

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 35 06 - Concrete Deck Corrosion Inhibitor.
- .2 Section 32 12 13.16 - Asphalt Tack Coats.
- .3 Section 32 12 16 - Asphalt Paving.

1.2 REFERENCES

- .1 Ministry of Transport of Ontario (MTO)
- .2 Ministry of Transport of Quebec (MTQ)
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 DEFINITIONS

- .1 Waterproofing membrane: an adhesive and water-impermeable covering placed on deck to protect concrete surfaces from the application of water with dissolved de-icing salts.
- .2 Protection board: a durable panel designed to act as a barrier between waterproofing membrane and asphalt overlay.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Convene pre-installation meeting 1 week prior to beginning waterproofing Work, with Departmental Representative in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Review manufacturer's installation instructions and warranty requirements.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide 2 copies of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Manufacturer's Certificate: certify that products meet or exceed specified requirements.
- .4 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.
- .5 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.

- .6 Reports: indicate procedures followed, ambient temperatures and wind velocity during application.

1.6 QUALITY ASSURANCE

- .1 Sampling requirements:
 - .1 Submit 1 litre of bonding layering from a sealed container after mixing to uniformity.
 - .2 Submit 1 m² of membrane removed from a roll.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Store materials in a dry location, sheltered from weather, and in a manner so that they are not in contact with soil.
- .2 Deliver materials to Site in original packaging. Store rolls of membrane in upright position.
- .3 Remove only in quantities required for same day use.
- .4 Place plywood runways over completed Work to enable movement of material and other traffic.
- .5 Store sealants at +5 degrees C minimum.
- .6 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .7 Store and manage hazardous materials in accordance with Sections 01 35 29.06 - Health and Safety Requirements and 01 35 43 - Environmental Procedures.
- .8 Packaging Waste Management: remove for reuse of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
 - .2 Fold up metal banding, flatten and place in designated area for recycling.

1.8 SITE CONDITIONS

- .1 Give written advice to Departmental Representative at least 24 hours in advance to specify the date and time of application.
- .2 Place bonding layer following concrete repairs, after minimum delay of 8 days, being 7 days followed by a period of 24 hours without precipitation.
 - .1 Period without precipitation begins after complete removal of curing materials and standing water on the deck.
- .3 Place bonding layer and waterproofing membrane only when ambient air temperature and concrete temperature, measured in the shade, are greater than 5°C and rising.
- .4 Placing of bonding layer or waterproofing membrane must not begin when precipitation is forecast; cease work if precipitation comes during placing.

- .5 Place adhesive membrane for joints following concrete repairs after a minimum delay of 14 days, including 7 days of concrete curing followed by 6 days after complete removal of curing material and a period of 24 hours without precipitation.
 - .1 Period of 24 hours starts after the complete removal of standing water.
 - .2 Departmental Representative may approve reduction of delay to no less than 10 days if bonding layer is placed after complete removal of curing or all standing water following precipitation.

Part 2 Products

2.1 MEMBRANE

- .1 Supply waterproofing membrane according to Ministry of Transport of Ontario or Ministry of Transport of Quebec.
- .2 Bonding layer:
 - .1 Bonding layer is composed of a base coating of bitumen modified by SBS polymer (styrene-butadiene-styrene). Minimum content of SBS of modified bitumen must be 8% by volume.
- .3 Prefabricated sheets:
 - .1 Reinforced with non-woven polyester.
 - .2 Made with elastomeric bitumen SBS (styrene-butadiene-styrene) coating the synthetic reinforcing on both sides. The thickness of the layer of bitumen for fusion must be such as to permit adherence to the deck along entire sheet, without damaging reinforcing during fusion.
 - .3 Made with an upper protection layer of grey stone granules, applied at a maximum density of 1.2 kg/m² and embedded in the bitumen.
 - .4 Minimum thickness of prefabricated sheet, measured for full sheet, is 4.5 mm.

2.2 FLASHING

- .1 Furnish flashing composed of plastic cement based on bitumen modified by SBS (styrene-butadiene-styrene) polymer.
- .2 Triangular flashing to have minimum height of 15 mm and minimum width of 50 mm.

2.3 BONDING LAYER

- .1 Bonding layer must be that specified by the manufacturer of the waterproofing membrane.
- .2 For existing decks and new decks covered with a temporary overlay, bonding layer must be water-based.

2.4 JOINT WATERPROOFING

- .1 Waterproofing products: adhesive membrane according to the Ministry of Transport of Ontario or Ministry of Transport of Quebec.

Part 3 Execution

3.1 CLEANING OF SURFACES

- .1 Wash surface and remove all debris using high pressure water jet (pressure 15 MPa, flow 20 l/min, jet nozzle concentrated circular and nozzle-surface distance of 150 mm to 200 mm) no more than 48 hours before application of bonding layer.
- .2 Remove dust and debris with air jet immediately before applying bonding layer for waterproofing membrane. Equipment used for air jet must be equipped with a filter to capture oil; effectiveness of filter must be demonstrated before using equipment.
- .3 Clean or repair concrete surfaces dirtied by oily material.
- .4 Traffic is forbidden on portion of deck receiving membrane from start of cleaning work, except for that of vehicles required to place membrane.

3.2 APPLICATION OF WATERPROOFING MEMBRANE

- .1 Bonding layer:
 - .1 Apply one coat of bonding layer at rate of 0.15 l/m² on surfaces to be covered by waterproofing membrane; this rate is calculated before evaporation of solvent or water.
 - .2 Protect against splashing sidewalks, bicycle paths, curbs, barriers, fences, expansion joints, etc. by means of cloths or of other appropriate material; the bonding layer must be applied by roller along such elements for a width of 600 mm.
 - .3 Clean dirtied surfaces during execution of Work.
- .2 Waterproofing membrane:
 - .1 Apply membrane with aid of mechanised application equipment, except near deck joints, or with propane torch. A roller must be integrated into mechanised application equipment.
 - .2 Adjust fusion parameters on account of evenness of surface to be covered and weather conditions (force of wind, temperature, etc.), so as to obtain during application a surface of melted bitumen at least 20 mm in front of roll of membrane and squeezing out of bitumen along joints.
 - .3 Apply membrane starting from low points of area to be covered toward high point of transversal profile. Offset joints so as not to place more than three membrane thickness at any point. The width of laps between membranes must be 75 mm for longitudinal joints and 150 mm for transverse joints.
 - .4 Place membrane as close as possible along curbs, sidewalks, bicycle paths, barriers, drains and deck joints, not to exceed a distance of 15 mm.
 - .5 Flashing:
 - .1 Place flashing along curbs, sidewalks, and barriers after membrane has been place.
 - .2 Do not place flashing along deck joints or near drains.
 - .3 Ensure that evacuation holes situated along drains are not obstructed by flashing

- .4 Place flashing on clean, dry surfaces, when concrete temperature of deck is greater than 5°C and minimum temperature of flashing at moment of placing is 20°C.
- .6 Refuse lap joints badly fused after placing each band of membrane.
- .7 After completing application, carefully inspect membrane. Pierce air pockets and folds and cover with piece of membrane extending at least 100 mm beyond edge of membrane zone to be repaired.

3.3 PLACING ADHESIVE MEMBRANE FOR JOINTS

- .1 Apply one coat of bonding layer at rate of 0.15 l/m² on surfaces to be covered by waterproofing membrane; this rate is calculated before evaporation of solvent or water.
- .2 Apply adhesive membrane for joints to clean and dry surfaces after a delay between 12 and 24 hours following application of bonding layer.
- .3 Remove dust and debris by means of a jet of air immediately followed by placing of membrane. Equipment used for air jet must be furnished with a filter to capture oil. Demonstrate effectiveness of filter before using equipment.
- .4 If water cleaning must be used to obtain clean surfaces, it must be done before the period of 24 hours without precipitation.
- .5 Heat surfaces to be covered by means of propane torch immediately before application of adhesive membrane for joints.

3.4 PROTECTION OF MEMBRANE

- .1 Furnish and put in place signs and security barriers, and keep them in good condition until the end of Work.
- .2 Protect membrane from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.
- .3 Remove and replace damaged membrane.
- .4 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

3.5 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.
- .4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Place materials defined as hazardous or toxic in designated containers.
 - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
 - .3 Ensure emptied containers are sealed and stored safely.

- .4 Unused coating material must be disposed of at official hazardous material collections site as reviewed by Departmental Representative.
- .5 Unused adhesive, sealant and asphalt materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .6 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.
- .7 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative.
- .8 Dispose of unused asphalt material at official hazardous material collections site approved by Departmental Representative.

END OF SECTION