

SECTION 07 1326

SELF-ADHERING SHEET WATERPROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Modified bituminous sheet waterproofing.
2. Bonded HDPE sheet waterproofing.
3. Molded-sheet drainage panels.

B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:

1. General provisions of the Contract, including General and Supplementary Conditions, and Division 01 General Requirements Specification Sections.
2. Section 03 3000 – CAST-IN-PLACE CONCRETE.
3. Section 07 9200 - JOINT SEALANTS

1.2 SUBMITTALS

A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.

B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining construction, and other termination conditions.

C. Certification:

1. Manufacturer: Submit written certification signed by manufacturer of each product that materials provided are suitable for long-term use with materials existing at site, including but not limited to soils containing saltwater and dredged hydraulic fills.
2. Installer: Signed by manufacturers certifying that installers comply with requirements

D. Product Test Reports: From a qualified independent testing agency indicating and interpreting test results of waterproofing for compliance with requirements, based on comprehensive testing of current waterproofing formulations.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: A firm experienced in producing specified materials similar to those indicated for this Project and with a record of successful in-service performance
2. Installer: A firm approved or licensed by waterproofing manufacturer for installation of waterproofing required for this Project.

B. Preinstallation Conference: Conduct conference at Project site. Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and

sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

- C. Source Limitations: Obtain sheet waterproofing and associated materials through one source from a single manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- C. Store rolls according to manufacturer's written instructions. Protect stored materials from direct sunlight.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.6 WARRANTY

- A. Special Manufacturer's Warranty: Written warranty, signed by waterproofing manufacturer agreeing to replace waterproofing material that does not comply with requirements or that does not remain watertight during specified warranty period.
 - 1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch in width.
 - 2. Warranty Period: Two years after date of Substantial Completion.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials and auxiliary materials from single source from single manufacturer.

2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Not less than 60-mil- thick, self-adhering sheet consisting of 56 mil of rubberized asphalt laminated to a 4-mil- thick, polyethylene film with release liner on adhesive side. Primer or surface conditioner as recommended by manufacturer and in compliance with VOC limits of authorities having jurisdiction.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cetco / Enviroseal.

2. American Hydrotech, Inc. / VM 75.
3. Grace, W. R. & Co. / Bituthene 3000.

C. Physical Properties:

1. Tensile Strength (ASTM D412, Die C, modified): 250 psi minimum
2. Ultimate Elongation (ASTM D412, Die C, modified): 300 percent minimum
3. Low-Temperature Flexibility (ASTM D1970): Pass at minus 20 deg F
4. Crack Cycling (ASTM C836): Unaffected after 100 cycles of 1/8-inch movement
5. Puncture Resistance (ASTM E154): 40 lbf minimum
6. Hydrostatic-Head Resistance (ASTM D5385): 50 feet minimum
7. Water Absorption (ASTM D570): 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F
8. Vapor Permeance: 0.05 perms; ASTM E 96, Water Method.

D. Self-Adhering, High-Temperature Sheet Waterproofing: Refer to Sectio 07 6200, SHEET METAL FLASHING AND TRIM.

2.3 BONDED HDPE OR POLYETHYLENE SHEET WATERPROOFING

A. General: Sub-grade waterproofing membranes shall form an integral and permanent bond to poured concrete to prevent water migration at the interface of the membrane and foundation structural concrete.

B. Horizontal Installations:

1. Pre-applied Integrally Bonded Sheet Waterproofing Membrane: Preprufe 200 Membrane by GCP Advanced Technologies Construction Products, a composite sheet membrane comprising 0.5 mm (0.020 in.) of high density polyethylene film, and layers of specially formulated synthetic adhesive layers. The membrane shall form an integral and permanent bond to poured concrete to prevent water migration at the interface of the membrane and structural concrete.

C. Vertical Installations:

1. Pre-applied Integrally Bonded HDPE Sheet Waterproofing Membrane: Preprufe 160R Plus Membrane as manufactured by GCP Applied Technologies, a 0.8 mm (0.032 in) nominal thickness composite sheet membrane consisting of a 0.4 mm (0.016 in.) of high density polyethylene film, a pressure-sensitive adhesive and a trafficable weather resistant coating. The membrane shall be supplied in a kick-out roll orientation and shall have no release liner to reduce waste onsite. The membrane shall form an integral, adhesive and permanent bond to poured concrete to prevent water migration at the interface of the membrane and structural concrete and shall include dual adhesive ZipLap seam technology to complete sidelaps and secure adjacent sheets.

D. Mastic, Adhesives, and Detail Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

2.4 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.

1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

- B. Primer: Liquid primer recommended for substrate by manufacturer of sheet waterproofing material.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.
- D. Sheet Strips: Self-adhering, rubberized-asphalt composite sheet strips of same material and thickness as sheet waterproofing.
- E. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.
- F. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.
- G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.
 - 1. Detail Tape to Seal Through-Wall Penetrations, End Laps and Tie-Ins: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.
- H. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, predrilled at 9-inch centers.

2.5 MOLDED SHEET DRAINAGE PANELS

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface drainage panel consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate of 9 to 15 gpm per ft.
- B. Woven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface drainage panels consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a woven-geotextile facing with an apparent opening size not exceeding No. 40 sieve laminated to one side of the core[and a polymeric film bonded to the other side; and with a horizontal flow rate not less than 2.8 gpm per ft.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
 - 1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
 - 2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.
 - 3. Verify that compacted subgrade is dry, smooth, and sound; ready to receive sheet waterproofing.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.
- F. Bridge and cover isolation joints, expansion joints and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.
- G. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D6135.
 - 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and at footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
- H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D6135.

3.3 MODIFIED BITUMINOUS SHEET WATERPROOFING APPLICATION

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and according to recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Two-Ply Application: Install sheets to form a membrane with lap widths not less than 50 percent of sheet widths to provide a minimum of 2 thicknesses of sheet membrane over areas to receive waterproofing.
- E. Horizontal Application: Apply sheets from low point to high point of decks to ensure that side laps shed water.
- F. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.
- G. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic.
- H. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.

- I. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.
- J. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

3.4 MOLDED-SHEET DRAINAGE-PANEL INSTALLATION

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall substrate, according to manufacturer's written instructions. Use adhesives or other methods that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

3.5 PROTECTION AND CLEANING

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION