B914 - WATERPROOFING BRIDGE DECKS AND CULVERTS WITH HOT-APPLIED RUBBERIZED ASPHALT (HRA) WATERPROOFING MEMBRANE - OPSS 914

914.1 GENERAL

Bridge deck waterproofing is the process of applying specialized materials and treatments to the surface of a bridge deck to prevent water and moisture infiltration. This protective measure ensures the underlying structure remains intact by preventing corrosion, deterioration, and freeze-thaw damage.

The waterproofing system that is used for all concrete bridge decks and structural culverts, includes components such as primer, hot-applied rubberized asphalt (HRA) waterproofing membrane, membrane reinforcement, and protection board.

Note: A cast-in-place concrete culvert with a span greater than 3.0 m is considered a structural culvert, and the top surface of the top slab of the culvert is considered a bridge deck.

Waterproofing with HRA waterproofing membrane is used on new and existing bridge decks and structural culverts.

The requirements for waterproofing of precast concrete culverts with spans less than, equal to, or greater than 3 m are specified in SSP 599S30. See CDED B599-7 for further information.

The requirements for tack coating of the protection board are specified in OPSS 308. See CDED B308 for further details.

914.2 REFERENCES

- Ministry of Transportation Publications - Structural Manual
- OPSS 308, Construction Specification for Tack Coating and Joint Painting
- CDED B308, Tack Coating and Joint Painting
- CDED B599-7, Waterproofing of Precast Concrete Culverts
- SSP 599S30, Requirements for Waterproofing of Precast Concrete Culverts
- SSP 914F02, Amendment to OPSS 914, Nov. 2024 - Existing Bridge Deck or Culvert Surface Preparation
- SSP 914S07, Amendment to OPSS 914, Nov. 2024

914.3 TENDER ITEMS

Item Code	Title	Col Type	U.O.M.	PQP
0914-0011	Bridge Deck Waterproofing	Normal	LS/m^2	N
0914-0015	Cast-in-Place Concrete Culvert Waterproofing	Normal	LS/m^2	N
0914-0021	Modification of Deck Drains	Normal	each	Y
0914-0031	Form and Fill Grooves	Normal	m	Y
0914-0040	Membrane Reinforcement	Normal	m	Y

914.4 SPECIFICATIONS

The requirements for the above tender items are specified in OPSS 914.

914.5 SPECIAL PROVISIONS

SSP 914F02 is used to specify whether the surfaces of existing concrete bridge decks or cast-in-place concrete culverts are textured or contain sawcut grooves, as indicated in the bridge deck condition survey.

SSP 914S07 is always with OPSS 914 and covers details for staged construction of waterproofing.

914.6 STANDARD DRAWINGS

Applicable standard drawings are contained in the Structural Standard Drawings (SSD), and the 3000 series of the Ontario Provincial Standards Drawings (OPSD) and Ministry of Transportation Ontario Drawings (MTOD).

Where modification of deck drains for existing decks is required, the designer shall include the appropriate Standard Drawing in the Contract Documents.

914.7 DESIGN

Refer to the Structural Manual and Structural Standard Drawings (SSD).

914.8 COMPUTATION

914.8.1 Sources of Information

The main source of information for the computation of these tender items is the Regional Structural Section.

914.8.2 Method of Calculation

a) Bridge Deck Waterproofing
b) Cast-in-Place Concrete Culvert Waterproofing

The basis of payment for these items is lump sum but the unit of measurement is LS/m² therefore the designer must calculate the theoretical quantity in square metres, for cost estimating purposes. In the tender, the item is shown as lump sum (LS) with a quantity of 100%.

c) Modification of Deck Drains

This is a Plan Quantity Payment (PQP) item. The unit of measurement for this item is each. The quantity is based on the number of deck drains that require modification.

d) Form and Fill Grooves
e) Membrane Reinforcement

These are Plan Quantity Payment (PQP) items. The unit of measurement for these items is metre.

914.9 DOCUMENTATION

914.9.1 Contract Drawings

The designer shall indicate the required thickness of the combined asphalt and waterproofing system on the Contract Drawings.

When a 20 mm wide by 20 mm deep form and fill groove in the asphalt is required to accommodate movement, its location and dimensions shall be shown on the Contract Drawings.

914.9.2 Quantity Sheets

These items are documented on the “Quantities - Structure” sheet. Each tender item requires a separate column. Each location is identified by station to station limits and offset left or right of the roadway centreline.

For multiple structures on the same contract, separate tender items are used for each applicable structure.

914.9.3 Documentation Accuracy

Stations are recorded to the nearest whole number metre. Offsets, if required are recorded to the nearest 0.1 metre.

a) Bridge Deck Waterproofing
b) Cast-in-Place Concrete Culvert Waterproofing

The quantities are recorded to the nearest 0.01 m², and the values are automatically displayed as 100%.

c) Modification of Deck Drains

The quantities are recorded to the nearest whole number.

d) Form and Fill Grooves
e) Membrane Reinforcement

The quantities are recorded to the nearest 0.01 m.