

ITEM 11595.5001 M - HOT APPLIED WATERPROOFING MEMBRANE

1.0 DESCRIPTION

This work shall consist of providing all labor, materials, equipment, and services to apply a new fabric reinforced, fluid applied waterproofing membrane system, including surface preparation, protection sheet and concrete protection course.

2.0 MATERIALS

2.1 Membrane system shall be hot process rubberized asphalt, two-coat application with fabric reinforcement, totalling a minimum thickness of 5.5 mm, and meeting CGSB 37.50-M89 standard. The membrane shall contain an inert clay filler to resist acids. Acceptable manufacturers are:

1. Monolithic Membrane 6125 FR by American Hydrotech, Inc., Chicago, IL
2. Ram-Tough 250 by the Barrett Company, Wilmington, DE
3. Elasto-Seal 790-11 by Monsey Bakor, Kimberton, PA

2.2 Surface Conditioner shall be an asphalt-based primer recommended in writing by the membrane manufacturer.

2.3 Membrane Reinforcement shall be spin-bonded polyester fabric sheet recommended in writing by the membrane manufacturer.

2.4 Membrane flashing shall be 1.5 mm uncured neoprene sheet for detailing of joints and curbs recommended in writing by the membrane manufacturer.

2.5 Bonding Cement shall be contact adhesive as recommended in writing by the membrane manufacturer.

2.6 Splicing cement shall be contact adhesive recommended in writing by the membrane manufacturer.

2.7 Lap sealant shall be recommended in writing by the membrane manufacturer.

2.8 Protection sheet shall be 2.3mm thick glass fiber reinforced rubberized asphalt sheet, as recommended in writing by the membrane manufacturer.

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2.9 Concrete protection course shall be Unreinforced Class A concrete as per Section 555 of the standard specifications.

2.10 Submittals: At least four weeks prior the commencement of work, contractor to submit manufacturer's descriptive literature for products specified herein, evidence of applicator's qualifications, sample copies of manufacturer's and applicator's completed warranties for previous work, and certification from an approved independent testing laboratory that the material meets the specified CGSB 37.50-M89 standard for rubberized asphalt membranes, including applicable ASTM procedures, and that all components were provided by the same manufacturer.

3.0 CONSTRUCTION DETAILS

3.1 Applicator's Qualifications. The Contractor shall submit documentation verifying that the proposed applicator possesses certification or license by the membrane manufacturer as an authorized applicator of the submitted product, for a minimum of two years. The applicator must list three projects satisfactorily completed within the past three years which have similar scope, and complexity to this project. This previous experience shall correspond to the specific membrane system proposed by the contractor.

3.2 Obtaining Membrane Components. The Contractor shall obtain membrane materials from a single manufacturer only. For materials not available from the approved manufacturer, products must be approved in writing by the membrane manufacturer .

3.3 Preconstruction Conference. The Contractor, applicator and manufacturer's representative shall attend a Pre-Construction Conference shall meet with the Engineer and the owners to review and discuss project conditions, constraints and schedule.

3.4 Delivery Storage and Handling

3.4.01 Protect all work in place from damage resulting from storage, preparation, handling and application.

3.4.02 Deliver materials in original unopened containers of packaging that is clearly labeled with manufacturer's name, brand name, instruction for use, all identifying numbers, and U.S. labels.

3.4.03 Keep all materials dry while they are transported, stored, and installed. Do not allow materials to be exposed to any moisture anywhere or at any time during transportation,

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storage, handling, and installation. Reject and remove from the site any new materials that exhibit evidence of moisture during application, or have been exposed to moisture. Reject and remove from the site any material that has a moisture content more than 10 percent greater than the Equilibrium Moisture Content (EMC) at 90 percent relative humidity.

- 3.4.04 Materials shall be stored in a neat, safe manner, not to exceed the allowable structural capacity of the storage area.
- 3.4.05 Store materials in a clean, dry area protected from water and direct sunlight.
- 3.4.06 Store all adhesives at temperatures between 15.5°C minimum temperature before using. If exposed to lower temperatures, restore materials to 15.5°C minimum temperature before using.
- 3.4.07 Store all materials on raised platforms with weather-protective coverings. The manufacturer's standard packaging and covering is not considered adequate weather protection. Tarpaulins are preferred for protection of all roof materials. If Visqueen coverings are used, venting of each package is required. Material storage procedures will be constantly monitored and strictly enforced.
- 3.4.08 Materials stored on decks shall be limited to the safe loading of installed materials, decking, and structural framing.

3.5 Project Conditions

- 3.5.01 Application of the membrane shall not commence nor proceed during inclement weather. All surfaces to receive the membrane shall be free of water, dew, frost, snow, and ice.
- 3.5.02 Perform all work under temperature and climatic conditions recommended by materials manufacturer.
- 3.5.03 After demolition, any existing membrane residuals shall be removed or rendered to the satisfaction of the waterproofing manufacturer.
- 3.5.04 The concrete surface shall be free of excessive roughness, voids, protrusions, and exposed aggregates.
- 3.5.05 The concrete surface shall be free of laitance, loose mortar or concrete, oil, and all other contaminants.

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- 3.5.06 Moisture content of concrete shall be tested immediately before application of any membrane material, using a moisture meter or other approved method. The concrete shall be dry as defined by the waterproofing membrane manufacturer.
- 3.5.07 Adhesives contain petroleum distillates and are extremely flammable. Do not breathe vapors or use near an open fire. Do not use in confined areas without adequate ventilation. Consult container or packaging labels and Material Safety Data Sheets for specific information.

3.6 Pre-Installation Conference

- 3.6.01 A job site meeting of the General Contractor, Waterproofing Applicator, Waterproofing Manufacturer, Architect/Engineer, and Owner shall be held to verify all conditions.
- 3.6.02 Demolition work shall be completed to such a degree, prior to this meeting, that all types of subsurface conditions are exposed and prepared for membrane installation.
- 3.6.03 All prints, drawings, and specifications affecting the Work of this Section shall be examined.
- 3.6.04 The Contractor shall schedule this meeting, and notify all parties of the time of the meeting a minimum of seven days prior to the meeting date.
- 3.6.05 Waterproofing installations shall not start until after this meeting.

3.7 Work Sequence

- 3.7.01 A Contractor shall sequence the fluid-applied waterproofing work with the other work of the Contract so as not to cause construction traffic from this or other trades over the completed waterproofing.
- 3.7.02 Installation of the new fluid-applied waterproofing system shall be coordinated with removal operations specified in Section 02070-Selective Demolition, and new installations specified in Patching Material, and Section 07600-Flashing and Sheet Metal.
- 3.7.03 Do not install membrane system materials when precipitation is imminent.

3.8 Warranty

1. Time period: Five years after date of completion and acceptance by the Owner.

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2. Terms: Include all labor, materials, tools, equipment and services necessary for proper repair, restoration, or replacement of all new work damaged as a result of defects, imperfection, or faults in materials and workmanship
3. The warranty shall include removal and replacement of athletic surfacing and base materials, drainage mat, etc., and any other materials requiring removal in order to access the waterproofing membrane.
4. Corrections of defects, imperfections, and faults shall not relieve the Contractor from his responsibility for additional corrective work during the remaining time period.

3.9 Inspection. Examine the surface condition of the substrate and the conditions under which fluid-applied waterproofing work is to be performed. Clean the substrate of substances and projections detrimental to the Work. Voids, cracks, and holes shall be filled with an approved material and be struck flush with adjoining surfaces. New concrete substrate must be free of any unapproved curing compounds or form release agents. Proceeding with the work shall signify the Contractor's acceptance of the substrate being covered by the new installation.

3.10 Preparation.

3.10.01 Substrate Preparation. All surfaces must be dry, smooth, free of depressions, voids and protrusions, and clean and free of surface contaminants. Contractor shall thoroughly sweep, the concrete surface to receive the new membrane of loose dirt, dust and debris. The Contractor shall air-blow the substrate clean of any remaining debris using compressed air.

3.10.02 Heating of Bituminous Materials. The rubberized asphalt membrane material shall be heated in a double jacketed melter/mixer to a temperature range of 180 degrees Centigrade to 220 degrees Centigrade or as per the manufacturer's recommendations. Heating of the membrane materials above 230 degrees Centigrade shall not be permitted.

3.11 Installation of Fluid-Applied Waterproofing System

3.11.01 Installation of Membrane Flashing. Where shown on the drawings installed the specified membrane material, fabric reinforcement, and uncured neoprene membrane flashing reinforcement in the configuration shown on the drawing and as per the manufacturer's recommendations.

3.12.01 Membrane Flashing Installation.

1. Over concrete deck and other cementitious substrates, apply the specified surface conditioner utilizing a short-napped roller at a continuous, uniform rate of 7 to 14sq.

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Meters per liter adequate to “tan” the surface, not blaken it. Sprayed application of the surface conditioner is not permitted.

2. Allow sufficient time for the surface conditions to thoroughly dry prior to the membrane application.
3. All detailing and flashing shall be completed before installing the membrane over the field of the substrate.
4. Apply the specified rubberized asphalt membrane material at a rate to provide a continuous monolithic coating of 2 mm minimum, into which a layer of the specified membrane reinforcement is embedded. Overlap seams in the fabric reinforcement 50 MM minimum.
5. Over the fabric reinforcement, apply an additional coating of the rubberized asphalt material to provide a continuous, monolithic coating thickness of an additional 3 mm within 30 days of membrane installation.

3.13 Water Flood Testing. The contractor shall conduct a submit a warranty for the membrane system as per the following requirements:

1. Subsequent to the installation of the fluid-applied membrane and protection sheet, but prior to the installation of the concrete protection course, the Contractor shall perform water flood testing of the completed membrane system. This testing shall consist of compartmentalizing the membrane system into manageable test area and flooding each individual test area with a minimum of 50 mm of water for a minimum of 12 hours.
2. At the end of each 12-hour test period, the Contractor, accompanied by the Architect/Engineer, shall inspect the interior areas below the test area to verify watertightness.
3. In the event leakage is detected, the test area shall be drained of all water, any necessary repairs made to the satisfaction of the Architect/Engineer and material manufacturer, and the test area retested.

3.14 Manufacturer’s Inspections. During the course of the work and upon substantial completion, but before the application of the concrete protection course, the guaranteeing manufacturer shall inspect the work to verify the conformance of the work with the manufacturer=s recommendations and warranty requirements.

3.15 Concrete Protection Course. The contractor shall place an unreinforced concrete protection course of the thickness shown on the plans over the entire new waterproofing

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membrane. Application shall be as per Section 555-03 of the Standard Specifications. Contractor shall exercise care so as not to damage the membrane system while placing the concrete protection course. Contractor shall submit pouring sequence and access method for review by the Engineer. In no case shall Contractor's equipment come into contact with membrane protection sheet. Concrete shall cure for 72 hours prior to placement of new soil.

4.0 METHOD OF MEASUREMENT

The quantity of the hot applied waterproofing membrane to be paid shall be defined as the number of square meters of membrane installed, including surface preparation, protection sheet, and concrete protection course. Horizontal, vertical and sloped surfaces shall be paid equally.

5.0 BASIS OF PAYMENT

The unit price bid per square meter for this work shall include the cost of furnishing all labor, material, equipment and resident coordination necessary to complete the work. Final application for payment must include applicator's and manufacturer's certificate of warranty.