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CONCRETE DECK PREPARATION FOR RAM-TOUGH 250DM APPLICATIONS

STRUCTURE

Before starting any waterproofing membrane application, verify the concrete deck has a sound surface, is of sufficient compressive strength (3000 psi minimum) and is capable of supporting maximum anticipated loads.

Lightweight insulating concrete is not an acceptable substrate. Lightweight **structural** concrete of 3000 psi or more is an acceptable substrate.

In new construction it is generally safe for the contractor to assume the designers took into consideration structural load requirements. On restoration projects or when converting to a greenroof installation, it is critical that a licensed professional determines that the deck meets all structural requirements.

SURFACE PREPARATION (New Construction)

A wood float finish, as per American Concrete Institute (ACI) 301 specification, is the preferred finish for newly poured concrete decks. Avoid surface defects such as honeycombing, fins, sharp offsets of the surface plane, ragged corners, spalling, laitance residue or other conditions which could interrupt the even application of the membrane to a firm substrate.

Concrete admixtures and curing compounds which can disrupt the adhesion of the membrane are not acceptable. The use of calcium chloride is also unacceptable. Consult with Barrett Technical Services for specific guidelines. Always test adhesion every hour during application.

Corrected surface defects prior to starting the membrane application. Irregular surfaces can be planed or ground smooth. Cracks greater than 1/16th on an inch, particularly those subject to further movement, should be routed out and patched in accordance with the 301 guidelines. Small cracks can also be stripped with a 6 inch wide strip of Ram 327HDR neoprene membrane set in hot Ram-Tough 250 bitumen. Holes can usually be filled with Ram-Tough 250 bitumen prior to installing the membrane.

Consult ASTM D-5295 "Preparation of Concrete Surfaces for Adhered (bonded) Membrane Waterproofing Systems", for specific information and requirements, including dealing with oily conditions, alkali and acid conditions, laitance and curing methods.

SURFACE PREPARATION (Restoration of Existing Decks)

In most cases, before a new membrane can be installed, all existing membrane materials must be removed. Staining on the deck surface is generally acceptable, but bulk residual material is not. In some cases the deck may require scarification or shot blast to produce an acceptable substrate. If clean concrete is not practical, contact Barrett Technical Services for possible alternatives.

When the old membrane has been satisfactorily removed, survey the deck surface and restore or repair as specified under the ASTM D-5295 standard and The International Concrete Repair Institute (ICRI) Guideline 03732 for Surface Preparation.

The existing deck may require significant concrete restoration to assure structural integrity. If there is any doubt about the condition of the concrete deck, an engineer familiar with concrete testing and restoration, should be consulted.

MOISTURE TESTING

Both new and existing concrete must be sufficiently cured and dry before applying the membrane. Excessive moisture in the concrete can result in adhesion issues and pinholes.

Typically new concrete should be allowed to cure for 28 days. However, if curing conditions are ideal, it is possible to reach an acceptable moisture content in less time, but never less than 7 days.

When the deck has sufficient curing time and appears dry, there are several moisture tests which can be utilized to determine if the deck is ready to accept the waterproofing membrane. The most common is ASTM 4263 (Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method). This standard recommends one 18 inch square test patch for every 500 sq.ft. of deck area.

A more sophisticated test method, ASTM F-1869-04, (Measuring Moisture Vapor Emission Rate of Concrete using Anhydrous Calcium Chloride), measures concrete slab moisture emission rates in pounds per 1000 sq.ft. over a 24 to 72 hour time period. The maximum vapor emission rate acceptable is 5 lbs/1000 sq.ft. per 24 hours.

Test kits to perform this field test are available on-line from a variety of suppliers such as Taylor Tools 303-371-7667 (www.taylorstools.com) or American Moisture Testing, Inc. 949-851-9011 (www.americanmoisturetest.com).

SURFACE TREATMENT

When moisture detection tests indicate the deck has reached an acceptable moisture level, sweep or blow the surface clean of all dirt and debris with compressed air that is filtered to eliminate all moisture and oil.

Apply Barrett Ram Primer and Surface Conditioner at a rate of 100 to 300 sq.ft. per gal. (brush) or 300 to 500 sq.ft. per gal. (spray), depending on the surface to be primed. Allow primer to dry tack free.

Primed areas that become contaminated from construction dust or anything that would affect the membranes adhesion must be re-primed and allowed to dry.

MEMBRANE ADHESION TESTING

Before starting the application of the membrane, it is recommended that a membrane adhesion test be performed. The most practical on-site test is to coat a small section of the deck with the required 90 mil base coat of Ram-Tough membrane. When cool, apply a 8 inch piece of 2 inch wide duct tape to the surface, allowing one end (approximately 1 to 2 inches) to remain unattached. Press the rest firmly against the membrane.



Taking a firm grip on the unattached end, try to peel the tape from the surface. (see picture above). If good adhesion is being achieved, some Ram-Tough 250 will pull away with the tape, due to its elasticity, but the lower strata will not release from the deck's surface.

If the Ram-Tough 250 releases from the deck, some form of bond breaker exists and the problem must be addressed before proceeding. Due to surface variations from area to area, it is recommended that this test be run approximately every hour, along with thickness checks, during the application of the membrane.