

SECTION 071300 - SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Rubberized-asphalt sheet waterproofing.
 - 2. Fluid -applied waterproofing.
 - 3. Drainage panels.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide waterproofing that prevents the passage of water.

1.4 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. LEED Submittals: Follow submittal requirements of Division 01 Section "Submittal Requirements" and provide product data on the LEED Materials Documentation Cover Sheet attached as an Appendix to Division 01 Section "Sustainable Design and LEED Requirements."
- C. 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 waterproofing, and other termination conditions.
- D. Samples: For the following products:
 - 1. 12-by-12-inch square of waterproofing and flashing sheet.
 - 2. 12-by-12-inch square of insulation.
 - 3. 4-by-4-inch square of drainage panel.
- E. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- F. 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.

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- G. Sample Warranty: Copy of special waterproofing manufacturer's and Installer's warranty stating obligations, remedies, limitations, and exclusions before starting waterproofing.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is authorized, approved, or licensed by waterproofing manufacturer to install manufacturer's products.
- B. Source Limitations: Obtain waterproofing materials through one source from a single manufacturer.
- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." 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.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver liquid 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.
- C. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- D. Store rolls according to manufacturer's written instructions.
- E. Protect stored materials from direct sunlight.

1.7 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.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.8 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.

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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.
- B. Special Installer's Warranty: Written waterproofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, for warranty period of two years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Rubberized-Asphalt Sheet Waterproofing:
 - a. Carlisle Corporation, Carlisle Coatings & Waterproofing Div.; CCW 701.
 - b. W. R. Grace & Co.; Bituthene.
 - c. W. R. Meadows, Inc.; Mel-Rol.
 - d. T. C. Miradri; Miradri.
 - e. Pecora Corporation; Duramem 700-SM.
 - f. Tamko Roofing Products, Inc.; TW-60.
 2. Fluid-applied Waterproofing:
 - a. W. R. Grace & Co.; Procor 75.
 - b. W. R. Meadows, Inc.; Sealtight® Meadow-Pruf™ Seamless.
 - c. Kosh Waterproofing Solutions, Inc.: Exotite Waterproofing.
 - d. OZKO, Inc.; Rub-R-Wall
 3. Drainage Panels for Foundation Walls (vertical application):
 - a. Amerdrain 520; American Wick Drain Corp.
 - b. Hydroduct 220; Grace: W.R. Grace & Co.; Construction Products Div.
 - c. J-Drain: Series 400.
 - d. Mel-Drain 5035; W. R. Meadows, Inc.
 - e. Miradrain 6200 XL; Nicolon Corp.; Mirafi Div.
 4. Drainage Panels for Stair Landings (horizontal application):
 - a. Amerdrain 650; American Wick Drain Corp.
 - b. Hydroduct 660; Grace: W.R. Grace & Co.; Construction Products Div.
 - c. J-Drain: Series 720.
 - d. Mel-Drain 5035; W. R. Meadows, Inc.
 - e. Miradrain 9000 XL; Nicolon Corp.; Mirafi Div.

2.2 RUBBERIZED-ASPHALT SHEET WATERPROOFING

- A. Rubberized-Asphalt Sheet: 60-mil- thick, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated to a 4-mil- thick, polyethylene film with release liner on adhesive side.
 - 1. Physical Properties: As follows, measured per standard test methods referenced:
 - a. Tensile Strength: 250 psi 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 deg F; ASTM D 1970.
 - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C 836.
 - e. Puncture Resistance: 40 lbf minimum; ASTM E 154.
 - f. Hydrostatic-Head Resistance: 150 feet minimum; ASTM D 5385.
 - g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
 - h. Vapor Permeance: 0.05 perms; ASTM E 96, Water Method.

2.3 FLUID-APPLIED WATERPROOFING

- A. Fluid Applied Waterproofing Membranes: Two part, self-curing, synthetic rubber based material. Fluid applied membranes shall meet or exceed the performance requirements of ASTM C 836.
- B. Physical Properties: As follows, measured per standard test methods referenced:
 - 1. Cured Film Thickness: 0.060 inch nominal; ASTM D 3767 Method A.
 - 2. Flexibility: Pass at minus 180° bend over 25 mm (1 in.) mandrel at 32°C (-25°F); ASTM D 1970.
 - 3. Peel Adhesion to Concrete: 5 lbf/in.; ASTM D 903, modified.
 - 4. Solids Content: 100 percent; ASTM D 1970.
 - 5. Elongation: 500 percent minimum; ASTM D 412.
 - 6. Hydrostatic-Head Resistance: 75 feet minimum.

2.4 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
- B. Primer: Liquid waterborne or solvent-borne 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.

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- 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: 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.
 - 2. Detail Strips: 62.5-mil- thick, felt-reinforced self-adhesive strip, 9 inches wide, with release film on adhesive side.

2.5 DRAINAGE PANELS

- A. Description: Prefabricated, composite drainage panels, made with drainage core and filter fabric, for use as part of foundation drainage system.
- B. Drainage Core: 3-dimensional, nonbiodegradable, molded-plastic-sheet material designed to effectively conduct water to foundation drainage system under maximum soil pressures.
 - 1. Minimum Flow Rate: 15 gpm/foot at 1 hydraulic gradient and 3600 psf normal pressure when tested according to ASTM D 4716.
 - 2. Film Backing: Plastic, protective-film, backing sheet attached to surface facing building wall.
- C. Filter Fabric: Nonwoven geotextile fabric of polypropylene (PP) or polyester fibers, or combination of both.

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 D 4263.
 - 3. Verify that compacted subgrade is dry, smooth, and sound; ready to receive HDPE sheet.
 - 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.

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- 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 D 4258.
 - 1. Install sheet strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.
- F. Bridge and cover isolation joints, expansion joints and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips.
 - 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 according to ASTM D 6135.
 - 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
 - a. 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 D 6135.

3.3 RUBBERIZED-ASPHALT SHEET APPLICATION

- A. Install self-adhering sheets according to waterproofing manufacturer's written instructions and 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, rubberized-asphalt sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.

- E. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic or sealant.
- F. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheets extending 6 inches beyond repaired areas in all directions.
- G. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

3.4 FLUID-APPLIED WATERPROOFING APPLICATION

- A. Install fluid-applied waterproofing according to waterproofing manufacturer's written instructions.
- B. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid applied waterproofing.
- C. Fill form tie rod holes with concrete and finish flush with surrounding surface.
- D. Repair bugholes over 13 mm (0.5 in.) in length and 6 mm (0.25 in.) deep and finish flush with surrounding surface.
- E. Grind irregular construction joints to suitable flush surface.
- F. Apply minimum 1.5 mm (0.060 in.) in all areas to be waterproofed. Apply minimum 3 mm (0.120 in.) in all detail areas.

3.5 DRAINAGE PANEL INSTALLATION

- A. Install according to manufacturer's written instructions and as indicated. Coordinate placement with other foundation drainage materials.
 - 1. Comply with manufacturer's written instructions for securing drainage panels to substrate. Use adhesives and mechanical fasteners recommended by manufacturer. Do not penetrate waterproofing. Protect installed panels during backfilling.

3.6 PROTECTION AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.
- B. Protect installed board insulation from damage due to ultraviolet light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

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END OF SECTION 071300