SECTION  – hot fluid-applied rubberized asphalt waterproofing

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. General
   1. SUMMARY
      1. Section Includes:
         1. Rubberized-asphalt waterproofing membrane [, unreinforced] [, reinforced].
         2. Molded-sheet drainage panels.
         3. Insulation.
         4. Plaza-deck pavers supported on pedestals.
      2. Related Requirements:

Retain subparagraph below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

* + - 1. Section 07 55 56.13 – Hot Applied Rubberized Asphalt Protected Membrane Roofing.
      2. Section 07 92 00 – Joint Sealants.
      3. Section 07 95 13 – Expansion Joint Assemblies.
      4. Section 32 14 00 – Unit Paving.
  1. preinstallation meetings

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + 1. Preinstallation Conference: Conduct conference at Project site.

If needed, insert list of conference participants not mentioned in Section 01 31 00 – Project Management and Coordination. Revise subparagraph below to suit Project.

* + - 1. Review waterproofing requirements including surface preparation, 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. action SUBMITTALS
     1. Product Data: For each type of product. Include manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.
     2. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins to adjoining waterproofing, and other termination conditions.

Retain subparagraph below if using pedestal-supported concrete pavers on plaza decks over waterproofing.

* + - 1. Include setting drawings showing layout, sizes, sections, profiles, and joint details of pedestal-supported concrete pavers.
    1. Samples: For plaza-deck pavers [**, full sized**] in each color and texture required.
  1. INFORMATIONAL SUBMITTALS

Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 01 45 00 – Quality Control and as may be supplemented in "Quality Assurance" Article.

* + 1. Qualification Data: For [**Installer**] [**and**] [**testing agency**].

Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + 1. Field quality-control reports.
    2. Sample Warranties: For special warranties.
  1. QUALITY ASSURANCE

Retain "Installer Qualifications" Paragraph below if applicable. For warranty purposes, manufacturer may qualify an installer. Coordinate paragraph with qualifications manufacturer requires of Installer.

* + 1. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
    2. Mockups: Install waterproofing to [**100 sq. ft. (9.3 sq. m)**] <**Insert value**> of [**deck**] [**wall**] to demonstrate surface preparation, crack and joint treatment, corner treatment, thickness, texture, and execution quality. [**Install pavers and pavers supports to demonstrate aesthetic effects, and set quality standards for materials and execution.**]

Retain first subparagraph below if mockups are not only for establishing appearance factors.

* + - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

Retain subparagraph below if the intention is to make an exception to the default requirement in Section 014000 "Quality Requirements" for demolishing and removing mockups.

* + - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by waterproofing manufacturer.
     2. Remove and replace liquid materials that cannot be applied within their stated shelf life.
     3. Protect stored materials from direct sunlight.
  2. FIELD CONDITIONS
     1. Weather 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, or when temperature is below zero deg F (minus 18 deg C).
        1. Do not apply waterproofing in snow, rain, fog, or mist.
     2. Maintain adequate ventilation during application and curing of waterproofing materials.
  3. WARRANTY

When warranties are required, verify with Owner's counsel that warranties stated in this article are not less than remedies available to Owner under prevailing local laws. Example in "Special Warranty" Paragraph below is a labor-and-material warranty. Verify coverage with manufacturers. Manufacturers' warranties customarily do not include costs of excavating and exposing the waterproofing membrane as well as backfilling and restoring affected construction in vertical applications.

* + 1. Special Warranty: Manufacturer agrees to repair or replace waterproofing and sheet flashings that do not comply with requirements or that fail to remain watertight within specified warranty period.

In addition to special warranty covering waterproofing and sheet flashings above, some manufacturers offer total-system warranties for plaza decks that include insulation and pavers. These warranties may include the costs of removing and reinstalling readily removable construction overlaying waterproofing. Verify coverage with manufacturers.

* + - 1. Warranty includes removing and reinstalling protection board, drainage panels, insulation, pedestals, and pedestal-mounted pavers on plaza decks.
      2. Warranty insulation retains 80 percent of original published thermal value.
      3. Warranty pavers do not dish or warp and do not crack, split, or disintegrate in freeze-thaw conditions.

Verify available warranties and warranty periods. Fabric-reinforced, hot fluid-applied waterproofing may qualify for 10-year warranties from some manufacturers.

* + - 1. Warranty Period: [**Five**] [5] <**Insert number**> years from date of Substantial Completion.

Retain "Special Installer's Warranty" Paragraph below if a separate special installer's warranty is required and if it is an accepted practice locally. Usually retain "Special Warranty" Paragraph above with "Special Installer's Warranty" Paragraph. Coordinate requirements of both special warranties to clarify responsibilities. If a specific installer's warranty form is required, see low-slope roofing Sections for examples that can be revised for waterproofing.

* + 1. Special Installer's Warranty: Specified form [**, on warranty form at end of this Section,**] signed by Installer, covering Work of this Section, for warranty period of [**two**] <**Insert number**> years.

Retain subparagraph below for plaza decks if applicable; revise if required.

* + - 1. Warranty includes removing and reinstalling protection board, drainage panels, insulation, pedestals, and pedestal-mounted pavers on plaza decks.

1. Products

Manufacturers and Products listed are neither recommended nor endorsed by the AIA or Avitru.. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications. For definitions of terms and requirements for Contractor's product selection, see Section 01 61 00 – Common Product Requirements.

* 1. manufacturers

Retain products from options in "Source Limitations" Paragraph below if a total-system warranty is required from single manufacturer.

* + 1. Source Limitations: Obtain waterproofing materials [**sheet flashings**] [**protection course**] [**molded-sheet drainage panels**] [**insulation**] [**pavers**] [**and**] [**pedestals**] from single source from single manufacturer.
  1. WATERPROOFING MEMBRANE
     1. Hot Fluid-Applied, Rubberized-Asphalt Waterproofing Membrane: Single component; 100 percent solids; hot fluid-applied, rubberized asphalt.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1649&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [American Hydrotech, Inc.](http://www.specagent.com/LookUp/?uid=123457103960&mf=04&src=wd)
         2. [Barrett Company](http://www.specagent.com/LookUp/?uid=123457103958&mf=04&src=wd).
         3. [Carlisle Coatings & Waterproofing Inc](http://www.specagent.com/LookUp/?uid=123457103961&mf=04&src=wd).
         4. [Henry Company](http://www.specagent.com/LookUp/?uid=123457103962&mf=04&src=wd).
         5. [Mar-flex Waterproofing & Building Products](http://www.specagent.com/LookUp/?uid=123457103967&mf=04&src=wd).
         6. [Situra Inc](http://www.specagent.com/LookUp/?uid=123457103966&mf=04&src=wd).
         7. [Soprema, Inc.](http://www.specagent.com/LookUp/?uid=123457103964&mf=04&src=wd)
         8. [Tamko Building Products, Inc](http://www.specagent.com/LookUp/?uid=123457103963&mf=04&src=wd).
         9. [Tremco Incorporated](http://www.specagent.com/LookUp/?uid=123457103959&mf=04&src=wd).
         10. <**Insert manufacturer's name**>.

Insert product physical and performance properties below if required. Manufacturers still report properties according to withdrawn CAN/CGSB-37.50, "Hot Applied, Rubberized Asphalt for Roofing and Waterproofing." See Evaluations for discussion and a listing of these properties.

* 1. AUXILIARY MATERIALS
     1. General: Auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with waterproofing.

Revise primer and adhesives in this article to manufacturer-approved, VOC-conforming products when VOC limits apply.

* + 1. Primer: ASTM D 41/D 41M, asphaltic primer.

Retain "Elastomeric Sheet" Paragraph below if used to reinforce joints, cracks, and terminations or for flashings. Revise or insert proprietary materials, such as self-adhering, rubberized asphalt with fabric facer or modified bituminous sheet, if not subject to hydrostatic head or frequent immersion in water.

* + 1. Elastomeric Sheet: 50-mil- (1.3-mm-) minimum, uncured sheet neoprene[**with manufacturer's recommended contact adhesives**] as follows:
       1. Tensile Strength: 1400 psi (9.6 MPa) minimum; ASTM D 412, Die C.
       2. Elongation: 300 percent minimum; ASTM D 412.
       3. Tear Resistance: 125 psi (860 kPa) minimum; ASTM D 624, Die C.
       4. Brittleness: Does not break at minus 30 deg F (34 deg C); ASTM D 2137.

Retain "Metal Termination Bars" Paragraph below if required by manufacturer to fasten top edge of elastomeric flashing sheet against wall at expansion or moving joints.

* + 1. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum termination bars; approximately 1 by 1/8 inch (25 by 3 mm) thick; with stainless-steel anchors.
    2. Sealants and Accessories: Manufacturer's recommended sealants and accessories.

Retain "Reinforcing Fabric" Paragraph below for joint-reinforcing fabric strips and for reinforced waterproofing membrane.

* + 1. Reinforcing Fabric: Manufacturer's recommended, spun-bonded polyester fabric.

Retain one of two "Protection Course" paragraphs below, or revise to insert other protection materials. Distinguish locations, such as plaza-deck and foundation walls, if more than one type of protection course is required.

Asphaltic protection course in first "Protection Course" Paragraph below is manufactured by W. R. Meadows and is also available from several other waterproofing manufacturers.

* + 1. Protection Course: ASTM D 6506, semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:
       1. Thickness: [**1/8 inch (3 mm)**] [**1/4 inch (6 mm)**], nominal.
       2. Thickness: 1/8 inch (3 mm), nominal, for vertical applications; 1/4 inch (6 mm), nominal, elsewhere.
    2. Protection Course: Manufacturer's standard, 80- to 90-mil- (2.0- to 2.3-mm-) thick, fiberglass-reinforced rubberized asphalt or modified bituminous sheet.
  1. MOLDED-SHEET DRAINAGE PANELS

Retain this article if drainage panels are required. Retain "Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel" Paragraph below if specifying nonwoven-geotextile-faced drainage panels, usually for foundation walls.

* + 1. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21-mm) sieve, laminated to one side [**with**] [**or**] [**without**] a polymeric film bonded to the other side of a studded, nonbiodegradable, molded-plastic-sheet drainage core, with a vertical flow rate of 9 to 15 gpm/ft. (112 to 188 L/min. per m).

Retain "Woven-Geotextile-Faced, Molded-Sheet Drainage Panel" Paragraph below if specifying woven-geotextile-faced drainage panels, usually for plaza decks.

* + 1. Woven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a woven-geotextile facing with an apparent opening size not exceeding No. 40 (0.43-mm) sieve, laminated to one side [**with**] [**or**] [**without**] a polymeric film bonded to the other side of a studded, nonbiodegradable, molded-plastic-sheet drainage core, with a horizontal flow rate not less than 2.8 gpm/ft. (35 L/min. per m).
  1. INSULATION

Retain "Board Insulation" Paragraph below if board insulation is required over waterproofing and if board insulation forms the first layer beneath an insulation drainage panel. Type IV and Type VI insulation are usually limited to vertical applications. Type VII and Type V insulation, with higher compressive resistances, are used on plaza decks.

* + 1. Board Insulation: Extruded-polystyrene board insulation complying with ASTM C 578, [**Type IV,** 25-psi (173-kPa)] [**Type VI,** 40-psi (276-kPa)] [**Type VII,** 60-psi (414-kPa)] [**Type V,** 100-psi (690-kPa)] minimum compressive resistance, [**square**] [**or**] [**shiplap**] edged.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1650&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [DiversiFoam Products](http://www.specagent.com/LookUp/?uid=123457103969&mf=04&src=wd).
         2. [Dow Chemical Company (The)](http://www.specagent.com/LookUp/?uid=123457103970&mf=04&src=wd).
         3. [Kingspan Insulation Limited](http://www.specagent.com/LookUp/?uid=123457103972&mf=04&src=wd).
         4. [Owens Corning](http://www.specagent.com/LookUp/?uid=123457103971&mf=04&src=wd).
         5. [T. Clear Corporation, a subsidiary of Fin Pan Inc](http://www.specagent.com/LookUp/?uid=123457103973&mf=04&src=wd).
         6. <**Insert manufacturer's name**>.

Retain "Unfaced Wall Insulation Drainage Panels" Paragraph below for unfaced insulation drainage panels for foundation wall applications. DiversiFoam's "CertiFoam 25 Drainage Board" and Dow's "Perimate" are Type IV. DiversiFoam's "CertiFoam 40 Drainage Board" is Type VI.

* + 1. Unfaced Wall Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, [**Type IV,** 25-psi (173-kPa)] [**or**] [**Type VI,** 40-psi (276-kPa)] minimum compressive resistance; unfaced; fabricated with shiplap or channel edges and with one side having grooved drainage channels.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1652&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [DiversiFoam Products](http://www.specagent.com/LookUp/?uid=123457103982&mf=04&src=wd).
         2. [Dow Chemical Company (The)](http://www.specagent.com/LookUp/?uid=123457103983&mf=04&src=wd).
         3. <**Insert manufacturer's name**>.

Retain "Geotextile-Faced Wall Insulation Drainage Panels" Paragraph below for geotextile-faced insulation drainage panels for foundation wall applications. Owens Corning's "Insul-Drain" and T. Clear's "Thermadry 750" are Type IV; T. Clear's "Thermadry 1250" is Type VI.

* + 1. Geotextile-Faced Wall Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, [**Type IV,** 25-psi (173-kPa)] [**or**] [**Type VI,** 40-psi (276-kPa)] minimum compressive resistance; fabricated with tongue-and-groove edges and with one side having grooved drainage channels faced with a nonwoven, geotextile filter fabric.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1653&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [Owens Corning](http://www.specagent.com/LookUp/?uid=123457103985&mf=04&src=wd).
         2. [T. Clear Corporation, a subsidiary of Fin Pan Inc](http://www.specagent.com/LookUp/?uid=123457103984&mf=04&src=wd).
         3. <**Insert manufacturer's name**>.

Retain "Unfaced Plaza-Deck Insulation Drainage Panels" Paragraph below for plaza-deck applications if an unfaced insulation drainage panel with ribbed drainage channels is required. Retain Type VI insulation for limited, intermittent pedestrian traffic or Type VII for heavier pedestrian traffic. Dow's "Styrofoam Ribbed Roofmate" and Owens Corning's "Foamular 404 RB" are Type VI; DiversiFoam's "CertiFoam Plaza Deck" and Owens Corning's "Foamular 604 RB" are Type VII.

* + 1. Unfaced Plaza-Deck Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, [**Type VI,** 40-psi (276-kPa)] [**Type VII,** 60-psi (414-kPa)] minimum compressive resistance; unfaced; fabricated with shiplapped or channel edges and with one side having ribbed drainage channels.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1654&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [DiversiFoam Products](http://www.specagent.com/LookUp/?uid=123457103986&mf=04&src=wd).
         2. [Dow Chemical Company (The)](http://www.specagent.com/LookUp/?uid=123457103987&mf=04&src=wd).
         3. [Owens Corning](http://www.specagent.com/LookUp/?uid=123457103988&mf=04&src=wd).
         4. <**Insert manufacturer's name**>.

Retain "Geotextile-Faced Plaza-Deck Insulation Drainage Panels" Paragraph below if Type VII geotextile-faced insulation is required for heavy pedestrian traffic.

* + 1. Geotextile-Faced Plaza-Deck Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, Type VII, 60-psi (414-kPa) minimum compressive resistance; fabricated with tongue-and-groove edges and with one side having grooved drainage channels faced with a nonwoven, geotextile filter fabric.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1655&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [T. Clear Corporation, a subsidiary of Fin Pan Inc](http://www.specagent.com/LookUp/?uid=123457103989&mf=04&src=wd).
         2. <**Insert manufacturer's name**>.
  1. PLAZA-DECK PAVERS

Retain this article for plaza-deck pavers supported on pedestals.

* + 1. Plaza-Deck Pavers: [**Brick**] [**Concrete**] [**Asphalt-block**] [**Granite**] [**Limestone**] [**Marble**] [**Quartz-based stone**] [**Slate**] [**Travertine**] pavers specified in Section 321400 "Unit Paving."

"Plaza-Deck Pavers" Paragraph below describes concrete pavers commonly used in pedestal-set applications over insulation and waterproofing. Limit pedestal systems to pedestrian plazas. Verify availability of deck pavers with characteristics retained.

* + 1. Plaza-Deck Pavers: Heavyweight, hydraulically pressed, concrete units, [**square edged**] [**with top edges beveled** 3/16 inch (5 mm)], manufactured for use as plaza-deck pavers; minimum compressive strength [**7500 psi (52 MPa)**] [**6500 psi (45 MPa)**] <**Insert value**>, ASTM C 140; absorption not greater than 5 percent, ASTM C 140; no breakage and maximum 1 percent mass loss when tested for freeze-thaw resistance according to ASTM C 67.

Retain "Manufacturers" Paragraph below and list of manufacturers to require products from manufacturers listed or a comparable product from other manufacturers.

* + - 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=1656&mf=04&src=wd): Subject to compliance with requirements, [**provide products by the following**] [**provide products by one of the following**] [**available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following**]:
         1. [Hanover Architectural Products](http://www.specagent.com/LookUp/?uid=123457103975&mf=04&src=wd).
         2. [Hastings Pavement Company, LLC](http://www.specagent.com/LookUp/?uid=123457103976&mf=04&src=wd).
         3. [Roofblok Limited](http://www.specagent.com/LookUp/?uid=123457103977&mf=04&src=wd).
         4. [Sunny Brook Pressed Concrete Company](http://www.specagent.com/LookUp/?uid=123457103978&mf=04&src=wd).
         5. [Wausau Tile Inc.](http://www.specagent.com/LookUp/?uid=123457103980&mf=04&src=wd)
         6. [Westile Roofing Products](http://www.specagent.com/LookUp/?uid=123457103979&mf=04&src=wd).
         7. <**Insert manufacturer's name**>.

Retain one thickness and one face size from options in "Thickness" and "Face Size" subparagraphs below. Include special paver sizes and insert descriptions of custom pavers, such as stair tread and riser units, coping or curbed termination pavers, and oversize pavers.

* + - 1. Thickness: [**1-5/8 inches (41 mm)**] [**1-3/4 inches (45 mm)**] [**2 inches (51 mm)**] [**2-3/8 inches (60 mm)**] <Insert dimension>.
      2. Face Size: [**8-7/8 inches (225 mm)** square] [**9 inches (229 mm)** square] [**9 by 18 inches (229 by 457 mm)**] [**12 inches (305 mm)** square] [**12 by 24 inches (305 by 610 mm)**] [**18 inches (457 mm)** square] [**24 inches (610 mm)** square] [As indicated] <Insert dimensions and shape>.
      3. Color: [As indicated by manufacturer's designations] [Match Architect's sample] [As selected by Architect from manufacturer's full range] <Insert color>.

Retain "Paver Supports" Paragraph below if using pedestal systems for paver supports.

* + 1. Paver Supports: Paver manufacturer's standard SBR rubber, high-density polyethylene, or polyurethane paver support assembly, including [**fixed-height**] [**adjustable or stackable**] pedestals, shims, and spacer tabs for joint spacing of [**1/8 inch (3 mm)**] [**3/16 inch (5 mm)**] [**1/8 to 3/16 inch (3 to 5 mm)**].

Retain "Concrete Fill" Subparagraph below if specifying Wausau's "Terr-Adjust" tilting and telescoping pedestals.

* + - 1. Concrete Fill: ACI 301, compressive strength of 5000 psi (34 MPa) at 28 days, and air content of 6 percent.

1. Execution
   1. EXAMINATION
      1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
         1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
         2. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
      2. Proceed with installation only after unsatisfactory conditions have been corrected.
   2. PREPARATION
      1. Clean and prepare substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for waterproofing application.
      2. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
      3. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.
      4. Remove grease, oil, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

Retain subparagraph below if required for waterproofing adhesion. Verify substrate acceptability with manufacturers.

* + - 1. Abrasive blast clean concrete surfaces uniformly to expose top surface of fine aggregate according to ASTM D 4259 with a self-contained, recirculating, blast-cleaning apparatus. Remove material to provide a sound surface free of laitance, glaze, efflorescence, curing compounds, concrete hardeners, or form-release agents. Remove remaining loose material and clean surfaces according to ASTM D 4258.
    1. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, and other voids.
  1. JOINTS, CRACKS, AND TERMINATIONS
     1. Prepare and treat substrates to receive waterproofing membrane, including joints and cracks, deck drains, corners, and penetrations according to manufacturer's written instructions.
        1. Rout and fill joints and cracks in substrate. Before filling, remove dust and dirt according to ASTM D 4258.

Usually retain two subparagraphs below. Retain first for reinforcing strips over moving or large joints and cracks.

* + - 1. Adhere strip of elastomeric sheet to substrate in a layer of hot rubberized asphalt. Extend elastomeric sheet a minimum of 6 inches (150 mm) on each side of moving joints and cracks or joints and cracks exceeding 1/8 inch (3 mm) thick, and beyond deck drains and penetrations. Apply second layer of hot fluid-applied, rubberized asphalt over elastomeric sheet.

Retain subparagraph below for reinforcing strips over nonmoving joints and cracks not exceeding 1/8 inch (3 mm) thick.

* + - 1. Embed strip of reinforcing fabric into a layer of hot rubberized asphalt. Extend reinforcing fabric a minimum of 6 inches (150 mm) on each side of nonmoving joints and cracks not exceeding 1/8 inch (3 mm) thick, and beyond roof drains and penetrations.

Retain subparagraph below with fabric-reinforced joints for unreinforced waterproofing membrane.

* + - * 1. Apply second layer of hot fluid-applied, rubberized asphalt over reinforcing fabric.

Revise or delete paragraph below if using expansion-joint gaskets or expansion-joint cover assemblies. Do not use modified bituminous flashing sheets for this condition.

* + 1. At expansion joints and discontinuous deck-to-wall or deck-to-deck joints, bridge joints with elastomeric sheet extended a minimum of 6 inches (150 mm) on each side of joints and adhere to substrates in a layer of hot rubberized asphalt. Apply second layer of hot fluid-applied, rubberized asphalt over elastomeric sheet.
  1. FLASHING INSTALLATION
     1. Install elastomeric sheets at terminations of waterproofing membrane according to manufacturer's written instructions.

Retain first paragraph below for smooth surfaces of masonry and concrete walls and parapets.

* + 1. Prime substrate with asphalt primer.
    2. Install elastomeric sheet and adhere to deck and wall substrates in a layer of hot rubberized asphalt.

Revise dimensions in first paragraph below if required. Verify minimum and maximum height limits with manufacturers if required.

* + 1. Extend elastomeric sheet up walls or parapets a minimum of 8 inches (200 mm) above plaza-deck pavers and 6 inches (150 mm) onto deck to be waterproofed.

Verify, with manufacturer, need for termination bars and mechanical fastening. Paragraph below is an example only.

* + 1. Install termination bars and mechanically fasten to top of elastomeric flashing sheet at terminations and perimeter of waterproofing.
  1. membrANE APPLICATION
     1. Apply primer, at manufacturer's recommended rate, over prepared substrate and allow it to dry.
     2. Heat and apply rubberized asphalt according to manufacturer's written instructions.
        1. Heat rubberized asphalt in an oil- or air-jacketed melter with mechanical agitator specifically designed for heating rubberized asphalt.

Retain first paragraph below if applicable.

* + 1. Start application with manufacturer's authorized representative present.

Retain "Unreinforced Membrane" or "Reinforced Membrane" Paragraph below, or both. If retaining both, indicate location of each system on Drawings.

* + 1. Unreinforced Membrane: Apply hot rubberized asphalt to substrates and adjoining surfaces indicated. Spread to form a uniform, unreinforced, seamless membrane, [**180-mil (4.5-mm) minimum thickness**] [**180-mil (4.5-mm) average thickness, but not less than 125 mils (3.2 mm)thick**].
    2. Reinforced Membrane: Apply hot rubberized asphalt to substrates and adjoining surfaces indicated. Spread to a thickness of 90 mils (2.3 mm); embed reinforcing fabric, overlapping sheets 2 inches (50 mm); spread another 125-mil- (3.2-mm-) thick layer to provide a uniform, reinforced, seamless membrane 215 mils (5.5 mm) thick.
    3. Apply waterproofing over prepared joints and up wall terminations and vertical surfaces to heights indicated or required by manufacturer.

Protection course also prevents insulation from sticking to membrane. Retain first option in paragraph below for foundation wall applications and second option for horizontal applications.

* + 1. Cover waterproofing with protection course with overlapped joints before membrane is subject to [**backfilling**] [**construction or vehicular traffic**].
  1. MOLDED-SHEET DRAINAGE PANEL INSTALLATION
     1. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate according to manufacturer's written instructions. Use methods that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

Retain subparagraph below if board insulation or protection course is installed before installing molded-sheet drainage panels.

* + - 1. For vertical applications, install [**board insulation**] [**protection course**] before installing drainage panels.
  1. INSULATION INSTALLATION
     1. Install [**one or more layers of board insulation to achieve required thickness**] [**and**] [**insulation drainage panels**] over waterproofed surfaces. Cut and fit to within 3/4 inch (19 mm) of projections and penetrations.

Retain first paragraph below if support is required during backfilling.

* + 1. On vertical surfaces, set insulation units into rubberized asphalt according to manufacturer's written instructions.
    2. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
  1. PLAZA-DECK PAVER INSTALLATION
     1. Install concrete pavers according to manufacturer's written instructions.

Retain first two paragraphs below if setting pavers on paving pedestals.

* + 1. Accurately install [**fixed**] [**adjustable**]-height paver pedestals and accessories to elevations required. Adjust for final level and slope with shims.

Retain subparagraph below if using Wausau's "Terr-Adjust" tilting and telescoping paver pedestals.

* + - 1. Fill paver pedestal with concrete mix, strike smooth with top of pedestal, and cure according to ACI 301.
    1. Loosely lay pavers on pedestals, maintaining a uniform open joint width. Tightly seat pavers against spacers to eliminate lateral movement or drift of paving assembly. Align joint patterns parallel in each direction.

Revise subparagraph below to suit Project. Consider paved area layout, paver module, and construction tolerances when imposing limits. Verify minimum dimensions with paver manufacturer. Minimum pedestal dimensions may also govern. Custom-dimensioned pavers or pavers scored to repeat module may be available.

* + - 1. Lay out pavers to avoid less-than-half-width pavers at perimeter or other terminations.

Insert special installation requirements below. Examples might include tread/riser units on tabs or treatment of pavers at plaza/building expansion joints.

* + 1. Install pavers to not vary more than 1/16 inch (1.6 mm) in elevation between adjacent pavers or more than 1/16 inch (1.6 mm) from surface plane elevation of individual paver.
    2. Limit variation in paving installation to within [**1/4 inch in 10 feet (6 mm in 3 m)**] <**Insert dimensions**> of surface plane in any direction; noncumulative.
  1. FIELD QUALITY CONTROL

Retain first paragraph below if a manufacturer's site representative is required. Manufacturer may also require this as a warranty condition.

* + 1. Engage a full-time site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions; surface preparation; and application of membrane, flashings, protection, and drainage components; furnish daily reports to Architect.
       1. Site representative shall measure membrane thickness with pin tester or other suitable device at least once for every 100 sq. ft. (10 sq. m) and include measurements in reports.

Retain "Testing Agency" Paragraph below to identify who shall perform tests and inspections. If retaining second option in "Testing Agency" Paragraph, retain "Field quality-control reports" Paragraph in "Informational Submittals" Article.

* + 1. Testing Agency: [**Owner will engage**] [**Engage**] a qualified testing agency to inspect substrate conditions, surface preparation, waterproofing application, protection, and drainage components, and to furnish reports to Architect.

Delete "Flood Testing" Subparagraph if waterproofing is limited to vertical applications. Revise below by identifying particular areas on Project to flood test when applicable. Limit water depth to not exceed load capacity of deck.

* + - 1. Flood Testing: Flood test each deck area for leaks, according to recommendations in ASTM D 5957, after completing and protecting waterproofing but before overlaying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water. Testing agency shall observe flood testing.
         1. Flood to an average depth of 2-1/2 inches (65 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (100 mm). Maintain 2 inches (50 mm) of clearance from top of sheet flashings.

ASTM D 5957 sets 24 hours as the minimum and 72 hours as the maximum duration for flood testing.

* + - * 1. Flood each area for [**24**] [**48**] [**72**] hours.
        2. After flood testing, repair leaks, repeat flood tests, and make further repairs until waterproofing installation is watertight.

Retain "Electric Field Vector Mapping (EFVM)" Subparagraph below only if Contractor is required to hire testing agency to perform this testing.

* + - 1. Electric Field Vector Mapping (EFVM): Testing agency shall survey entire waterproofing area for potential leaks using EFVM.
  1. CLEANING AND PROTECTION
     1. Protect waterproofing from damage and wear during remainder of construction period.

Retain first paragraph below when board insulation or insulation drainage panels are required and may be exposed for a period on plaza decks.

* + 1. Protect installed [**board insulation**] [**insulation drainage panels**] from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
    2. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

Insert Special Installer's Warranty Form below if required.

END OF SECTION