WATERPROOFING PRESTRESSED SLAB BEAM ENDS 10/30/08

**1.0 Description.** This work shall consist of furnishing and applying waterproofing material to fill face ends of erected prestressed slab beams at the end bents. The waterproofing membrane shall extend a minimum of 12 inches onto the fill face of the existing end bent beam caps and wings. A butyl rubber membrane system shall be used.

**2.0 Material.** All material shall be in accordance with Division 1000, Material Details.

**2.1 Butyl Rubber Membrane.** 0.060-inch-thick butyl rubber membrane shall be in accordance with ASTM D 6134.

**2.2** Adhesive for securing butyl rubber membrane shall be in accordance with the recommendations of the butyl rubber membrane manufacturer.

**2.3** Rubber cement for splicing butyl rubber membrane shall be a self-vulcanizing butyl rubber compound in accordance with the following requirements:

| **Item** | **Specific Value** |
| --- | --- |
| Rotational Viscosity (Brookfield), 77°F (25°C),Spindle #3, 10 rpm (ASTM D 2196), cps | 1700 - 3400 |
| Solids Content, percent, min | 30 |

**2.4** Butyl gum tape for splicing butyl rubber membrane shall be vulcanizable, black butyl rubber with an 8 mil (200 µm) polyethylene film backing. The total tape thickness shall be 30 mils ±4 mils (0.8 mm ±100 µm), including the polyethylene film backing.

**3.0 Construction Requirements.**

**3.1** Waterproofing shall not be applied in wet weather nor when the ambient temperature is below 50°F (10°C). Concrete shall be dry and clean before waterproofing is applied. Concrete surfaces shall be cleaned by sandblasting or shotblasting. Projections that might damage the waterproofing shall be removed.

**3.2 Butyl Rubber Membrane.**

**3.2.1** Butyl rubber membrane shall be secured with an adhesive. The application shall be in a thin layer in accordance with the manufacturer’s recommendations at a minimum rate of one gallon per 60 square foot (0.68 L/m2). Membrane sheets shall be positioned in a tight manner, but not stretched. Half of the membrane shall then be uniformly rolled up in a direction away from the starting edge or subsequent splice. Adhesive shall be applied to the area exposed. The adhesive shall be allowed to dry in accordance with the manufacturer’s recommendations. The membrane shall be unrolled, pressed firmly and uniformly into place, using care to avoid trapping of air. The remaining half of the butyl membrane sheet shall be placed in a similar manner. Wrinkles and buckles will not be allowed, and each succeeding sheet shall be positioned to fit the previously installed sheet and spliced.

**3.2.2** Splices shall be tongue and groove or lap type, with a minimum overlap of 6 inches (150 mm). Contact surfaces for splices shall be thoroughly cleaned and cemented. Cleaning agents or synthetic cleaning devices shall be used and shall be in accordance with the manufacturer’s recommendations. The butyl rubber cement shall be spread continuously on the seam, lap and splice areas at a minimum uniform rate of 2 gallons per 100 square foot (0.8 L/m2). After the butyl rubber cement has dried in accordance with manufacturer’s recommendations, butyl gum tape shall be applied to the membrane area to obtain full contact. Bridging and wrinkles shall be avoided. A 2-inch (50 mm) factory-made heat-vulcanized seam may be used for one side of the 6-inch (150 mm) tongue and groove splice instead of the 6-inch (150 mm) lap. Butyl gum tape shall be extended at least 1/8 inch (3 mm) beyond all edges of each splice. Lap sealant shall be used on the top of all edges to provide continuity.

**3.2.3** Any holes in the membrane sheeting shall be patched in accordance with the manufacturer’s recommendations, with a minimum overlap of 4 inches (100 mm). Care shall be exercised during construction so that the membrane is not damaged.

**4.0 Method of Measurement.** The work provided herein will not be measured but will be considered included in the vertical drain at end bents per each.

**5.0 Basis of Payment.** Payment for the above described work, including all material, equipment, labor and any other incidental work necessary to complete this item, will be considered completely covered by the contract unit price for Vertical Drain at End Bents.