

## SECTION 07 13 29

### BUTYL RUBBER MEMBRANE WATERPROOFING

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Butyl rubber sheet membrane
- B. Adhesive
- C. Vulcanizing cement
- D. Butyl gum tape
- E. Membrane protection board
- F. Anti-bonding paper
- G. Rubberized asphalt

##### 1.02 RELATED SECTIONS

- A. Finishing and curing of concrete bridge decks are specified in Section 03 35 00 - Concrete Finishing

##### 1.03 MEASUREMENT AND PAYMENT

- A. General: Measurement and payment for butyl rubber membrane waterproofing will be either by the lump-sum method or by the unit-price method as determined by the listing of the bid item for butyl rubber membrane waterproofing indicated in the Bid Schedule of the Bid Form.
- B. Lump Sum: If the Bid Schedule indicates a lump sum for butyl rubber membrane waterproofing, the lump-sum method of measurement and payment will be in accordance with Section 01 20 00 - Price and Payment Procedures, Article 1.03.
- C. Unit Prices: If the Bid Schedule indicates a unit price for butyl rubber membrane waterproofing, the unit-price method of measurement and payment will be as follows:
  - 1. Measurement
    - a. Butyl rubber membrane waterproofing will be measured for payment by the square yard (square) or square foot complete in place.
    - b. Adhesives, tape, expansion joints, protection board, and accessories will not be measured separately for payment; such items will be considered incidental to the membrane waterproofing work and included in the measurement specified above.
  - 2. Payment: Butyl rubber membrane waterproofing will be paid for at the Contract unit price for the computed quantities as determined by the measurement method specified in Article 1.03.C.1

**1.04 REFERENCES**

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. AASHTO M173 Specification for Concrete Joint-Sealer, Hot-Poured Elastic Type
- B. American Railway Engineering and Maintenance of Way Association (AREMA):
  - 1. Manual for Railway Engineering (herein referred to as the "AREMA Manual"), Volume II, Chapter 29, "Waterproofing"
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM D517 Specification for Asphalt Plank
  - 2. ASTM D1190 Specification for Concrete Joint Sealer, Hot-Applied Elastic Type
- D. Federal Specifications (FS):
  - 1. SS-S-1401 Sealants, Joint, Non-Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Asphalt Concrete Pavements

**1.05 DESCRIPTION**

- A. Membrane waterproofing shall be a single-ply, butyl-rubber sheet membrane waterproofing system for ballasted concrete bridge decks as specified in the AREMA Manual, Chapter 29, Part 2, Membrane Waterproofing.

**1.06 SUBMITTALS**

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Product Data: Submit product data and detailed installation instructions for both vertical and horizontal applications.
- C. Manufacturer's Certification: At completion of the installation, submit written certification, signed by the manufacturer or its authorized representative, that the materials used in the waterproofing work were in accordance with these Specifications, and that they were installed in accordance with the material manufacturer's installation instructions and recommendations.

**1.07 QUALITY ASSURANCE**

- A. Membrane waterproofing system shall be installed by an applicator/installer skilled and experienced in the type of work involved. Applicator shall be approved by the manufacturer who furnishes the materials.

- B. The Contractor shall make necessary arrangements with the manufacturer of the materials to be installed to provide on-site consultation and inspection service to assure the correct installation of the membrane waterproofing.
- C. The manufacturer's representative shall be present at the time any phase of the work is performed. Membrane waterproofing shall be applied only over substrate surfaces previously approved by the manufacturer's representative.

**1.08 GUARANTY**

- A. In addition to the guaranty requirements specified in General Conditions Article GC4.9, membrane waterproofing work shall be guaranteed against leakage, defective materials and defective installation of the completed waterproofing work. Any such defects or leakage occurring during the period of the guaranty shall be promptly and completely corrected, including all affected work, at no additional cost to the District.
- B. Said guaranty shall be in effect for a period of five years from the date of Certificate of Completion or Substantial Completion issued by the District. The guaranty shall be signed by the waterproofing applicator or installer and countersigned by the Contractor, and shall be submitted to the Engineer as specified in Section 01 77 00 - Closeout Procedures.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Waterproofing Membrane: Pliable, butyl-rubber sheet material in minimum uniform thickness of 0.060 inch, conforming to the requirements of the AREMA Manual, Chapter 29, Part 2, Article 2.3.5.
- B. Adhesive: As specified in the AREMA Manual, Chapter 29, Part 2, Article 2.3.6.
- C. Vulcanizing Cement: As specified in the AREMA Manual, Chapter 29, Part 2, Article 2.3.7, for butyl-rubber membrane splices.
- D. Butyl Gum Tape: As specified in the AREMA Manual, Chapter 29, Part 2, Article 2.3.8, for tongue-and-groove splices and lap splices.
- E. Membrane Protection Board: Asphalt plank conforming to ASTM D517, plain type, applied in minimum thickness of one inch using two layers with joints staggered; or asphaltic panels conforming to the AREMA Manual, Chapter 29, Part 2, Article 2.4.7, applied in minimum thickness of 3/4 inch using two layers with joints staggered.
- F. Anti-bonding paper shall be a tough, impervious paper with weight of not less than 5 pounds per 100 square feet.
- G. Rubberized Asphalt shall conform to AASHTO M173, ASTM D1190 or Fed. Spec. SS-S-1401.

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Verify that substrate surfaces are clean and dry, and that concrete is properly aged.
- B. Verify that substrate and backing surfaces are smooth and rigid where membrane turns down at edges and vertical surfaces, and up at curbs and other vertical barriers.

**3.02 APPLICATION**

- A. Comply with applicable requirements of the AREMA Manual, Chapter 29, Part 2, Article 2.9.
- B. Membrane waterproofing shall be applied in accordance with the manufacturer's installation instructions for membrane waterproofing of ballasted bridge decks. Adhesive shall be applied to the entire surface to be waterproofed.
- C. All splices and seams of the membrane material shall be tongue and groove butyl membrane splices in accordance with the AREMA Manual, Chapter 29, Part 2, Figure 2.
- D. Reinforce membrane at inside and outside corners and edges and around penetrations and projections in the substrate.
- E. After the membrane waterproofing application has been inspected and accepted by the Engineer, install protection board with adhesive in accordance with the manufacturer's installation instructions and recommendations, for protection from subsequent construction operations and ballasted track installation. Protection board damaged during subsequent construction operations and activities shall be properly repaired or replaced immediately.

**3.03 FIELD QUALITY CONTROL**

- A. Verify that installed membrane is free from wrinkles, buckles, blisters (trapped air) and other damage. Damaged or defective membrane shall be corrected.
- B. Verify that waterproof membrane is free from defects or damage before covering or concealing the membrane with protection board.
- C. Clean adjacent surfaces of spillage and splatterings of adhesive materials.

**END OF SECTION 07 13 29**