

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Sections 01 73 00 / 01 74 11 / 0174 21 / 07 55 63 / 32 91 19.14

1.2 MEASUREMENT FOR PAYMENT

- .1 Geomembranes will be measured and paid in square metres of surface covered. No payment will be made for seams and overlaps.

1.3 REFERENCES

- .1 ASTM International
 - .1 ASTM D413-98(2007), Standard Test Methods for Rubber Property-Adhesion to Flexible Substrate.
 - .2 ASTM D638-10, Standard Test Method for Tensile Properties of Plastics.
 - .3 ASTM D746-07, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
 - .4 ASTM D792-08, Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 - .5 ASTM D1004-09, Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 - .6 ASTM D1204-08, Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature.
 - .7 ASTM D1238-10, Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.
 - .8 ASTM D1593-09, Standard Specification for Nonrigid Vinyl Chloride Plastic Film and Sheeting.
 - .9 ASTM D1603-06, Standard Test Method for Carbon Black in Olefin Plastics.
 - .10 ASTM D1693-08, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
 - .11 ASTM D882-10, Standard Test Methods for Tensile Properties of Thin Plastic Sheeting.
 - .12 ASTM D1203-10, Standard Test Methods for Volatile Loss from Plastics Using Activated Carbon Methods.
 - .13 ASTM D1790-08, Standard Test Method for Brittleness Temperature of Plastic Sheeting by Impact.
 - .14 *F.L.L.* (Institut du développement et de la construction des aménagements paysager, Allemagne)
 - .15 CGSB (Canadian General Standards Board).

1.4 SUBMITTALS

- .1 Submit required documents and samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data
 - .1 Submit data sheets, as well as manufacturer's instructions and printed product literature for geomembranes, including geotextiles, root-repelling membrane, and water retention/drainage membrane for green roofs. The data sheets must indicate product characteristics, performance criteria, physical size, limitations and finishes.

- .3 Shop drawings
 - .1 Submit shop drawings stamped and signed by a professional engineer registered or licensed to practice in the province of Québec, in the territory of Canada.
 - .2 Submit shop drawings, indicating instructions regarding the installation and dimensions of geomembranes, including fabricated and field seams, anchors, trenches, and protruding details, if required.
- .4 Samples
 - .1 Submit the following samples at least two (2) weeks prior to commencing the work:
 - .1 Minimum 1 m length of standard-width membrane.

1.5 QUALITY ASSURANCE

- .1 Obtain approval from the Departmental Representative for each of the membranes involved in this work before continuing with subsequent work that would cover the tasks for which approval is required.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements and the manufacturer's written instructions.
- .2 Delivery and acceptance: deliver materials to the site in their original factory packaging, labelled with manufacturer's name and address.
- .3 During delivery and storage, protect geomembranes from direct sunlight, ultraviolet rays, excessive heat, mud, earth, dust, debris and rodents.
- .4 Storing and handling:
 - .1 Store materials in a clean, dry, well-ventilated area, in accordance with manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new materials.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Geomembrane: Root-repelling membrane.
 - .1 Supplied in:
 - .1 Rolls at least 1.5 wide.
 - .2 Composed of specifically formulated polyethylene resin electronically tested to provide complete protection for the architectural waterproofing system.
 - .3 This membrane is installed independently of the architectural waterproofing system.
 - .4 Physical properties
 - .1 Thickness: 2.5 mm minimum, according to ASTM D5199 standard.
 - .2 Tensile strength: 230 N in each direction, according to ASTM E154 standard Section 9 (D882).
 - .3 Weight: 0.24 kg/m², according to ASTM D1505 standard.
 - .4 Puncture resistance: 2.6 N minimum, according to ASTM D1709 test methods, method B.
- .2 Geomembranes: Needle punched nonwoven geotextile
 - .1 Supplied in:
 - .1 Rolls at least 1.5 m wide.

- .2 Composed of polyethylene
- .3 Physical properties
 - .1 Tensile strength at break: 550 N, according to CGSB 148.1 #7.3 standard.
 - .2 Elongation at break: 45-105%, according to CGSB 148.1 #7.3 standard.
 - .3 Tear resistance: 250 N, according to CGSB 4.2 #12.2 standard.
 - .4 Bursting strength: 1,585 kPa, according to CGSB 4.2 #11.1 test methods.
 - .5 Permeability: 0.23 cm/s, according to CGSB 148.1 #4 standard.
 - .6 Permittivity: 1.34 s⁻¹, according to CGSB 148.1 #4 standard.
 - .7 FOS: 180 µm, according to CGSB 148.1 #10 standard.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of conditions: Verify that the condition of substrate previously installed under other sections or contracts is acceptable for installation of the geomembranes and permits the achievement of the work in accordance with manufacturer's written instructions.
 - .1 Visually inspect the substrate in the presence of the Departmental Representative.
 - .2 Inform the Departmental Representative of any unacceptable conditions immediately upon discovery.
 - .3 Proceed with the installation only after the unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 PREPARATION

- .1 Temporary erosion and sedimentation control measures:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and alleys, as well as particles driven by the wind, in accordance with the specific site conditions.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

3.3 INSTALLATION OF GEOMEMBRANES

- .1 Maintain areas to be covered with geomembranes free of water and snow.
 - .2 Prepare excessively soft surfaces before the installation of the geomembranes, as directed by the Departmental Representative.
 - .3 Do not place or seam geomembrane panels when ambient temperatures are below -5° Celsius or above 40° Celsius, during rain or snow falls, in the presence of excessive moisture (i.e. fog, dew), nor in the presence of high winds.
 - .4 Place and seam geomembrane panels in accordance with the manufacturer's recommendations on graded surfaces in the direction and locations indicated, if seaming is required. Minimize wrinkles, scratches and crimps in geomembranes and avoid damage to supporting material.
 - .5 Protect installed geomembranes from displacement, damage or deterioration before, during and after placement of material layers.
 - .6 Replace damaged, torn or permanently twisted panels to the approval of Departmental Representative. Remove rejected panels from the site.
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- .7 Keep seam areas clean and free of moisture, dust, dirt, debris and foreign materials.
- .8 Make sample field seams in accordance with the requirements described in PART 2, on fragments of geomembrane and test to verify that seaming conditions are adequate.
- .9 Test field seams as the work progresses, using non-destructive methods over their full length. Repair seams that do not pass tests. Reconstruct seams between failed section and any passed test locations, until non-destructive testing is successful.
- .10 Repair minor tears and pinholes by patching until non-destructive testing is successful. Patches to be round or oval in shape, made of same geomembrane material, and extend at least 75 mm beyond edge of defect.

3.4 CLEANING

- .1 Progress cleaning: Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave work site clean at the end of each working day.
- .2 Final cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION
