

SECTION 07 1355

DIMPLED PLASTIC DAMPPROOFING AND WATERPROOFING MEMBRANES WITH DRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Below grade drainage sheets.
- B. Planter drainage sheets.

1.02 RELATED SECTIONS

- A. Section 07 1400 (07140) - Fluid-Applied Waterproofing.
- B. Section 31 2323 (02316) - Fill: Backfilling.
- C. Section 33 4600 (02620) - Subdrainage: Foundation perimeter drainage.

1.03 SUBMITTALS

- A. See Section 01 3000 (01300) - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Samples: 12 by 12 inch (300 by 300 mm) piece of each type of sheet; minimum 12 inch (300 mm) long piece of each type of strip; each type of fastener.
- D. Installer Qualifications: Include minimum of 5 project references.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of this type and approved by the membrane manufacturer.
- B. Manufacturer's Representative Qualifications: Approved or accredited by, and employed by, sheet manufacturer to perform specified field quality control activities.

1.05 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products to project site in original packaging with labels intact.
- B. Store products in manner acceptable to membrane manufacturer.
- C. Provide temporary cover for products while stored on site before installation, protected from direct sunlight and UV exposure.
- D. When products must be stored for extended periods, store at temperatures above minus 24 degrees F (minus 30 degrees C).
- E. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. All Products of This Section:
 - 1. Cosella-Dörken Products Inc: www.cosella-dorcken.com.
 - 2. Substitutions: Not permitted.

2.02 APPLICATIONS

- A. Foundation Wall Drainage Sheet: Drainage sheet over waterproofing installed by others, from bottom of wall to grade level, and in locations indicated on the drawings.
- B. Basement Floor: Horizontal application drainage sheet between mud slab and finish slab.
- C. Planters: Drainage sheet inside planters, over waterproofing by others.
- D. Lagging Walls and Other "Blind" Side Foundation Walls: Drainage sheet on entire surface of wall "form" prior to installation of foundation wall.

2.03 MATERIALS

- A. Drainage Sheet for Vertical Installation: Polypropylene sheet, dimpled throughout field of sheet, with flat flanges on manufactured edges; polypropylene filter fabric heat bonded to top of dimples.
 - 1. Product: Cosella-Dörken Delta-Drain 6200; with factory-installed protection sheet adhered to side in contact with waterproofing.
 - 2. Dimpled Thickness: 0.40 inch (10 mm).
 - 3. Color: Black.
 - 4. Sheet Width: As required to result in as few seams as possible.
 - 5. Water Flow Rate in Vertical Orientation: 18 gal/min/ft (233 L/min/m), when tested in accordance with ASTM D 4716.
 - 6. Compressive Strength: Minimum 15,100 psf (723 kN/sq m), when tested in accordance with ASTM D 1621.
 - 7. Dimpled Sheet Weight: 2.75 oz/sq ft (830 g/sq m), when tested in accordance with ASTM D 3776.
 - 8. Working Temperature Range: Minus 22 degrees F (minus 30 degrees C) to 176 degrees F (80 degrees C).
 - 9. Filter Fabric: Non-woven polypropylene.
 - a. Apparent Opening Size: 70 sieve (0.21 mm), when tested in accordance with ASTM D 4751.
 - b. Permittivity: 2.0 per second, when tested in accordance with ASTM D 4491.
 - c. Water Flow Rate: 140 gpm/sq ft (5690 L/min/m), when tested in accordance with ASTM D 4491.
 - d. Ultraviolet Resistance: 70 percent (500 hr), when tested in accordance with ASTM D 4355.
 - e. Grab Tensile Strength: 110 lbf (450 N) when tested in accordance with ASTM D 4632.
 - f. Elongation at Breaking Load: 50 percent, when tested in accordance with ASTM D 4632.
 - g. Trapezoidal Tear Strength: 45 lbf (200 N), when tested in accordance with ASTM D 4533.
 - h. Puncture Strength: 65 lbf (0.29 N), when tested in accordance with ASTM D 4833.
 - i. Burst Strength: 215 psi (1482 kPa), when tested in accordance with ASTM D 3786.
 - j. Weight, Nominal: 4 oz/sq yd (135 g/sq m), when tested in accordance with ASTM D 5261.
- B. Drainage Sheet for Horizontal Installation: Polypropylene sheet, dimpled throughout field of sheet, with flat flanges on manufactured edges; polypropylene filter fabric heat bonded to top of dimples.
 - 1. Product: Cosella-Dörken Delta-Drain 9000.
 - 2. Dimpled Thickness: 0.40 inch (10 mm).
 - 3. Color: Black.
 - 4. Sheet Width: As required to result in as few seams as possible.
 - 5. Water Flow Rate in Horizontal Orientation: 5.4 gal/min/ft (67 L/min/m), when tested in accordance with ASTM D 4716.
 - 6. Water Flow Rate in Vertical Orientation: 27 gal/min/ft (334 L/min/m), when tested in

- accordance with ASTM D 4716.
7. Compressive Strength: Minimum 18,000 psf (862 kN/sq m), when tested in accordance with ASTM D 1621.
 8. Dimpled Sheet Weight: 3.05 oz/sq ft (930 g/sq m), when tested in accordance with ASTM D 3776.
 9. Flange Width: 3 inches (75 mm).
 10. Working Temperature Range: Minus 22 degrees F (minus 30 degrees C) to 176 degrees F (80 degrees C).
 11. Filter Fabric: Woven polypropylene.
 - a. Apparent Opening Size: 40 sieve (0.42 mm), when tested in accordance with ASTM D 4751.
 - b. Permittivity: 1.36 per second, when tested in accordance with ASTM D 4491.
 - c. Water Flow Rate: 100 gpm/sq ft (4074 L/min/sq m), when tested in accordance with ASTM D 4491.
 - d. Ultraviolet Resistance: 70 percent (500 hr), when tested in accordance with ASTM D 4355.
 - e. Grab Tensile Strength: 365 lbf (1623 N) when tested in accordance with ASTM D 4632.
 - f. Elongation at Breaking Load: 24 percent, when tested in accordance with ASTM D 4632.
 - g. Trapezoidal Tear Strength: 115 lbf (511 N), when tested in accordance with ASTM D 4533.
 - h. Puncture Strength: 100 lbf (440 N), when tested in accordance with ASTM D 4833.
 - i. Burst Strength: 480 psi (3304 kPa), when tested in accordance with ASTM D 3786.
 - j. Weight, Nominal: 6.5 oz/sq yd (216 g/sq m), when tested in accordance with ASTM D 5261.
- C. Accessory Strips: Products furnished by sheet manufacturer and of type and size appropriate to particular purpose.
1. Termination Bars: High density polyethylene strips for securing flange edges of dimpled sheet.
 2. Flashing Strip: Z-shaped high density polyethylene strip for securing and flashing top edge of sheet and detailing as required to substrate.
 3. C-Molding Strip: C-shaped, high density polyethylene strip for securing and enclosing drainage sheet top edge and detailing as required.
- D. Dimpled Sheet Fasteners: Corrosion resistant, high strength concrete nails or equivalent; plastic fastener dimpled to fit membrane sheet, with at least four dimples per washer, not counting center nail hole with single plastic connection plug.
- E. Sealant: Butyl-polyisobutylene joint sealant complying with ASTM C 1311 or CGSB 19-GP-14M; or other sealant compatible with membrane sheet; and approved by sheet manufacturer.
- F. Tape: Type as recommended by sheet manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are sound enough to retain fasteners and suitable for bonding of sealant.
- B. Verify that masonry walls below grade have been parged or waterproofed by others.
- C. Verify that subdrainage system has been properly installed.
- D. Verify that finish grade elevations are clearly marked.
- E. Do not begin installation until substrates have been properly prepared.

- F. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces "broom clean" prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 1. Remove projections larger than 1/4 inch (6 mm); remove sharp edges; remove all metal form ties or rods.
 - 2. In concrete and masonry, patch cracks and holes so that they provide suitable substrate as recommended by membrane manufacturer.
- C. Footings for Masonry Walls: Dampproof top of footing; form sealant cove bead at intersection of wall and footing.
- D. Mark installation locations on walls prior to starting installation.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Do not install when:
 - 1. Ambient temperature is below minus 24 degrees F (minus 30 degrees C).
 - 2. Concrete has been cured for less than 3 days.
 - 3. Standing water is present or uncontrolled.
- C. General Sheet Installation:
 - 1. On vertical and sloped surfaces, start at lowest point and work to top, running length of sheets perpendicular to slope, and overlapping upper sheets in shingle fashion; flash and seal top edges in manner recommended by manufacturer.
 - 2. Lap sheets at least 6 inches (150 mm) unless otherwise indicated.
 - 3. Install sheets without gaps, large wrinkles, creases, or tears.
 - 4. Align and interlock dimples in overlapping layers.
 - 5. Join and seal seams as required by manufacturer for particular application.
 - 6. Secure to substrate at edges and in the field of the sheet using fasteners and methods recommended by sheet manufacturer; stagger fasteners in alternate rows.
 - 7. Seal around openings, penetrations, and other locations recommended by manufacturer, in manner recommended by manufacturer.
- D. Drainage Sheets: In addition to general sheet installation above:
 - 1. Install with protruding dimples and filter fabric on side facing away from substrate, unless otherwise indicated.
 - 2. On vertical applications, seal lap joints with sealant in the overlap and fasten along edges and joints at maximum 6 inches (150 mm) on center.
 - 3. In addition, on vertical applications, seal lap joints with tape.
 - 4. On horizontal and low slope applications, seal lap joints with tape or sealant in the overlap and fasten along edges and joints at maximum 12 inches (305 mm) on center.
 - 5. Enclose all open edges of drainage sheets using either specified flashing strip or C-molding strip; in fine silty cohesive soils, wrap exposed edges with filter fabric before installing the enclosure strip.
 - 6. Cover sheet laps with filter fabric and do not leave dimpled sheet exposed at any time during installation.
 - 7. At vertical walls over waterproofing install sheet with filter fabric facing backfill, with sheets running either vertically or horizontally.
 - 8. On lagging, pile, or earth forms, and other "blind side" wall construction, install drainage sheet with filter fabric in contact with form; anchorage may be by adhesive if desired; seal

fastener penetrations using sealant approved by sheet manufacturer; seal joints in dimpled sheet using tape or subsequently applied waterproofing.

9. On low-slope split slab installations, install with filter fabric side up; seal dimpled sheet overlaps; do not penetrate sheets but provide temporary anchorage to prevent movement prior to and during installation of cover.
 10. In planters, install sheet continuously from just below final grade, across bottom, and seal around drains.
 11. At bottom of walls, extend a single sheet from wall over footing, and to drainage pipe if any.
- E. Repairs to Dimpled Sheet: Apply patch made of same material interlocked, with continuous sealant bead around tear or penetration and edges taped.
 - F. Repairs to Filter Fabric: Secure matching material over damaged area using tape, fasteners at maximum 6 inches (150 mm) on center, or other method as recommended by manufacturer.
 - G. After installation of reinforcing bars, inspect drainage sheet and repair damaged sheet and repair any damaged sheet and fabric to provide the same level of performance expected from the original drainage sheet installed.

3.04 FIELD QUALITY CONTROL

- A. Provide the services of representative of sheet manufacturer, qualified as specified above, to assist Contractor in achieving a satisfactory installation by inspecting substrates for suitability for installation, periodically reviewing procedures during construction, and evaluating the finished work.

3.05 PROTECTION

- A. Do not leave installed membrane exposed to sunlight for more than 30 days after installation; if not backfilled to cover, provide supplementary protection board.
- B. Prior to backfilling or installing subsequent construction, inspect sheets for tears and other damage and repair.
- C. Take care when backfilling to avoid damage to membrane; replace membrane damaged during backfilling.
- D. Protect installed products until completion of project.
- E. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION