

SECTION 07 13 26

SELF ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Modified bituminous sheet waterproofing.

1.2 ACTION SUBMITTALS

- A. Product Data: Technical data for each type of product, including include construction details, material descriptions, and tested physical and performance properties of waterproofing.
  - 1. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Submit installer's qualifications.
- B. Field quality control reports.
- C. Sample Warranty: Copy of special waterproofing manufacturer's and Installer's warranty stating obligations, remedies, limitations, and exclusions before starting waterproofing.

1.4 CLOSEOUT SUBMITTALS

- A. Executed copy of Special Manufacturer's Warranty.
- B. Executed copy of Special Installer's Warranty.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity having minimum 5 years documented experience and employs installers and supervisors who are trained and approved by waterproofing manufacturer.
- B. Source Limitations for Waterproofing System: Obtain waterproofing materials, protection course, and molded sheet drainage panels from single source from single manufacturer.

- C. Mockups: Build mockups to verify selections made under Sample submittals and to set quality standards for installation.
  - 1. Build for each typical waterproofing installation including accessories to demonstrate surface preparation, crack and joint treatment, corner treatment, and protection.
    - a. Size: 200 square feet in area minimum with corner and footing conditions As shown on Drawings or in area selected by the Architect.
    - b. Description: Each type of installation.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at site.

## 1.6 FIELD CONDITIONS

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

## 1.7 WARRANTY

- A. Written warranty signed by manufacturer in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- B. Written warranty signed by Installer in which Installer agrees to warrant its work.
  - 1. Warranty Period: Two years from the date of Substantial Completion.
  - 2. Warranty includes removing and reinstalling protection board, drainage panels, insulation, pedestals, and pavers on plaza decks.

## PART 2 - PRODUCTS

### 2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Minimum 60 mil (1.5 mm) nominal thickness, self adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated on one side to a 4 mil (0.10 mm) thick, polyethylene film reinforcement, and with release liner on adhesive

side; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. Basis of Design: Provide Bituthene System 4000 by GCP Applied Technology. Subject to compliance with requirements, and determination of an equivalent system by the Architect, provide products by one of the following may also be acceptable:
  - a. American Hydrotech, Inc.
  - b. Carlisle Coatings & Waterproofing Inc.
  - c. CETCO, a Minerals Technologies company.
  - d. Henry Company.
  - e. Polyguard Products, Inc.
  - f. Protecto Wrap Company.
  - g. W. R. Meadows, Inc.
2. Physical Properties:
  - a. Tensile Strength, Membrane: 250 psi (1.7 MPa) minimum; ASTM D 412, Die C, modified.
  - b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
  - c. Low Temperature Flexibility: Pass at minus 20 degrees F (minus 29 degrees C); ASTM D 1970.
  - d. Crack Cycling: Unaffected after 100 cycles of 1/8 inch (3-mm) movement; ASTM C 836.
  - e. Puncture Resistance: 40 lbf (180 N) minimum; ASTM E 154.
  - f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 degrees F (21 degrees C); ASTM D 570.
  - g. Water Vapor Permeance: 0.05 perms (2.9 ng/Pa x s x sq. m) maximum; ASTM E 96/E 96M, Water Method.
  - h. Hydrostatic Head Resistance: 200 feet (60 m) minimum; ASTM D 5385.
3. Sheet Strips: Self adhering, rubberized asphalt strips of same material and thickness as sheet waterproofing.

## 2.2 AUXILIARY MATERIALS

- A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing and specific applications.
  1. Furnish liquid type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid waterborne primer recommended for substrate by sheet waterproofing material manufacturer.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet waterproofing material manufacturer.
- D. Liquid Membrane: Elastomeric, two component liquid, cold fluid applied, of trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low viscosity, two component, modified asphalt coating.

- F. Epoxy Seal: Recommended by waterproofing system manufacturer.
- G. Sealants, Mastic, Adhesives, and Detail Tape: Sealeants, Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer for the specific conditions of each application and to uphold the warranty.
  - 1. Detail Tape: For covering joints. cut edges, roll ends, penetrations and detailing.
  - 2. Flashing: As recommended by waterproofing manufacturer for the specific conditions of each application.
- H. Metal Termination Bars: Aluminum bars, approximately 1 inch by 1/8 inch (25 mm by 3 mm), predrilled at 9 inch (229 mm) centers.
  - 1. Fasteners: Stainless steel or aluminum recommended by system manufacturer.
    - a. Fasteners to Concrete Substrates: 1/4 inch (25 mm) diameter minimum impact anchor with plastic expansion body and stainless steel drive pin of lengths to provide a minimum of 1-1/2 inch (38 mm) embedment into substrate. Provide compatible washers necessary to engage termination bar.
  - 2. Hose Clamp: Stainless steel, worm drive.
- I. Waterstop:
  - 1. Hydrophilic Waterstop: Nonmoving concrete joints compatible with waterproofing membrane and included in system warranty.
    - a. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
      - 1) ADCOR Hydrophilic Waterstop by GCP Applied Technologies.
      - 2) Sika Hydrotite by Sika Corp.
  - 2. Injectable Waterstop: System that provides a conduit for placement of chemical grouts for permanent sealing interfaces and voids within construction joints, pipe penetrations, and wall and slab connections.
    - a. Permeable tube, 1/2 inch (13 mm) for injecting chemical grouts.
- J. Chemical Grout: Provide one of the following as applicable to installation conditions.
  - 1. Flex SLV Pure by De Neef, GCP Applied Technologies: Ultra low viscosity hydrophobic polyurethane for injecting into hairline cracks in concrete structures.
  - 2. Flex LV Pure by De Neef, GCP Applied Technologies: Hydrophobic polyurethane forming flexible gasket when injected into cracks and joints in concrete structures; expanding on contact with water and curing to flexible foam resistant to organic solvents, mild acids, alkali, petroleum and microorganisms.
  - 3. Superflex AR by De Neef, GCP Applied Technologies: System composed of methacrylic acrylate copolymer resin and reinforcing agent for a low viscosity injectable grout for injecting into pores, capillaries, hairline cracks, and honeycombed concrete.
- K. Cementitious Grout: ASTM C 827; type recommended by waterproofing manufacturer; nonshrink, nonmetallic, premixed, nonstaining, noncorrosive grout suitable for feathered edge.

## 2.3 PROTECTION COURSE

- A. Protection Course: Extruded polystyrene board insulation, unfaced, ASTM C 578, Type X, 1/2 inch (13 mm) thick.

## 2.4 MOLDEDSHEET DRAINAGE PANELS

- A. Nonwoven Geotextile Faced, Molded Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel acceptable to waterproofing manufacturer and 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 (0.21 mm) sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft. (112 to 261 L/min. per m).
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Hydrotech, Inc.
    - b. Carlisle Coatings & Waterproofing Inc.
    - c. Grace Construction Products.
    - d. Protecto Wrap Company.
- B. Molded Sheet Collector Panel System Wrapped with Geotextile: Composite subsurface collector panel system by same manufacturer as primary molded sheet drainage panels; consisting of high profile, studded, nonbiodegradable, molded plastic sheet drainage core; wrapped with nonwoven geotextile facing with an apparent opening size not exceeding No. 40 (0.425-mm) sieve; and with a vertical flow rate through the core of 21 to 97 gpm per ft. (261 to 1197 L/min. per m) and minimum horizontal, in-plane flow rate of 21 gpm per ft. (261 L/min. per m). Provide system with manufacturer's outlets, connectors, tapes, and accessories to connect primary molded sheet drainage panels with piped subdrainage system.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and conditions affecting performance of waterproofing.
  - 1. Verify concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
  - 2. Verify substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D 4263.
  - 3. Verify that compacted subgrade is dry, smooth, sound, and ready to receive waterproofing sheet.
- B. Proceed with installation after correcting unsatisfactory conditions.

### 3.2 PREPARATION

- A. Clean, prepare, and treat substrates in accordance with 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 penetrating contaminants or film forming coatings from concrete.
- D. Remove fins, ridges, mortar, and 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 in accordance with ASTM D 4258.
  - 1. Install sheet strips of width in accordance with manufacturer's written instructions and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).
- F. Bridge and cover isolation joints, expansion joints, and discontinuous deck to wall and deck to deck joints with overlapping sheet strips of widths in accordance with manufacturer's written instructions.
  - 1. 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 in accordance with ASTM D 6135.
  - 1. Install membrane strips centered over vertical inside corners. Install 3/4 inch (19 mm) fillets of liquid membrane on horizontal inside corners and as follows:
    - a. At footing to wall intersections, extend liquid membrane in each direction from corner or install membrane strip centered over corner.
    - b. At plaza deck to wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.
- H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions in accordance with ASTM D 6135.

### 3.3 MODIFIED BITUMINOUS SHEET WATERPROOFING APPLICATION

- A. Install modified bituminous sheets in accordance with waterproofing manufacturer's written instructions and per recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow it 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 (64 mm) 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 degrees F and 40 degrees F (minus 4 degrees C and plus 5 degrees C), 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 degrees F (16 degrees C).
- D. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing where applicable.
- E. 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 (150 mm) beyond repaired areas in all directions.
- F. Seal penetrations through membrane with additional stripping making positive seal with penetrating members. Seal around items and surfaces projecting through waterproofed surfaces. Ensure sealed areas are watertight.
- G. Protection Course: Immediately install protection course with butted joints over waterproofing membrane. Apply protection board the same day membrane is applied. Apply mastic at rates recommended by manufacturer.
  1. Apply protection board with long dimension vertical with joints lapped 6 inches (150 mm) minimum and end laps offset 6 inches (150 mm) in succeeding courses to result in a maximum of 3 layers of board at corners. Seal laps with 1/16 inch (1.6 mm) thick trowel application of adhesive. Neatly fit boards around pipes and projections.
  2. Do not leave board exposed above grade line. Protect from damage until backfill is placed.

### 3.4 MOLDED SHEET DRAINAGE PANEL INSTALLATION

- A. Place and secure molded sheet drainage panels, with geotextile facing away from wall or deck substrate, in accordance with manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded sheet drainage panels during subsequent construction.
  1. For vertical applications, install protection course before installing drainage panels unless otherwise indicated on the Drawings.

### 3.5 FIELD QUALITY CONTROL

- A. Manufacturer Field Service: Engage a full time site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components; and to furnish daily reports to Architect.
- B. Waterproofing will be considered defective if it does not pass inspections.
- C. Prepare test and inspection reports.

3.6 PROTECTION, REPAIR, 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. Protect installed insulation drainage panels from damage due to UV light, harmful weather exposures, physical abuse, construction equipment damage and other causes. Provide temporary coverings where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- D. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- E. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION