

665 MEMBRANE

SPECIFICATION FOR WATERPROOFING BRIDGE DECKS

PART 1 - GENERAL

DESCRIPTION:

The work in this section includes requirements for membrane waterproofing of highway bridge decks.

Related work specified elsewhere:

- Concrete Work: Section _____
- Prefabricated Expansion Joints: Section _____
- Sealants and Caulking: Section _____
- Drains: Section _____

SUBMITTALS:

- Submit the following samples for approval:
 - 1) One square foot sample of *665 Membrane*
 - 2) One pint of *650 RC Liquid Adhesive* (when applicable for use on the project).
 - 3) One tube of *650 Mastic*
- Submit copies of manufacturer's product description, product usage, and product application for all materials proposed for use on the project.

DELIVERY AND HANDLING:

Delivery: Materials should be delivered in manufacturer's original, unopened packaging with labels attached.

Handling: All materials must be handled in a manner to prevent damage. Any material damaged must be removed from the project area and replaced with new material.

Polyguard products must be handled in accordance with *Polyguard Products, Inc.* guidelines. *Liquid Adhesives* and *Mastics* are solvent based liquids and are flammable. No open flames, sparks, or smoking should be allowed in the immediate area.

JOB CONDITIONS:

Polyguard Waterproofing Materials should only be applied under proper weather conditions. *665 Membrane* should be applied at temperatures of 45° F, and above.

All concrete must be cured a minimum of seven days and be dry to the touch before applying *Polyguard Waterproofing*. Lightweight structural concrete must be dried a minimum of 14 days prior to waterproofing application.

All drains, curbs, and protrusions must be in place before waterproofing application begins.

Surfaces to receive the *Polyguard Waterproofing System* materials must be smooth, dry, and free of dust, dirt, loose aggregate or other foreign materials. Surfaces must be free of voids, spalled areas, loose aggregate, and sharp protrusions. Surfaces must be free of contaminants from release agents that contain wax, oil, silicone, or pigment.

The concrete surface must resemble a troweled texture. A float or broom finish is generally acceptable.

PART 2 - PRODUCTS

MANUFACTURER:

Products specified for waterproofing bridge decks are manufactured by *Polyguard Products, Inc.*, PO Box 755 Ennis, Texas 75120-0755, phone: 214-515-5000. Website: www.PolyguardProducts.com

- *665 Membrane*
- *650 RC Liquid Adhesive*
- *650 mastic*

MATERIALS:

665 Waterproofing Membrane is self-adhering membrane consisting of rubberized asphalt laminated to a polypropylene mesh to form a minimum 65 mil membrane. *665 Membrane* is 4 feet wide by 50 feet long. The membrane is delivered on a silicone release liner that serves as a carrier. The release liner is removed prior to application of the membrane. *665 Membrane* is completely cold-applied and requires no special adhesives or heating equipment.

PART 3 – EXECUTION

INSTALLATION:

PRIMING:

- 1) Never apply *650 RC Liquid Adhesive* to wet or frozen surfaces.
- 2) When substrate is ready, apply *650 RC Liquid Adhesive* at a rate of 300-400 square feet per gallon (250 square feet on milled surfaces) using lambswool roller, brush, squeegee, or spray apparatus.
- 3) Allow primer to dry until tack-free.

- 4) Prime only the area which can be covered with membrane in the same working day. Areas primed and not covered with membrane within 24 hours should be reprimed. Smoothness and porosity of the concrete will effect coverage rate.
- 5) Do not apply liquid adhesive at heavier rates than recommended. Excessive material build-up will delay drying and membrane application.

665 MEMBRANE INSTALLATION - HORIZONTAL SURFACES:

- 1) *665 Membrane* should be applied to the primed surface starting at the low point and working to the high point in a shingling technique.
- 2) Side laps should be a minimum of 3 inches and end laps a minimum of 6 inches.
- 3) At parapet walls, apply membrane to extend vertically a minimum of 1" - 2" up the parapet wall. Press that portion of the membrane at the parapet/deck interface firmly into the concrete, with the objective being to eliminate any voids or tented areas. The horizontal edge of the membrane on the parapet wall is to receive a bead of *650 Mastic*. This mastic bead should then be tooled firmly along the edge so that a continuous edge seal is created.
- 4) At drains, apply a double layer of *665 Membrane*.
- 5) Inadequately lapped seams and damaged areas should be patched with small sections of *665 Membrane*. The patch area should extend at least 6 inches beyond the defect.
- 6) Fishmouths and severe wrinkles should be slit, flaps overlapped, and repaired as above.
- 7) All inside and outside corners shall be treated with 12 inch strips. The field membrane should be placed over the corner treatment. It is recommended that inside corners have a minimum 3/4 inch fillet of *LM 95 Liquid Membrane* or latex modified cement mortar.
- 8) Double ply all non-working joints or cracks over 3/16" width with a 6" to 12" piece of *665 Membrane*.
- 9) Perform any additional detailing as required by D.O.T. specifications.
- 10) Limited construction traffic can be allowed on the membrane prior to paving. Especially when membrane has been installed on milled surfaces, this will help insure adhesion and minimize air pockets between the substrate and membrane. However, any bridge traffic should be kept to lower than normal speeds because the polypropylene backing of this membrane, in the event of rain, can be more slippery than a normal pavement surface.
- 11) A tack coat of asphalt or asphalt emulsion is applied prior to the bituminous overlay.
- 12) It is recommended that the bituminous overlay be not less than 2" in thickness and not above 300° at time of application.
- 13) The use of vibratory rollers over *Polyguard* membrane is not recommended.

Limitations: If a Superpave overlay requiring higher paving temperatures than 300°F is specified, contact *Polyguard* for technical advice. Woven polypropylene backings are subject to high shrinkage at over 300°F.

PHYSICAL PROPERTIES:

665 Membrane will meet the following physical properties:

| PROPERTY/UNIT | TEST METHOD | MARV VALUE |
|--|---------------------------------|---|
| Thickness | ASTM D 1777 (1/2" presser foot) | 65 mils. |
| Strip Tensile Strength | ASTM D 882 | 85 lbs./in. Width |
| Grab Tensile Strength | ASTM D 4632 | 200 lbs. |
| Puncture Resistance | ASTM E 154 | 299 lbs. |
| Permeance - Perms | ASTM E 96 (Method B) | 0.05 max. |
| Elongation at break of fabric | ASTM D 4632 | 20% |
| Pliability at low temperatures (@ -15°F) | ASTM D 146 (Modified) | No cracks in fabric or rubberized asphalt |

650 RC Liquid Adhesive will meet the following physical properties:

| PROPERTY/UNIT | TEST METHOD | TYPICAL - ENGLISH | TYPICAL - METRIC |
|------------------|-------------|-------------------|------------------|
| Color | - | Black | Black |
| Specific Gravity | ASTM D 891 | .92 | .92 |
| Flash Point | ASTM D 56 | 45° F | 7° C |

650 Mastic will meet the following physical properties:

| PROPERTY/UNIT | TEST METHOD | TYPICAL - ENGLISH | TYPICAL - METRIC |
|------------------|-------------|-------------------|------------------|
| Color | - | Black | Black |
| Specific Gravity | ASTM D 891 | 1.12 | 1.12 |
| Flash Point | ASTM D 56 | 105° F | 41° C |

LM 95 Liquid Membrane Mixture will meet the following physical properties:

| PROPERTY/UNIT | TEST METHOD | TYPICAL - ENGLISH | TYPICAL - METRIC |
|---|-------------|---|------------------|
| Description | - | 2 Component Urethane Waterproofing – mix on job | |
| Solids Content | ASTM D 1754 | 100% | 100% |
| Viscosity @ 80° F (27° C) Brookfield @ 20 RPM | ASTM D 2196 | 61 | 61 |

END OF SECTION