ITEM 03594.50 M - MEMBRANE WATERPROOFING SYSTEM FOR TIMBER STRUCTURAL DECKS

DESCRIPTION. This work shall consist of furnishing and applying a membrane waterproofing system where indicated on the Contract Plans. The work shall include the preparation of timber surfaces. The Contractor shall select, furnish, and apply one of the membrane waterproofing systems included in this specification. The Contractor shall also apply an asphaltic primer to the timber surfaces prior to applying the membrane waterproofing systems.

The Contractor has the option of using any one of the membrane waterproofing systems included in this specification, as desired. However, only a single system may be used on any one structure, regardless of the length or design of that structure.

MATERIALS.

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Membrane Waterproofing System. The membrane waterproofing shall be a preformed sheet. The membrane waterproofing system shall consist of one of the proprietary sheet systems.

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A. PREFORMED SHEET MEMBRANE MATERIALS

1. GeoTac Waterproofing Membrane as manufactured by Contech Construction Products, Inc., Middletown, Ohio.

2. PetroTac as manufactured by Phillips Fibers Corporation, Greenville, South Carolina.

B. ASPHALTIC PRIMERS

The asphaltic primer shall be recommended by the manufacturer of the sheet membrane used.

C. WIRE MESH

Wire mesh for use over subdrainage openings shall be 6 mm mesh, 23 gauge hot-dipped galvanized cloth.

CONSTRUCTION DETAILS.

General.
Work shall not be done during wet weather conditions nor when atmospheric conditions are such that unsatisfactory results will be produced. The Engineer shall be the sole determiner of favorable atmospheric conditions. No work shall be done when the deck surface or ambient temperatures are below 10°C. The timber structural deck shall be surface dry at the time of application of the membrane waterproofing system.

Timber Structural Deck Cleaning. All structural slab surfaces and any other surfaces against which the membrane waterproofing system is to be placed shall be free of all loose material, including dirt, and gravel. The deck shall be cleaned by vacuuming or blowing with compressed air.

Primer Application. After cleaning, all surfaces to be waterproofed shall be primed with the reccommended primer for the manufacturer selected. The primer shall be thoroughly mixed prior to application. Mixing shall be done with mechanical mixers or by hand mixing using clean paddles or other suitable instruments.

The primer shall be applied, without dilution, using brushes, squeegees, rollers, or a combination of these methods. Spray applications will be allowed if the Engineer determines that wind conditions are such that there will be no overspraying. The Engineer shall be the sole determiner of whether or not the primer will be spray applied. The primer shall be applied at the rate reccommended by the manufacturer to ensure the surface is thoroughly and uniformly covered. The primer shall be allowed to dry to a “tack free” condition prior to the application of the

preformed membrane. Excess primer, occurring as puddles or wet areas, shall be removed by brushes or as directed by the Engineer.

Preformed Sheet Membrane Installation.

1. General. The preformed membrane sheets and "flashing strips" shall be placed longitudinally on the structural slab so that both the longitudinal and transverse overlaps are formed in the direction of water drainage (See Plates 1 and 2). "Flashing strips" shall be defined to mean sections of membrane which are used to waterproof vertical surfaces and seal the intersection of the vertical surface with the structural slab. At those locations where no cross slope exists on the structural slab, the transverse water drainage shall be assumed to be from the center of the roadway toward the curbs (See Plate 1).

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Rolls of preformed sheet membrane may be applied by hand or mechanical means. The sheet shall be placed on the structural slab, sticky side down. Preformed sheet membrane flashing strips shall be placed and turned up the vertical faces of curbs, headers, scuppers, joints, and concrete barriers to a height equal to the thickness of bituminous overlay. Rolls of sheet membrane shall be placed in such a manner as to minimize wrinkles and bubbles. Stiff bristled brooms shall be used at the time of application to smooth the sheet at its point of contact with the structural slab. Adjacent rolls of sheet shall overlap a minimum of 50 mm on transverse laps and 200 mm on longitudinal laps.

The application of the sheet membrane shall proceed as follows:

a. Before the rolls of sheet membrane are applied to the slab, flashing strips shall be applied to the vertical faces where the direction of water drainage is toward the vertical face. The "flashing strips" shall be placed so that their overlaps are formed in the direction of water drainage. The flashing strips shall extend up the vertical face to the depth of the bituminous overlay and a minimum of 150 mm onto the structural slab. Where required, the vertical faces shall be coated with mastic to ensure adhesion of the flashing strip.

b. Rolls of preformed sheet membrane shall then be aligned parallel to and applied on the structural slab. The preformed sheet shall be placed within 25 mm of abutting vertical faces. If necessary, mastic shall be used to ensure adhesion and to prevent seepage under the membrane.

c. After the rolls of sheet membrane have been applied to the slab, flashing strips shall be applied to the vertical faces where the direction of water drainage is away from the vertical face, so the flashing strip is on top of the sheet membrane.

d. The vertical termination of the flashing strips shall be sealed with a bead of mastic. The completed membrane shall be free of large wrinkles, "fishmouths", air bubbles, and other placement defects. These shall be corrected in a manner satisfactory to the Engineer. Where patches are used, the area shall be coated with mastic sealer and pieces of membrane pressed into the sealer over the defective area. The patches shall extend at least 150 mm in every direction beyond the edge of the defect. Bubbles of 25 mm diameter and greater shall be vented by piercing with an ice pick, or other suitable instrument, and expelling the air. Vented bubbles need not be repaired.

To insure adhesion to the structural slab, the preformed membrane shall be rolled with the required roller. Laps which have not been thoroughly sealed by rolling operations shall be sealed with mastic.

A 125 mm square piece of wire mesh shall be pressed into mastic applied to the membrane at each subdrainage opening.

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When only a portion of the membrane application is completed in one day, the exposed edge of the membrane shall be sealed with mastic. The termination edge of the membrane at slab ends and expansion joints constructed without headers shall be sealed with mastic sealer.

METHOD OF MEASUREMENT. The work shall be measured as the number of square meters of surface area of the structural slab as shown on the plans covered with the complete membrane waterproofing system. No separate measurement of the vertical faces of curbs, joints, concrete barriers, headers, and scuppers, or for the inside surfaces of subdrainage outlets, shall be made. No deductions will be made for holes less than one tenth square meter in area.

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BASIS OF PAYMENT. The unit price bid per square meter for this item shall include the cost of furnishing all labor, materials, (including primer), and equipment necessary to complete the work.

No payment will be made for any work necessitated by damage or defacement attributable to the Contractor's operations.

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No additional payment will be made for patching damaged areas of a membrane system.