

HotDeck HOT RUBBERIZED ASPHALT WATERPROOFING FOR HORIZONTAL DECK APPLICATIONS

SECTION 07 14 13 – HOT FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions, and Division 1 specification section, apply to this section.

1.2 SECTION INCLUDES

- A. The installation of materials designed to provide deck waterproofing protection when installed per project specification, this section covers the composite waterproofing membrane, along with the following:
 - 1. Surface preparation and substrate treatment
 - 2. Auxiliary materials
 - 3. Prefabricated drainage mat
 - 4. Insulation
 - 5. Deck drain

1.3 RELATED SECTIONS

- A. Section 03 15 00: Concrete Accessories
- B. Section 03 30 00: Cast-in-Place Concrete
- C. Section 03 40 00: Precast Concrete
- D. Section 03 50 00: Cast Decks and Underlayment
- E. Section 07 10 00: Damp Proofing and Waterproofing
- F. Section 07 20 00: Thermal Protection
- G. Section 07 25 00: Weather Protection
- H. Section 07 76 16: Roof Decking Pavers
- I. Section 07 90 00: Joint Protection
- J. Section 22 14 00: Facility Storm Drainage

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide a hot fluid applied horizontal waterproofing system that includes surface conditioner, 215 mils of reinforced hot applied rubberized asphalt, protection course, drainage mat, and other materials provided by a single source manufacturer, at the manufacturer's direction, or as required by the Architect.

1.5 SUBMITTALS

- A. Product Data: For each type of waterproofing specified submit manufacturer's printed technical data, tested physical and performance properties, instructions for evaluating, preparing, and treating substrates, and installation instructions.
- B. Shop Drawings: Project specific drawings showing locations and extent of waterproofing, details for substrate joints and cracks, sheet flashing, penetrations, transitions, and termination conditions.
- C. Samples: Submit two standard size samples of hot rubberized asphalt, reinforcing fabric, protection material, and drainage.
- D. Installer Certification: Submit written confirmation at the time of bid that installer is currently approved by the membrane manufacturer.
- E. Sample of manufacturer's warranty identifying the terms and conditions for the project.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Waterproofing installer shall be an EPRO Authorized contractor who is trained and performs work that is in accordance with EPRO standards and policies. For projects requiring a no-dollar-limit labor and material warranty, the waterproofing installer must be E.Assurance Certified at the time of bidding and EPRO systems must be used on the below grade envelope.
- B. Single source warranties that cover the below grade and above grade horizontal waterproofing must be done by the same manufacturer's authorized contractor and include all transition areas.
- C. Certified Third Party Inspection: For projects requiring a no-dollar-limit labor and material warranty, an independent inspector must be E.Assurance Certified and comply with the documentation requirements. Inspectors must meet the requirements set forth by the manufacturer.
- D. Pre-Installation Meeting: A meeting shall be held prior to application of the waterproofing system to assure proper substrate preparation, confirm installation conditions, and any additional project specific requirements. Attendees of the meeting shall include, but are not limited to the following:
 - 1. EPRO representative
 - 2. EPRO installer
 - 3. Third party inspector
 - 4. General contractor
 - 5. Owners representative
 - 6. Concrete/Shotcrete contractor
 - 7. Project design team

8. All appropriate related trades
- E. Field Sample: Apply waterproofing system field sample to 100 ft² (9.3 m²) of each assembly to demonstrate proper application techniques and standard of workmanship.
 1. Notify waterproofing system manufacturer representative, architect, certified inspector, and other appropriate parties one week in advance of the dates and times when field sample will be prepared.
 2. Test to confirm proper adhesion is achieved.
 3. If architect and certified inspector determines that field sample does not meet requirements; reapply composite membrane system until field sample is approved.
 4. Retain and maintain approved field sample during construction in an undisturbed condition as a standard for judging the completed composite membrane system. An undamaged field sample may become part of the completed work.
 - F. Materials: Waterproofing materials and system shall be single sourced.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site labeled with manufacturer's name, product brand name, material type, and date of manufacture. Upon the arrival of materials to the jobsite, inspect materials to confirm material has not been damaged during transit.
- B. Storage: Proper storage of onsite materials is the responsibility of the certified installer. Consult product data sheets to confirm storage requirements. Storage area shall be clean, dry, and protected from the elements. Liquid products at room temperature shall be stored within the stated manufactures recommend temperature requirements.
- C. Disposal: Remove and replace any material that cannot be properly applied in accordance with local regulations and specification section 01 74 19.

1.8 PROJECT CONDITIONS

- A. Temperature: Do not install waterproofing system when ambient temperatures fall below 0°F (-18°C).
- B. Weather Limitations: Do not start application in inclement weather, such as, rain, snow, or ice. The substrate must be free of water, moisture, snow, or ice.
- C. Substrate Review: Substrates shall be reviewed by the certified installer and accepted prior to application.
- D. Ventilation: Conduct work in well ventilated areas and limit access by other trades when product is being applied. Do not allow any flame or sparks to be present near flammable products. In confined areas adequate ventilation will be required. Vapors from hot applied materials may cause discomfort to skin and eyes during application.
- E. Protection: Protect all adjacent areas not receiving waterproofing. Protecting surfaces is necessary to prevent unwanted damage to surrounding areas.

- F. System Damage: Limit access by other trades during the application process. The general contractor shall provide adequate time for the system to cure and protection courses to be set into place. Do not allow any mineral or waste products to come in contact with the system as they may be detrimental to the system.

1.9 WARRANTY

- A. General Warranty: The special warranty specified in this section shall not deprive the owner of other rights the owner may have under other provisions of the contract documents, and shall be in addition to, and run concurrent with, other warranties made by the contractor under requirements of the contract documents.
- B. Special Warranty: Submit a written warranty signed by system manufacturer agreeing to repair or replace waterproofing that does not remain watertight within the specified warranty period. 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 the specially applied concrete that exceed 1/16 inch (1.6 mm) in width.
 - 1. Warranty Period: 5 years after the date of substantial completion.
 - 2. Coverage: Manufacturer will provide prorated coverage for the warranty term, agreeing to repair or replace material that does not meet requirements or remain watertight.
 - 3. Additional warranty options are available upon request and approval from the manufacturer. Warranty options include an E.Series Labor and Material warranty or a non-prorated No-Dollar-Limit E.Assurance Labor and Material warranty.
 - 4. When EPRO below grade waterproofing systems are used, a single sources manufacturer warranty will be available for all conditions where EPRO products are installed provided EPRO requirements are followed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: All waterproofing and membrane components must be supplied by a single source manufacturer. EPRO Services, Inc. (EPRO), P.O. Box 347; Derby, KS 67037; Tel: (800) 882-1896; Email: Info@eproinc.com; Web: www.eproinc.com
- B. System Assembly: **HotDeck** (215 mil reinforced) – **HD.primer1, HD.membrane 90 mil, HD.skrim, HD.membrane 125 mil, HD.cap1, e.drain 6000**
- C. For decks with vehicular traffic use **e.drain 9000** in lieu of **e.drain 6000**.

2.2 WATERPROOFING MATERIALS

- A. Membrane: Hot fluid applied rubberized asphalt membrane, **HD.membrane**, and shall contain the following physical properties:

| PROPERTIES | TEST METHOD | VALUE |
|--------------------------------|-------------|--|
| Color | | Black |
| Solid Content | | 100% |
| Application Rate at 215 mil | | 1.23 lb./ft ² |
| Heating Temp | | 350° F to 400° F |
| Softening Point | | 210°F |
| Water Vapor Transmission | ASTM E96 | .07 Perms |
| Methane Transmission | ASTM D1434 | Passed |
| Flash Point | | > 500° F |
| Cone Penetration | ASTM D5329 | @ 32° F = 25 dmm @ 77° F = 55 dmm @ 120° F = 160 dmm |
| Flow @ 140° F | ASTM D3407 | 0.1 |
| Heat Stability 5 hours @390° F | | No Change |
| Low Temperature Flexibility | | No Cracking at -15° F |
| Water Vapor Permeability | ASTM E96 | 0.01 Perms |
| Bond | ASTM D5329 | Passed |
| VOC Content | | 0 |

- B. Surface Conditioner: Primer shall be used to condition the concrete surfaces. Two products are available to meet site conditions.
1. **HD.primer1**: VOC compliant primer for most applications.
 2. **HD.primer2**: Solvent based primer for lower temperature applications, or where solvent based primers are accepted. Applicator to confirm local VOC requirements prior to use.
- C. Reinforcement: Reinforcement is required per manufactures instructions and details.
1. **HD.skrim** – Spun-bonded non-woven polyester fabric.
 2. **HD.neoflash** – Uncured neoprene rubber flashing sheet.
- D. Protection Course:
1. **HD.cap1** – Polymer modified fiberglass protection course, 90 mils
 2. **HD.cap2** – UV stable polymer modified fiberglass protection course, 120 mils
- E. Insulation: Extruded polystyrene board shall be used when specified. Acceptable options meeting ASTM C578 include:
1. Type VI
 2. Type VII
 3. Acceptable manufactures include: Dow Chemical and Owens Corning
- F. Drainage:
1. **e.drain 6000** – ¼” drainage panel with non-woven geotextile.
 2. **e.drain 9000** – ¼” drainage panel with woven geotextile.
- G. Auxiliary Materials
1. All accessory products shall be provided by the specified waterproofing manufacturer. Auxiliary products used in lieu of, or in addition to, the manufactures products must be approved in writing by the manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with project documents, manufacturer's product information, including product application and installation guidelines, pre-job punch list, as well as, manufacturer's shipping and storage recommendations.

3.2 SURFACE PREPARATION

- A. The general contractor shall engage the certified installer to ensure surfaces are prepared in accordance with manufacturer's instructions. Unless, explicitly stated in the contract documents, the certified installer is not responsible for surface preparation.
- B. Examine all substrates, areas, and conditions under which waterproofing systems will be applied, with installer and inspector present. Do not proceed with installation until unsatisfactory conditions have been corrected and the surface prep requirements have been met. If conditions exist that are not addressed in this section notify inspector and contact EPRO for additional clarification.
- C. Cast In Place Concrete: Cast in place concrete shall be monolithic, smooth, free of voids, spalled areas, laitance, honeycombs, and protrusions.
 - 1. Provide clean, dust-free, and dry substrate for waterproofing application.
 - 2. Surfaces shall be light broom finished and power washed to remove grease, oil, form release agents or any other penetrating contaminants from the concrete. No agents shall be visible prior to the application of **HD.membrane**. Steel trowel finished concrete must be sandblasted prior to application.
 - 3. Remove all fins, ridges, and other protrusions.
 - 4. Fill honeycomb, aggregate pockets, tie holes, and other voids greater than 1/16 inch with hydraulic cement, or rapid-set grout.
 - 5. For a concrete hydration cure, a full 28 day (14 day nominal) cure is recommended prior to the application of the membrane. For application prior to a 14 day cure, contact EPRO.
 - 6. For light weight concrete, a full 60 days is recommended, 28 day minimum. For application prior to a 28 day cure, contact EPRO
 - 7. All joints must be filled with the appropriate material and detailed per manufactures instructions.
- D. Precast Concrete:
 - 1. Mechanically secure all panels in place to minimize movement.
 - 2. Grout all joints.
 - 3. Provide clean, dust-free, and dry substrate for waterproofing application.

3.3 DECK MEMBRANE INSTALLATION – HOTDECK

- A. General: The deck membrane shall be installed under strict accordance with the manufacturer's guideline and project specifications. Coordination between the installer, inspector, general contractor and concrete contractor will be necessary to ensure proper installation.

3.3.1 SURFACE CONDITIONER

1. Apply **HD.primer1** over the entire application area using airless spray, low nap phenolic core roller, or wide fiber brush. For low temperatures, or where regulations allow, utilize VOC based **HD.primer2** for surface conditioning. Refer to the respective data sheets for coverage rates.
2. Allow time for surface conditioner to fully cure prior to membrane installation.

3.3.2 DETAILING, FLASHING AND TRANSITIONS

- A. All detailing, flashings, and transitions must be completed prior to the application of the waterproofing membrane.
 1. Detail all cracks with 90 mils of **HD.membrane** and **HD.skrim** reinforcement. Embed reinforcement while the membrane is still warm. Detail should extend 6" past the edge of the crack in all directions.
 2. For cracks larger than 1/16", but 1/4" or less, apply 90 mils of **HD.membrane** and **HD.neoflash** reinforcement. Embed reinforcement while the membrane is still warm. Detail should extend 6" past the edge of the crack in all directions.
 3. Penetrations, horizontal to vertical transitions, and transitions to below grade waterproofing shall be done in accordance with manufacturers details and completed prior to the waterproofing membrane.

3.3.3 HOT FLUID APPLIED MEMBRANE

- A. Heat **HD.membrane** to a pouring temperature range between 360° - 400° F in an insulated, double-shell, oil or air jacketed kettle with mechanical agitator.
- B. Install all detailing, flashing, at transition areas prior to the application of the field membrane.
- C. Total application thickness shall be 215 mils and applied in two coats.
- D. Apply a continuous minimum first coat of 90 mils over the entire area to be waterproofed. This includes all previously detailed areas.
- E. While the initial 90 mil layer is still warm, embed the **HD.skrim** reinforcement layer. Overlap the **HD.skrim** a minimum of 1" while ensuring membrane is present between each seam overlap.
- F. Apply a continuous minimum second coat of 125 mils over the **HD.skrim** reinforcement membrane, thus creating a membrane with a 215 nominal mil thickness.

3.3.4 PROTECTION LAYER

- A. Install protection sheet, **HD.cap1** or **HD.cap2**, by embedding into the still warm second coat of **HD.membrane**.

- B. Overlap all joints of protection course a minimum of 3" to ensure adequate protection.
- C. Conduct field quality control prior the installation of additional layers.

3.3.5 PREFABRICATED DRAINAGE MAT INSTALLATION

- A. Installation: Starting from one corner, install **e.drain 6000** over the protection course.
 - 1. Secure drainage panels to the deck without penetrating the deck waterproofing system.
 - 2. Abut the joints of **e.drain 6000** together, so they are flush with one another.
 - 3. **e.drain 6000** shall be detailed around deck drains per the project drawings.
 - 4. Subsequent trades must contact the general contractor if damage to the deck system occurs, failure to do so may void the warranty.

3.4 FIELD QUALITY CONTROL

- A. No extended coverage warranty will be issued if one of the methods highlighted below is not performed.
- B. Conduct field quality control prior to the placement drainage or insulation layers.
- C. No other trades are to proceed prior to the completion of the field quality control.
- D. Allow **HD.membrane** to cure by giving it time to cool. When cool to the touch the quality control process can begin.
- E. Electronic Vector Testing (EVT) is often a preferred method to flood testing.
 - 1. Coordination of test should be agreed upon at the pre-construction meeting between the members of the project team and the independent inspector.
 - 2. Identified breach shall be repaired and the area re-tested.
 - 3. Distribute testing reports as agreed upon in the pre-construction meeting. EPRO must be copied on all reports.
- F. Flood Test
 - 1. Confirm the structure can withstand the deadload weight of the flood test prior to commencing the test.
 - 2. Coordination of test should be agreed upon at the pre-construction meeting between the members of the project team and the independent inspector.
 - 3. Conduct flood test for a 48-hour period by flooding deck area with a minimum of 2 inches of water.
 - 4. Identified breach shall be repaired and the area re-tested.
 - 5. Distribute testing reports as agreed upon in the pre-construction meeting. EPRO must be copied on all reports.

3.5 CLEANING

- A. Remove and properly discard any areas that were masked to protect the underlying surface from unwanted material.
- B. Check drains to ensure proper function.
- C. Clean up all remaining debris and equipment.

End of Section