polyurethane coating and shall meet or exceed the following typical performance properties:

**ELASTA-TUFF 6000-AL Top Coat**

| <b>PROPERTY</b>     | <b>TYPICAL VALUE</b>  | <b>TEST METHOD</b> |
|---------------------|---|--------------------|
| Composition         | Aliphatic, Polyester Polyurethane                           |                    |
| Weight Solids       | 80 ± 2%   |                    |
| VOC Content         | Less than 250 gm/l  |                    |
| Hardness, Shore A   | 90 ± 5  | ASTM D-2240        |
| Tensile Strength    | 3300 ± 300 psi  | ASTM D-412         |
| Ultimate Elongation | 250 ± 50%   | ASTM D-412         |
| Tear Resistance     | 350 ± 50 lb./in.  | ASTM D-1004        |
| Water Permeability  | Less than 0.1 Perm  | ASTM E-96          |
| Weather Resistance  | No Chalking @ 2000 hours                                    | ASTM-D-822         |
| Abrasion Resistance | Negligible Change, CS-17 wheels, 1000 cycles, 1000 gm. load | ASTM C-501         |

**3.7 Aggregate:** Shall be rounded, non angular, blended 20 mesh or 30 mesh flint shot silica, Monterey aggregate, colored quartz aggregate or equivalent quality and size, washed and kiln-dried aggregate.

**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. Acceptable methods of cleaning are sandblasting, shotblasting or mechanical grinding followed by the complete and thorough removal of any 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 polyurethane elastomeric sealant.
- 4.13 All cracks shall be stripe-coated with a 4 inch wide by 30 mils thick detail coat of **ELASTA-TUFF 5000**.
- 4.14 Apply a ¾ inch cant of polyurethane sealant around all pipes, drains and vertical junctions and allow to thoroughly cure.
- 4.15 All expansion and contraction joints shall be cleaned, primed, fitted with a backing rod and caulked with elastomeric polyurethane sealants. Joints under ½ inch in width and all caulked cracks shall be stripe-coated with a 30 mil preparatory coat of **ELASTA-TUFF 5000**.
- 4.16 Prior to commencing with the application, all surfaces to be coated shall be dry and free from any surface contaminates or cleaning residues.

**4.2 Plywood Surfaces:**

- 4.21 Sweep all plywood joints clean and free of sawdust. Fill all separations over 1/16 inch in width with polyurethane sealants. Apply joint reinforcement consisting of a brush coat of **ELASTA-TUFF 5000** Detail Coat 30 mils thick, 5 inches wide, centered over all joints and transitions to metal flashings, drip-edges, etc. Imbed 4 inch wide **TUFFLEX “PW”** or **“WG”** reinforcing fabric into the wet membrane. Allow the detail membrane to cure overnight or until firm.
- 4.22 Damaged plywood panels shall be repaired or replaced prior to coating.

**4.3 Flashing Reinforcement:**

- 4.31 All required metal or neoprene flashing and fabric flashing reinforcement and all sealant cants shall be installed at this time.
- 4.32 All metal shall be delivered with a shop primer and then be field primed with **TUFF-POXY 607-WB** (or **TUFF-POXY Primer # 2 or #3**) Epoxy Primer. (For galvanized or other metal surfaces which may exhibit adhesion difficulties, first prime with a zinc-rich or acid-wash-vinyl epoxy primer).
- 4.33 **ELASTA-TUFF 5000** Base Membrane is used as an adhesive for the reinforcing fabric. The reinforcing fabric shall be laid into the wet base membrane with roller, brush or broad blade knife. The fabric shall be laid relaxed, smooth and wrinkle-free and thoroughly embedded in the base membrane.

4.34 Flashings and polyester reinforcing fabric shall be coated (with base coats and top coats) each time the deck is coated.

**4.4 Priming:** Stir each side of primer separately and then mix all of Part A with all of Part B. Use a mixing paddle on a slow speed drill motor. Mix for 2 to 3 minutes and let mixed primer sit 5 minutes before applying.

**5. APPLICATION OF MEMBRANE**

**5.1 Primer:** Apply **TUFF-POXY 607-WB** Water-Based Epoxy Primer at the approximate rate of 250-350 square feet per gallon. Allow primer to dry until it is tack-free. Within 12 hours of application of the primer, the base coat must be applied. If the base coat can't be applied within 16 hours or if the primer is contaminated by rain, then reprime.

**5.2 ELASTA-TUFF 5000 Base Membrane** shall be trowel or squeegee applied, followed by backrolling, in one uniform coat at the rate of 50 square feet per gallon in order to obtain an average thickness of 32 wet mils. Allow each layer of **ELASTA-TUFF 5000** Base Membrane to cure 24 hours before applying the next layer of membrane. Do not apply coating system over joints greater than ½ inch wide.

**5.3 Additional ELASTA-TUFF 5000 Base Membrane** shall be trowel or squeegee applied, followed by backrolling, in one uniform coat at the rate of 50 square feet per gallon in order to obtain an average thickness of 32 wet mils. Allow each layer of **ELASTA-TUFF 5000** Base Membrane to cure 24 hours before applying the next layer of membrane or Top Coat.

**5.3 ELASTA-TUFF 6000-AL PIGMENTED TOP COAT** shall be trowel or squeegee applied, followed by backrolling, in one uniform coat at the rate of 100-120 square feet per gallon in order to obtain an average thickness of 14-16 wet mils. While the coating is still fluid, uniformly broadcast and thoroughly encapsulate 20/30 mesh aggregate into the coating at the rate of 25-40 lbs. per 100 square feet. (If the preceding layers of membrane should become dirty or contaminated or lose their surface tack, wipe clean with xylene immediately before applying the next application.) Allow 16-24 hours curing time before removing excess aggregate and applying the final Top Coat.

**5.4 Additional ELASTA-TUFF 6000-AL Top Coat (PIGMENTED OR CLEAR)** shall be trowel or squeegee applied, followed by backrolling, in one uniform coat at the rate of 100-120 square feet per gallon in order to obtain an average thickness of 14-16 wet mils and to completely and uniformly coat the aggregate.

**5.5 Thickness:** The overall dry film thickness of the completed waterproofing system, excluding aggregate, shall average 68-72 mils.

**6. TRAFFIC ON COATED SURFACES**

The completed coating system shall not be subject to any light pedestrian traffic during the first 24 hours after application is complete nor to any heavy traffic during the first three (3) days after application of the final coat.

**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 their customary and 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.