

COMPENSATION

965.80 Method of Measurement.

Membrane waterproofing for bridge decks will be measured by the square meter and the quantity to be paid for shall be the number of square meters of surface covered with no allowance for overlapping or for edges turned up or carried into recesses for seals, except that the area of the full membrane turned down in back of the backwalls and extended under and in back of curb or edging will be included for payment.

The protective course will be measured by the metric ton and the quantity to be paid for shall be the actual and verified tonnage, complete in place, and approved.

965.81 Basis of Payment.

The membrane waterproofing will be paid for at the contract unit price per square meter under the item for Membrane Waterproofing for Bridge Decks, complete in place.

The mass of protective course will be paid for at the contract unit price per metric ton, complete in place.

965.82 Payment Items.

965.	Membrane Waterproofing for Bridge Decks	Square Meter
462.	Class I Bituminous Concrete Dense Binder Course	Metric Ton

SECTION 967

MEMBRANE WATERPROOFING AND PROTECTIVE COURSE FOR ABUTMENTS AND WINGWALLS

DESCRIPTION

967.20 General.

Membrane waterproofing applied to the surface indicated on the plan and elsewhere as directed shall consist of one of the following systems:

- (1) Coal tar emulsion reinforced with two piles of coated glass fabric.
- (2) Biodegradable corrugated kraft paper panels with flutes filled with bentonite and ends sealed.

The protective course, if required, will be cement concrete brick, cement concrete block or protection board as specified by manufacturer.

MATERIALS

967.40 General.

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Protective Seal Coat Emulsion (Coal Tar Emulsion)	M3.03.3
Coated Glass Fabric	M3.06.1
Cement Concrete Brick	M4.05.0
Cement Concrete Block	M4.05.1
Portland Cement	M4.01.0
Bentonite Panels	M9.09.0

CONSTRUCTION METHODS

967.60 Preparation of Surface.

All concrete surfaces which are to be waterproofed shall be finished. Surfaces shall be trimmed free of rough spots, projections or other defects which might cause puncture of the membrane.

Immediately prior to the membrane application the concrete surface shall be thoroughly swept and blown clean with an air compressor to remove any loose debris.

967.61 Application.

A. System 1 – Coal Tar Emulsion reinforced with two plies of Coated Glass Fabric.

This system shall be applied in accordance with the requirements of Subsection 965.61.

B. System 2 – Bentonite Panels.

This system shall consist of applications of bentonite panels as indicated on the plans and elsewhere as an option to System 1 with the approval of the Engineer.

The placement and protection shall be in accordance with manufacturer's instructions.

967.62 Protective Course.

The protective course, if required, shall be placed within 24 hours after the membrane is installed in order to protect the membrane. A longer period of time will be allowed only with the approval of the Engineer. The protective course shall consist of either cement concrete brick, solid cement block, or protection board as recommended. The protective course shall be applied in a single layer of the thickness required.

A. Cement Concrete Brick.

Brick used as protective course shall be laid over the entire membrane in regular courses as shown on the plans except around drainage castings and other openings and obstructions; around such obstructions cement mortar shall be used for the protective course. When the brick protection is to be laid against a vertical wall or on a steep slope, the bricks shall be laid in cement mortar.

B. Cement Concrete Blocks.

Cement concrete blocks shall be machine made solid segments of a thickness corresponding to the required thickness of the protective course.

C. Protection Board for Bentonite Panels.

Protection Board will be used for Bentonite Panels when backfill contains sharp rocks larger than 50 millimeters. The hard surface fiber board 1.5 millimeters thick, which is biodegradable and nailable shall be nailed over the panels to provide a continuous protective layer between the panels and the soil area. Boards shall be overlapped with the ends of joints staggered and cut to fit for complete protection.

COMPENSATION

967.80 Method of Measurement.

Membrane waterproofing will be measured by the square meter and the quantity to be paid for shall be the number of square meters of surface covered, with no allowance for overlapping or for edges turned up or carried into recesses for seals.

The protective course will be measured by the square meter and the quantity to be paid for shall be the number of square meters of membrane surface covered.

967.81 Basis of Payment.

The membrane waterproofing will be paid for at the contract unit price per square meter under the item for

Membrane Waterproofing, complete in place.

The protective course will be paid for under the item for protective course.

967.82 Payment Items.

967.	Membrane Waterproofing	Square Meter
966.	Waterproofing Protective Course	Square Meter

SECTION 970

BITUMINOUS DAMP-PROOFING

DESCRIPTION

970.20 General.

Bituminous damp-proofing to be applied as shown on the plans shall consist of a cut-back asphalt, a protective seal coat emulsion or an asphalt emulsion. If material other than that specified herein is permitted to be used, the method of application shall conform to the published specifications of the manufacturer.

MATERIALS

970.40 General.

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Cut-Back Asphalt	M3.02.0
Emulsified Asphalt	M3.03.0
Protective Seal Coat Emulsion	M3.03.3

CONSTRUCTION METHODS

970.60 General.

Concrete surfaces shall be allowed to dry for a period of at least 5 days after the removal of forms before damp-proofing is applied.

Surfaces to be damp-proofed shall be made reasonably smooth and free from all projections and holes. All holes in concrete surfaces shall be satisfactorily filled with 1 part cement to 2 parts sand mortar before damp-proofing is applied. Concrete surfaces shall be properly cured before being damp-proofed. Surfaces shall be dry and immediately before the application of the damp-proofing shall be thoroughly cleaned of dust and all loose material. Damp-proofing shall not be done during wet weather, nor when the weather conditions as to temperature otherwise are unsatisfactory.

The material for damp-proofing shall be mopped or sprayed on the designated surfaces as directed and in amounts necessary to obtain a 2 coat coverage of not less than 2 liters of asphaltic material per 10 square meters of area.

The initial coat of damp-proofing shall be allowed to dry thoroughly before a second coat is applied. The final coat shall be thoroughly dry before any fill is placed against it.

COMPENSATION

970.80 Method of Measurement.

Damp-proofing will be measured by the actual area of surface covered in square meters.