



Iowa Department of Transportation

SPECIAL PROVISIONS FOR IMPERVIOUS GEOMEMBRANE

Mills County
NHSX-534-1(84)--3H-65

Effective Date
July 19, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

090139.01 DESCRIPTION.

This work shall consist of furnishing and placing an impervious geomembrane over expanded polystyrene fill for the purpose of preventing petroleum-based products from infiltrating and damaging the blocks.

090139.02 MATERIALS.

- A. The geomembrane shall be a high density polyethylene (HDPE) product and shall meet the following physical and chemical requirements, specified as minimum or maximum, not average roll properties:
1. Thickness, ASTM D5199: Minimum 30 mil.
 2. Density, ASTM D1505: Minimum 0.94 g/m².
 3. Carbon black content, ASTM D1603: Minimum 2 percent.
 4. Tensile properties, ASTM D638:
 - a. Stress at break: Minimum 66 psi.
 - b. Stress at break (LB/IN width): Minimum 114 LB/IN width.
 - c. Strain at break: Minimum 13 psi.
 - d. Strain at break: Minimum 700 percent.
 5. Tear resistance, ASTM D1004: Minimum 740 LB/IN width.
 6. Puncture resistance, FTMS method 2065: Minimum 1800 LB/IN width.
 7. Hydrostatic resistance, ASTM D751: Minimum 400 psi.
 8. Permeability, ASTM E96: Maximum 4.6 x 10⁻¹⁴ cm/sec.

9. Soil burial resistance, ASTM D3083 mod.: Maximum 10 percent change.

10. Bonded seam strength, ASTM D4437: Minimum 60 LBS.

B. The geomembrane shall be flexible and puncture-free. The geomembrane shall cover and conform closely to the 90 degree edges and corners of the geofoam blocks at ambient temperatures above 45°F, without additional heating of the geomembrane.

090139.03 CONSTRUCTION.

B. Submittals.

1. Submit a sample and manufacturer's literature on the proposed geomembrane at least 7 days prior to delivery to the site.
2. Submit details of the proposed method of seaming adjacent sections of geomembrane.

C. Acceptance.

Furnish a Certificate of Compliance stating that the selected geomembrane has been tested, and meets the above mentioned requirements and is:

1. Free from pinholes, tears, and other defects which would cause leakage of liquids through the geomembrane.
2. Acceptable for spill containment of hydrocarbons, including automobile gasoline, aviation fuel, diesel fuel, kerosene, hydraulic fluid, methanol, mineral spirits, and naphtha.

D. Sampling and Testing.

Perform Sampling and testing at the direction of the Engineer.

E. Execution.

1. Do not drive construction equipment directly on the geomembrane. Damage to the geomembrane resulting from the Contractor's vehicles, equipment, or operations shall be replaced or repaired with new materials to the satisfaction of the Engineer.
2. Bond all seams to meet Vapor Transmission Rates and in accordance with the manufacturer's recommendations.

090139.04 METHOD OF MEASUREMENT.

The quantity of Impervious Geomembrane shall be measured in square feet by the Engineer.

090139.05 BASIS OF PAYMENT.

For the quantity of Impervious Geomembrane placed, the Contractor shall be paid for the unit price per square foot for the Impervious Geomembrane. This payment shall be full compensation to furnish and install the Impervious Geomembrane.