Substrate Preparation Guidelines

Technical Data Sheet

Substrate Preparation

General

Prior to application of any ALT products or materials, the substrate shall be prepared as recommended by ALT and/or required for the intended application. All substrates must be clean, dry, free of oil, grease, curing compounds, release agents, laitance, gross irregularities, loose, unsound or foreign material such as moss, algae growth, dirt, ice, snow, water or any other condition that would be detrimental to adhesion of the primer and/or resin to the substrate. Some surfaces may require scarifying, sandblasting or grinding to achieve a suitable substrate.

In addition, substrate shall have a maximum moisture content of six (6) percent or 75% relative humidity, and be prepared as required to provide adhesion of the membrane to substrate with a minimum bond strength of 116 psi (0.8 N/mm^2) for roofing applications or 219 psi (1.5 N/mm^2) for traffic systems. Determinations of bond strength and moisture content shall be performed periodically by the contractor throughout the course of work.

Concrete

New concrete must be cured a minimum of 28-days in accordance with ACI-308, or as recommended by the concrete/mortar manufacturer, with a minimum hardness of 3,500 psi (25 N/mm^2).

Where required new and existing concrete shall be abrasively cleaned in accordance with ASTM D4259 to provide a sound substrate free from laitance with an open abraded surface. When using mechanical methods to remove existing waterproofing products or surface deterioration, the surface profile is not to exceed 1/8-inch (3 mm) peak to valley. The substrate shall be sounded and all spalls, voids and blow holes on vertical or horizontal surfaces repaired before placement of the resin waterproofing. Areas of minor surface deterioration of 1/2-inch (13 mm) or greater in depth shall be repaired to prevent possible ponding, leading to excessive usage of primer and/or resin. For concrete materials with a compressive strength of less than 3,500 psi contact ALT Technical Department for substrate preparation requirements.

Masonry

Walls should be constructed of hard kiln-dried brick, concrete block, or other precast tilt-up or cast-in-place concrete construction. Masonry walls shall be prepared in the same manner as indicated for concrete substrates. Membrane must not be applied over soft or scaling brick or masonry, faulty mortar joints, or walls with broken, damaged or leaking coping. Walls of ordinary hollow tile, or other materials which in themselves are not waterproofed, should not be accepted as suitable to receive flashings unless they are properly waterproofed to prevent moisture infiltration from above or behind the flashing system.

Metal & Rigid Plastic

Clean and abrade metals to provide a rough open surface in accordance with SSPC - SP3 (power tool clean) or as required by ALT. Extend preparation a maximum of 1/8-inch (3 mm) beyond the termination of ALT materials. When possible, notch steel surfaces to provide a rust-stop as required.

Wood

Wood plank, timber or plywood shall be prepared as required to provide a suitable substrate for proper application of ALT materials. Fill joints, knot holes or cracks with ALT Poly Paste resin or resin-mortar to provide a level substrate. Cover joints in plywood sheathing with 2” minimum duct tape followed by 6-inch (15 cm) wide strips of ALT membrane flashing.

New plywood shall be structural panels performance-rated pursuant to National Institute of Standards and Technology (NIST) voluntary product standard PS-1-95; identified with American Plywood Association (APA) grade trade marks C-D Exposure 1 rated sheathing or Sanded B-C Group 1 Exterior sheathing; ¾” minimum thickness tongue & groove single layer or 15/32” minimum thickness 2-layer staggered

joint applications; using only screw type fasteners for attachment to structural members.

Hygroscopic building materials such as wood plank, timber or plywood will normally have higher moisture content (in the range of 8% to 12%) as they adsorb or de-sorb moisture to reach equilibrium moisture content with the surrounding air. ALT products should not be applied to damp or wet sheathing materials, but may be applied to materials with higher moisture contents as indicated above, provided the exposed surface is clean and dry. Ultimately, determinations of moisture content and the resulting bond strength should be performed periodically to determine acceptability. If poor adhesion or blistering occurs, substrate will require additional drying time before proceeding.

Asphalt BUR or Granulated Surface Modified Bitumen Membrane

All loose granules, dust and dirt shall be removed from the surface of the built-up roof (BUR) membrane by brooming and/or power vacuuming. For gravel surfaced BUR membranes, gravel should be removed by spudding and power vacuuming. All blisters and ridges must be cut and patched using ALT resin-mortar or an acceptable base sheet overlay to provide a reasonably level substrate.

Note: BUR membranes with gravel surfacing removed generally require a leveling coat of ALT resin-mortar or an acceptable roof recovery overlay board.

Smooth Surface APP Modified Bitumen Membrane

All blisters and ridges must be cut, dried and patched using ALT resin-mortar or an acceptable base sheet overlay to provide a reasonably level substrate.

If a base sheet or overlay is not used, the smooth APP modified bitumen membrane must be broadcast with 0.7 - 1.2 mm quartz silica to full cover. Using a torch or hot-air welder, liquefy the top surface of the APP sheet and embed silica aggregate into the liquid asphalt. After the asphalt has cooled, remove all loose granules, dust and dirt from the surface of the membrane by brooming and power vacuuming.

Framed Wall Construction

Frame walls are not acceptable to receive cold fluid-applied reinforced membrane flashings unless suitable solid backing for the flashing is provided. As minimum sheet metal, plywood or cement backer board should be used as wall sheathing. Walls sheathed with gypsum wall board or other gypsum based products are not acceptable as a substrate for ALT membrane. Suitable stops should be provided at the top of the flashing in curtain wall construction, to ensure a watertight seal for flashings.

Insulation

Insulation may be installed as a separation layer over the existing substrate and/or to obtain the desired thermal value. Rigid foam roof insulation must be 1-inch (2.5 cm) minimum thickness closed-cell polyisocyanurate foam core integrally laminated to heavy non-asphaltic fiber-reinforced felt facers; complying with ASTM C 1289, Type II, Class 1, Grade 2; with minimum compressive strength of 20-psi, nominal 2.0 pcf density; using non-HCFC hydrocarbon blowing agents.

When recommended, cover insulation joints with 1-1/2” minimum duct tape, 6-inch (15 cm) wide strips of ALT membrane. Generally, insulation joints may be sealed with an application of ALT R295 Matrix flashing, ALT R290 Paste resin, or minimum 1-ply fully adhered APP and SBS granulated cap sheet, or smooth SBS heavy base sheet base applied over roof board insulation to provide a monolithic substrate for application of the roofing membrane.

Provide appropriate cover board insulation over rigid foam board insulation where required, and when hot mopping base sheet in asphaltic adhesive. Cover board insulation may be a minimum 1/2-inch thick fiberboard, 4-foot x 4-foot maximum board dimension, complying with ASTM C208, C209 & C165 with 45-psi compressive strength; or other acceptable roof cover board as recommended and/or approved on a case-by-case basis by ALT Technical Department.

Other Substrates

Remove all contaminants as required. Surface preparation shall be performed by means approved by ALT. Contact ALT Technical Department for preparation and treatment not specifically indicated above.

Substrate Repairs

General

Before application of any ALT membrane, all joints, cracks, voids, fractures, and indentations in the substrate must be repaired. The substrate shall be sounded as required to identify all spalls, voids, blisters and blow holes on vertical or horizontal surfaces for repair.

ALT recommends the use of ALT R290 Paste or ALT resin-mortars for all substrate repairs. ALT resin-mortars may be combined with kiln-dried quartz silica to create modified repair mortars used for leveling, patching and repairs. ALT resin-mortars provide fast-set times (45-minutes), unlike polymer modified cement-based repair materials that require several days to cure, allowing application or the ALT membrane immediately after the ALT resin-mortar mixture sets. ALT resin-mortars are recommended for trowel applied vertical and horizontal repairs. Refer to ALT "Resin-Mortar Application, Mixing and Use Guidelines" for additional information regarding recommendations and use of ALT resin-mortars.

Reinforced Membrane Applications

Substrate Leveling & Patching

Fill cavities and depressions with an appropriate ALT resin-mortar leveling mixture as needed to achieve a flat surface. Any surface to be leveled or patched must first be primed with an appropriate ALT primer if required.

Static Cracks

Determine that crack is non-moving. Remove any existing filler and clean out crack by brushing and oil-free compressed air. Fill crack with ALT resin-mortar. Alternately, polyurethane sealant may be used, but must be allowed to completely cure prior to application of ALT primer or membrane.

Dynamic Cracks

Determine that crack is moving. Remove any existing filler and clean out crack by brushing and oil-free compressed air. Fill crack with ALT resin-mortar. Alternately, polyurethane sealant may be used, but must be allowed to completely cure prior to application of ALT primer and membrane. Apply 6-inch (15 cm) wide strip of ALT membrane (resin and reinforcement) in strict accordance with ALT's written instructions.

Non-Reinforced System Applications

Substrate Leveling & Patching

Fill cavities and depressions with ALT RS233 or RS242 mortar leveling mixture as needed to achieve a flat surface. ALT RS233 or RS242 mortar must be used for leveling of all traffic bearing substrates. Larger depth indentations should be filled with ALT RS242 mortar.

Static Cracks

Determine that crack is non-moving. Remove any existing filler and clean out crack by brushing and oil-free compressed air. Fill crack with ALT RS233 mortar or RS242 mortar for larger indentations.

Dynamic Cracks

Determine that crack is moving. Remove any existing filler and clean out crack by brushing and oil-free compressed air. Fill crack with ALT RS233 mortar and allow to cure.

Apply minimum 6-inch (15 cm) wide strip of ALT membrane (resin and reinforcement) in strict accordance with ALT's written instructions.

ALT Membrane Stripping

Using a lambs wool roller apply an even base layer of approved ALT resin, working the ALT Fleece reinforcement into the wet resin while removing trapped air and assuring full saturation of the fleece. Apply an even topcoat of approved ALT resin to achieve uniform coverage and finished membrane thickness.

Base Coat: Minimum of 0.19 kg/sf (2.0 kg/m^2)
Top Coat: Minimum of 0.12 kg/sf (1.3 kg/m^2)

Laps/Seams:
Maintain a minimum 2 inch (50mm) overlap at all end laps of membrane stripping.