



Ultraseal 3750 MTO Waterproofing Membrane Installation Instructions - Single Layer Application

MATERIALS

Ultraseal 3750 MTO Waterproofing Membrane (Part No. 89020)

Ultraseal 3750 MTO Waterproofing Membrane is a hot-applied asphalt-based composition which is specifically formulated as a fluid material which is applied to form a continuous adhered waterproofing system.

Crafco Asphalt Primer (PN 33140) or Ultraseal Asphalt Primer (PN 89037)

Primer is a specially formulated solvent based asphalt primer that is used to improve adhesion of asphalt product to various surfaces. Emulsion types of Tack Coats or Primers are not acceptable.

Ultraseal Reinforcing Fabric (Part No. 89050)

Reinforcing Fabric is a spun bonded sheet structure composed of 100% continuous filament polyester fibers bonded together at their crossover points.

Ultraseal Protection Board (Part No. 89062)

Protection Board shall be durable panel 3.0 ±1.0 mm thick specifically designed to provide a protective cushion between the asphalt pavement layer and the Rubberized Asphalt Membrane layer, and shall be manufactured, supplied or recommended by Crafco and approved by the Designer.

The Protection Board shall have water absorption of 5% or less. The Protection Board shall consist of spun glass fibers. Use of Protection Boards containing cellulose reinforcing fibers is not permitted. Protection Board shall show no evidence of delamination, pumping, stripping of the aggregates, or any signs of incompatibility between the boards and asphalt pavement.

Size of Protection Boards shall have a thickness of 3 mm ±1 mm with straight edges, square corners, and edges free of burns and breakaways.

CONSTRUCTION

Weather Limitations

Application of primer and installation of waterproofing system and pavement overlay shall be undertaken only during stable weather when precipitation has not occurred during the previous 48 hours and is not imminent, and when the minimum ambient and concrete surface temperature is 40°F (5°C) and rising.

Substrate Conditions

Prior to application of Ultraseal 3750MTO Waterproofing Membrane System, new concrete shall be cured not less than 14 days depending on the curing rate of the concrete. The moisture condition of the concrete surface shall be sufficiently dry to prevent vaporization of moisture and blistering during application of the primer, primer and membrane.

Waterproofing System Procedure

The Contractor shall perform the waterproofing system installation in accordance with the Installation Instructions provided herein and in sequential order, such that there are no delays except those necessary to meet the requirements of this specification.

Surface Preparation

All concrete surfaces shall be prepared and conditioned in accordance with the Installation Instructions and shall be sound, clean and free from any contamination.

- a) All defects in concrete surfaces, cracks, delamination, and spalled areas shall be repaired with a suitable patching material. All patching shall be cured to the patching Contractor's supplier/manufacturer's specification.
- b) All protrusions, ridges, trowel marks and sharp edges shall be removed by grinding. CrafcO recommends that the Surface Preparation shall be prepared so that the protrusions, ridges, trowel marks and sharp edges shall be removed by grinding so that the deck has blunt protrusions not exceeding 5 mm (200 mils) or depressions not to exceed 10 mm (400 mils).
- c) Exposed deck surfaces and concrete-filled shear keys between pre-stressed units shall not have textured finishes. The surface of the concrete shall be completely treated by sand blasting or steel shot blasting to expose sound laitance-free concrete.
- d) All dust and debris resulting from the concrete deck surface preparation shall be removed and disposed of.

Priming

All concrete deck surfaces that are to receive Ultraseal 3750MTO waterproofing membrane must be primed with Ultraseal primer or equivalent. Ultraseal Asphalt Primer is to be applied by brush, roller or spray at an application rate of between approximately 200 to 400 ft²/gallon (0.025 to 0.05 gsy). Application rate will depend on surface condition, porosity and texture. Application should result in a completely wetted surface without puddling. Primer must completely cure prior to membrane installation. Curing time required depends on weather conditions, including temperature, cloud cover, wind and humidity. At 70°F (21°C) on a sunny day curing will generally take from 30 minutes to 2 hours. At temperatures below 55°F (13°C) primer should be allowed to cure for at least 16 hours or overnight. Minimum temperature for primer applications is 45°F (7°C). Primer is cured sufficiently when it reaches a tacky condition when touched with no transfer to one's finger. All areas of the primed surface must reach this state of curing prior to membrane application. Membrane should be applied the same day as when the primer becomes fully cured. If membrane is not applied that day, the surfaces should be re-primed. Other primer types will have different application rates, methods and curing requirements. For other approved primers, contact CrafcO, Inc.

Concrete Surfaces

All concrete surfaces shall be clean and fully dry prior to application of primer. Immediately prior to the application of the primer, the concrete surface shall be cleaned by sweeping with high pressure clean, dry, oil-free air. Cleanliness of compressed air shall be tested according to ASTM D 4285 - 83 (2006) Test Method for Indicating Oil or Water in Compressed Air.

Primer Application

Primer application shall proceed only if the condition of cleaned and repaired concrete surfaces is in accordance with the condition stated in the Installation Instructions.

All concrete surfaces to be covered with Ultraseal 3750MTO waterproofing membrane shall be uniformly treated with primer at an application rate of approximately 200 to 400 ft²/gallon (0.025 to 0.05 gsy). Application rate will depend on surface condition, porosity and texture. Application should result in a completely wetted surface without puddling. Primer must completely cure prior to product installation. Curing time required depends on weather conditions, including temperature, cloud cover, wind and humidity. Primer is cured sufficiently when it reaches a tacky condition when touched with no transfer to one's finger. All areas of the primed surface must reach this state of curing prior to product application.

Equipment

As a minimum, heating and mixing kettles shall be of the double boiler oil heat transfer type with a built-in agitator and equipped with two functional permanently installed dial type thermometers with an accuracy of $\pm 2^{\circ}\text{C}$ to measure the temperature of the melted compound and oil. A separate calibrated thermometer with an accuracy of $\pm 2^{\circ}\text{C}$ to verify the material temperature shall be available on the job site.

Detail Work

Extra attention must be given to all detail work which shall be performed prior to final installation of the Ultraseal 3750MTO waterproofing membrane. The work shall be completed in accordance with the Installation Instructions.

i) Waterproofing of joints, cracks, segment joints and shear keys - Prior to the application of the hot Ultraseal 3750MTO waterproofing membrane to the deck, a coat of hot Ultraseal 3750MTO waterproofing membrane of 4±1 mm thick and 8" (200 mm) wide on either side of joints or cracks or shear keys shall be applied to primed concrete surface.

Joints and Cracks - all filled cracks wider than 3 mm, all precast segment joints, and all joints with a gap less than 6 mm, shall be covered with a Reinforcing Fabric. Joints wider than 6 mm shall be treated as a standard expansion joint and the Ultraseal 3750MTO waterproofing membrane System shall be terminated at expansion joint assembly if approved by the Designer.

ii) A strip of Reinforcing Fabric 12" (300 mm) wide shall extend 6" (150 mm) on either side of the precast segment joint, construction joint crossed by post-tensioning, lift hook pockets on main span panels, shear key, patch or crack and shall be placed and pressed directly in the hot and tacky Ultraseal 3750MTO waterproofing membrane. Reinforcing Fabric shall be overlapped a minimum 4" (100 mm) when multiple strips are used.

iii) Waterproofing along curbs, barrier walls, parapets, deck drains, and expansion joints- the Ultraseal 3750MTO Waterproofing Membrane System shall be applied to the height of the top of the asphalt-pavement surface course, and 6" (150 mm) onto the deck.

Application of Ultraseal 3750MTO waterproofing membrane

i) Ultraseal 3750MTO waterproofing membrane shall be melted in the heating kettle specified. The contents shall be continuously agitated until the material can be drawn free flowing and lump free from the kettle at a temperature within the range recommended by Crafcoc (350°F-400°F / 176°C-204°C).

ii) Ultraseal 3750MTO waterproofing membrane shall not be applied until the primer has cured completely. The Ultraseal 3750MTO waterproofing membrane shall be applied within the temperature range recommended, to the clean primed concrete deck, to form a uniform film having a thickness of 5 mm ±1 mm (200 mil +/- 25 mil). The application of Ultraseal 3750MTO waterproofing membrane shall be such that discontinuities in the membrane are avoided and any joints lapped 6" (150 mm). The Ultraseal 3750MTO waterproofing membrane shall be applied over all waterproofed joints and cracks, and shall extend up the face of curbs, parapets, deck drains, and expansion joints, to the height of the top of the asphalt pavement surface level course. Deck drains and drainage tubes (weep holes) shall not be plugged. It is suggested to use backer rod or similar to protect drains and drainage tubes (to be removed at completion of waterproofing process).

iii) As the Ultraseal 3750MTO waterproofing membrane is installed, the Contractor shall frequently measure the specified thickness and inspect the surface for pinholes, bubbles and missed areas. Defects such as bubbles, pinholes, low thickness and missed areas shall be repaired before the Ultraseal 3750MTO waterproofing membranes cools.

Installation of Protection Board

The Protection Board shall be laid on the Ultraseal 3750MTO waterproofing membrane the length of board running transversely, on the deck, while the membrane is still hot. Protection Boards shall be placed with edges overlapping minimum ½" (12 mm) to maximum 1" (25 mm) both longitudinally and transversely. Protection Board edge shall be placed within ¼" (5 mm) of all curbs, drain verticals and deck joint verticals.

In instances where the final hot-mix asphalt concrete overlay thickness is 2" or less, Protection Board should not have overlapped edges; rather, boards should be placed edge to edge and butted up against one another.

Protection Boards shall be placed such that the joints lap in the direction of traffic flow and be staggered a minimum of 6" (150 mm). It shall be rolled by means of a linoleum or lawn type roller while the membrane is still warm, in order to ensure good contact with the asphalt membrane. Holes shall be cut through the Protection Board to allow water to drain freely through the drainage tubes.

In instances where edges of the Protection Board curl up, the edges shall be cemented down using hot Rubberized Asphalt Membrane material. Protection Boards that are warped, distorted or damaged in any way, by manufacture, storage, handling or exposure to weather, shall be rejected.

PAVING WITH HOT-MIX ASPHALT CONCRETE: Paving can occur immediately after installation of protection board. Following installation, the membrane may be exposed to rain without damage, but it must be dry prior to paving. Minimum compacted asphalt concrete thickness is 2" (5 cm). The first 1.5 in (3.8cm) thickness of the overlay shall be applied in a single lift. The asphalt concrete mixture type used shall be hot –mix asphalt concrete as specified by the highway agency.

Tack Coat: A tack coat must be applied over the membrane prior to paving. Recommended tack coat application rates are 0.10 to 0.12 gsy (residual) of paving grade asphalt cement or standard emulsified asphalt tack coat materials. Cutback tack coats are not permitted as they may soften the membrane.

Placing Asphalt Concrete: The hot–mix asphalt concrete is placed using standard procedures. Laydown should proceed smoothly and uniformly to minimize starting and stopping which may damage the membrane. Mix should be placed from low to high points. The minimum asphalt concrete mix thickness of 2" (5 cm) placed in a single lift. Additional layers of asphalt concrete mix can be added after initial lift.

ADDITIONAL INFORMATION:

STORAGE: Pallets of product are protected with a weather resistant covering. During storage, this covering must be intact to prevent boxes from getting wet. If wet, boxes may lose strength and crush. Rips in the pallet covering should be repaired to maintain packaging integrity. Pallets should be stored on a dry, level surface with good drainage. Pallets should not be stacked because crushing of bottom of boxes may occur. Product properties are not affected by packaging deterioration.

SAFETY PRECAUTIONS: Since this product is heated to elevated temperatures, it is essential that operations be conducted safely. All personnel need to be aware of hazards of using hot applied materials and safety precautions. Before use, the crew should read and understand product use and safety information on the box and the product MSDS. User should check D.O.T. requirements for transportation of product at elevated temperatures above 212°F (100°C).

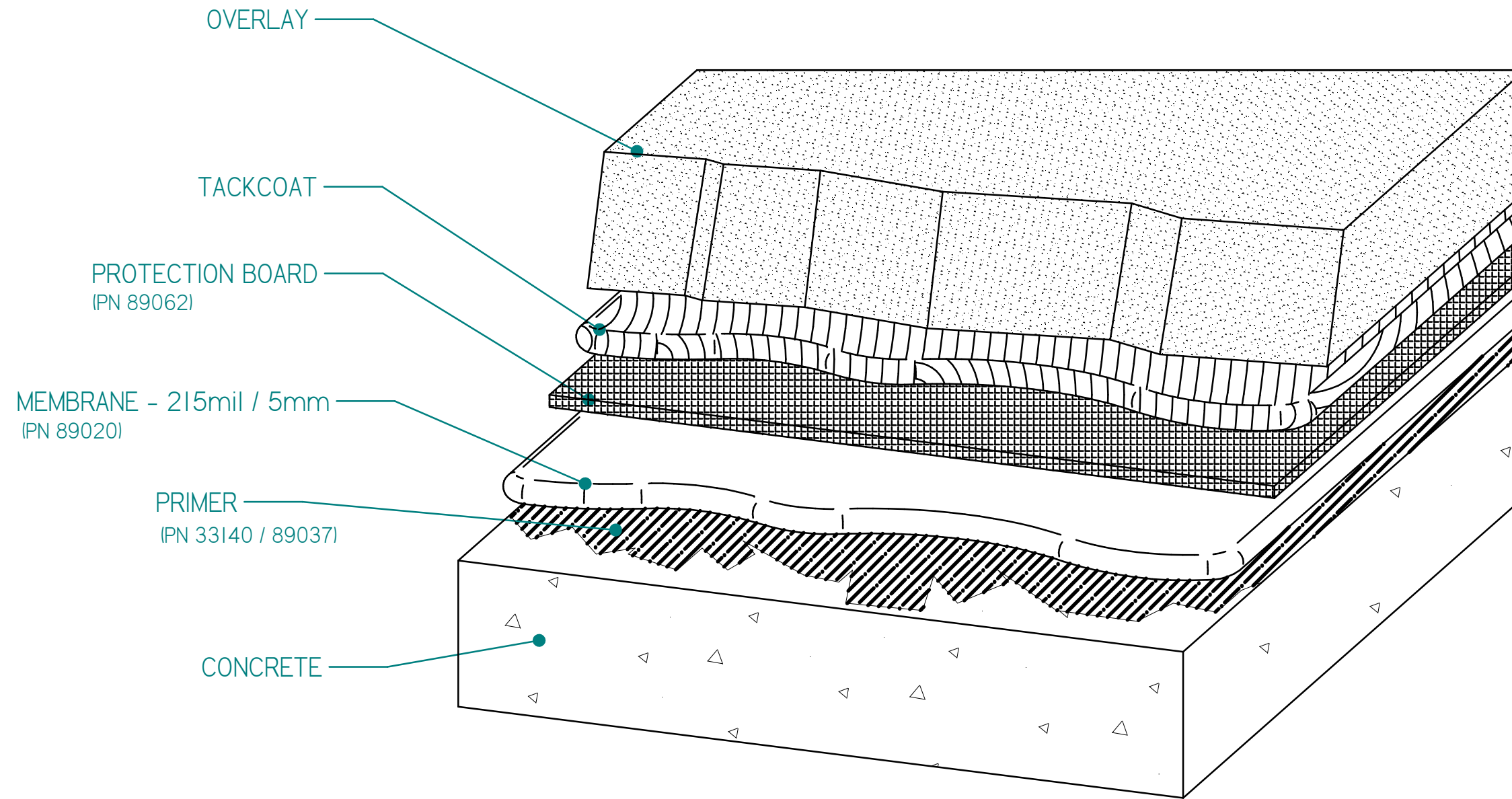
HAZARDS ASSOCIATED WITH HOT-APPLIED MATERIALS: Skin contact with hot materials causes burns. Over exposure to fumes may cause respiratory tract irritation, nausea, or headaches. Precautions are to be taken to prevent contact with hot material to avoid inhalation of fumes for everyone in the vicinity. Safety precautions should include:

1. Protective clothing to prevent skin contact with hot material.
2. Care when adding product to melters to reduce splashing.
3. Careful operation of wands or pour pots that apply product.
4. Traffic and pedestrian control measures which meet or exceed MUTCD requirements to prevent access to work areas while product is in a molten state.
5. Avoidance of material fumes.
6. Proper application configurations with a minimum amount of material excess.
7. Appropriate cleanup of excessive applications or product spills.

For additional information, refer to Product Data Sheets and Material Safety Data Sheets for these products or contact CrafcO, Inc. at www.crafcO.com.

NOTES: SINGLE LAYER SYSTEM

REVISIONS			
DATE	REV	BY	DESCRIPTION



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TOLERANCES:
(UNLESS OTHERWISE SPECIFIED)
.X +/- 0.06
.XX +/- 0.03
.XXX +/- 0.015
ANGLES +/- 1/2

DRAWN BY: GFR
DATE: 9/7/18
MATERIAL: STOCK #

CRAFTCO® INC
AN **ERGON** COMPANY

TITLE: ULTRASEAL BRIDGE DECK WATERPROOFING SINGLE LAYER TYPICAL ASSEMBLY

SIZE: B	SCALE: N/A	DRAWING NO.: N/A	REV: 0
DO NOT SCALE DRAWING		SHEET NO. 1 OF 1	