BRIDGE DECK WATERPROOFING

CRAFCO INC
AN ERGON COMPANY

PROTECT YOUR ASSETS
Hot Applied Waterproofing

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Why waterproof?

Protect deck from corrosion due to:
• Moisture
• Salt
• Chemicals
Look familiar?
Why Waterproof?

Air Voids =
Moisture =
Water =
Carrier to Pathways =
Caustic Elements
(Salts, etc.) =
Corrosion =
FAILURE

SOLUTION $\Rightarrow$ Eliminate Air Voids
A little history

1960’s
Partnership - Shell Oil & Uniroyal

Polymer Modified Asphalt

Used throughout the world to waterproof above grade, below grade, roofing assemblies, and foundations.

SOLUTION ⇔ Eliminate Air Voids
Why does it work?

Flow ● Hot Applied ● Seamless ● Voidless
Tenacious Bond ● Crack Bridging / Flexibility
The Science

Crack Sealant (6690-II) vs. 3750
Tenacious Adhesion = Stronger Bond to Deck
Toughness = Resists Slipping
## System Specifications

<table>
<thead>
<tr>
<th>Test Description</th>
<th>ASTM 6690-II</th>
<th>CAN/CGSB 37.50-M89</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cone Penetration @ 77° F (25° C)</td>
<td>90 max.</td>
<td>110 max.</td>
</tr>
<tr>
<td>Softening Point</td>
<td>80 min.</td>
<td></td>
</tr>
<tr>
<td>Bond @ -29° C</td>
<td>Pass 3 Cycles</td>
<td></td>
</tr>
<tr>
<td>Resilience %</td>
<td>60% min.</td>
<td></td>
</tr>
<tr>
<td>Flow @ 140° F (60° C)</td>
<td>3 mm max.</td>
<td>3 mm max.</td>
</tr>
<tr>
<td>Cone Penetration @ 122° F (50° C)</td>
<td></td>
<td>200 max. [± 130 avg.]</td>
</tr>
<tr>
<td>Toughness</td>
<td></td>
<td>5.5 joule min.</td>
</tr>
<tr>
<td>Toughness Ratio</td>
<td></td>
<td>0.040 min.</td>
</tr>
<tr>
<td>Adhesion Rating</td>
<td></td>
<td>1 min.</td>
</tr>
<tr>
<td>Water Vapor Permeance</td>
<td></td>
<td>1.7 ng/Pa·s·m² max.</td>
</tr>
<tr>
<td>Water Absorption</td>
<td></td>
<td>Loss in mass of 0.18 g max. Gain in mass of 0.35 g max.</td>
</tr>
<tr>
<td>Pinholing (250 mm x 250 mm)</td>
<td></td>
<td>1 max.</td>
</tr>
<tr>
<td>Low Temperature Flexibility @ -13° F (-25° C)</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Crack Bridging @ -13° F (-25° C)</td>
<td></td>
<td>Pass 10 Cycles</td>
</tr>
<tr>
<td>Heat Stability, 5 hours</td>
<td></td>
<td>Pass</td>
</tr>
<tr>
<td>Viscosity @ 400° F (204° C)</td>
<td></td>
<td>2 to 15 seconds</td>
</tr>
<tr>
<td>Flash Point</td>
<td></td>
<td>500° F (260° C) min.</td>
</tr>
</tbody>
</table>
Recent Case Study - NDOR

Bridge – Constructed in 1930s
Expanded in 1970s
Addition of hot applied system / overlay
Rehab within last 5 years

Results of Core Samples
Protecting our Infrastructure Investment

Hot Applied Waterproofing

Ultraseal Sealant

Waterproofing
Hot Applied System

Asphalt Pavement Overlay
Asphaltic Protection Board
Hot Applied Polymer Modified Asphalt Membrane
Reinforcing Fabric
Hot Applied Polymer Modified Asphalt Membrane
Primer

Concrete Bridge Deck
Primer Application

- Primer should be spray applied. Allow primer to dry thoroughly.
- Rate of application: 200-400 ft² per gallon.
Membrane Application

• Use a double-jacketed melter with mechanical agitation.

• Treat construction joints and cracks greater than 1/16” with a 125 mil coat of ULTRASEAL 3750MTO

• All detail work should be completed prior to application of the membrane.

• May be squeegee applied on horizontal surface.

• Hand troweled or roller applied on vertical surfaces.
Detail Work

Initial membrane application: 90 mils
Reinforcing fabric is embedded into the membrane while it is still warm and tacky.
Rubberized Waterproofing Membrane

• A second coat of ULTRASEAL 3750MTO is then applied at a minimum thickness of 125 mils.

• Be sure to fully encapsulate the reinforcing fabric within the membrane.
Membrane Application

Membrane should be 215 mils (5 mm) thick.
Membrane Application

Membrane should be 215 mils (5 mm) thick
Protection Board

Install the protection board in a staggered pattern – 1” overlap
Protection Board

Detail Work
Protection Board

Detail Work
Advantages

Completely monolithic – no seams!

Fully bonded

Conforms to all surface irregularities and bonds tenaciously to acceptable substrates eliminating lateral migration of water.

Tough, flexible, thick, self-healing membrane

100% Solids - One component

No solvents means no on-site cure failures

No two part mixing

No VOC restrictions

LONG LIFE
Advantages

Can be installed at temperatures as low as 0° F (-18° C)

*Provided the substrate is clean, dry, free of snow and frost*

Typically installed at 200-215 mils thick with Reinforced Fabric Assembly

*This is more than three times thicker than most other waterproofing membranes. Thickness is an important benefit in that ULTRASEAL 3750MTO exhibits the ability to self-heal and better accommodate developing cracks in a concrete substrate.*

Can also be used in a single layer application – typically installed at 190+ mils.
Limitations

- Is not intended as an exposed membrane
- Lightweight insulating concrete is not an acceptable substrate
- For applications below 32°F (0°C), consult Crafco
Tools

- Specification document (PDS)
  - Application Instructions
    - MSDS
  - Job site checklist
  - Application video
- Contractor installation certification checklist
  - Contractor Certification by Crafco
Look familiar?

Most will have this type of equipment in house. Oil jacketed protects the integrity of the product.
Protect Your Assets

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