

SECTION 07 14 13 – HOT FLUID-APPLIED WATERPROOFING

The highlighted text boxes and anything in blue text is for internal use only. Please delete once the appropriate warranty option is selected.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hot fluid-applied rubberized asphalt waterproofing, horizontal deck applications.

1.2 RELATED REQUIREMENTS

1. Section 03 31 00 "Cast-in-Place Concrete" for moisture curing of concrete waterproofing substrate.
2. Section 04 20 00 "Unit Masonry" for compatibility with flashing components.
3. Section 07 21 00 "Thermal Insulation" for foundation and perimeter insulation.
4. Division 07 air barrier section for wall waterproofing and interface coordination.
5. Section 07 72 73 "Membrane Leak Detection System" for requirements for EFVM leak detection system installation and membrane leak testing.
6. Section 07 76 13 "Roof Pavers" for requirements for roof ballast and roof decking pavers and support pedestal systems.
7. Section 07 92 00 "Joint Sealants" for joint sealants and accessories and joint preparation.
8. Section 07 95 00 "Expansion Control" for expansion joint systems.
9. Section 33 46 00 "Subdrainage" for drainage pipe and conduits, drainage panels, and filter fabrics.

1.3 REFERENCES

A. References, General: Versions of the following standards current as of the date of issue of the project apply to the Work of this Section.

B. ASTM International (ASTM):

1. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants
2. ASTM D 4258 - Standard Practice for Surface Cleaning Concrete for Coating
3. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
4. ASTM D 4716 - Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
5. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials
6. ASTM E 96/E 96M - Standard Test Methods for Water Vapor Transmission of Materials
7. CAN/CGSB-37.50-M89: Hot-Applied, Rubberized Asphalt for Roofing and Waterproofing

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project Site.
 - 1. Review requirements for waterproofing products and installation, including surface preparation, substrate conditions, project and manufacturer's details, installation procedures, mockups, testing and inspection requirements, protection and repairs, and coordination and sequencing of waterproofing work with work of other Sections.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of waterproofing product specified, including:
 - 1. Technical data indicating compliance with requirements.
 - 2. Substrate preparation instructions and recommendations.
- B. Shop Drawings: Show locations for waterproofing system components. Show details for each type of substrate, joints, corners, and edge conditions, including flashings, counterflashings, penetrations, transitions, and terminations.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer, manufacturer[, and waterproofing Inspector].
 - 1. Certification of manufacturer's approval of Installer.
- B. Product Test Reports: Test data for waterproofing products and waterproofing system, by qualified testing agency, indicating proposed waterproofing meets performance requirements, when requested by Architect.
- C. Warranty: Sample of unexecuted manufacturer and installer special warranties.
- D. Field quality control reports.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A manufacturer-approved firm, employing workers trained by manufacturer, including a full-time on-site supervisor with a minimum of [three] years' experience installing similar work, and able to communicate verbally with Contractor [, Architect,] and employees.
- B. Manufacturer Qualifications: A qualified manufacturer [listed in this Section] with minimum five years' experience in manufacture of waterproofing as one of its principal products.
 - 1. Manufacturer's product submitted has been in satisfactory operation on five similar installations for at least five years.
 - 2. Approval of Manufacturers and Comparable Products: [Submit] [Prime Bidder must submit] the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Completed and signed Substitution Request form.
 - b. Product data, including certified independent test data indicating compliance with requirements.
 - c. Sample shop drawings from similar project.

- d. Name and resume of proposed qualified Inspector.
- e. Sample warranty.

Retain "Independent Observation" Paragraph below if Option 2 under "Warranty" is selected. This is a requirement to obtain AVM Aussie Guard No Dollar Limit Warranty covering both material and labor

- C. Waterproofing Inspector Qualifications: An independent party certified as a waterproofing inspector approved by the manufacture, retained by the owner and experienced in the installation and maintenance of the specified waterproofing system, qualified to perform observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification.
- D. Testing Agency Qualifications: Qualified independent agency experienced in the installation of the specified waterproofing system, and qualified to perform observation and inspection specified in Field Quality Control Article to determine Installer's compliance with the requirements of this Project, acceptable to Architect, retained by the owner.
- E. Mockups: Provide waterproofing mockup application within mockups required in other sections, or if not specified, in an area of not less than 150 sq. ft. of surface where directed by Architect for each type of substrate condition. Include examples of surface preparation, crack and joint treatment, waterproofing application, and flashing, transition, and termination conditions, to set quality standards for execution.
 - 1. Include intersections of deck waterproofing with adjacent vertical waterproofing and moisture control systems, including Air Barrier Membrane(s)

1.8 DELIVERY, STORAGE AND HANDLING

- A. Accept materials on site in manufacturer's unopened original packaging.
- B. Store products in weather protected environment, clear of ground and moisture, within temperature ranges recommended by waterproofing manufacturer.
- C. Construction Waste: Store and dispose of packaging materials and construction waste in accordance with requirements of Division 01 Section ["Construction Waste Management"] ["Temporary Facilities and Controls."]

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer.
 - 1. Protect substrates from environmental conditions that affect waterproofing performance.
 - 2. Do not apply waterproofing to a damp or wet substrate or during snow, rain, fog, or mist.

1.10 SCHEDULING

- A. Coordinate installation of waterproofing with completion of roofing and other work requiring interface with waterproofing.
- B. Schedule work so waterproofing applications may be inspected prior to concealment.

- C. Ensure waterproofing materials are cured before covering with other materials.

1.11 WARRANTY

Warranty Selection: Below are two warranty options offered by AVM Industries. The selection of Option #2 will involve additional requirements mentioned throughout the paragraph. Delete the option NOT selected.

If Shotcrete is being used for structural foundation walls and the project is beneath the water-table (hydrostatic condition), please consult with your AVM representative prior to finalizing the specification. AVM's dual waterproofing system may be required.

Option #1 (A): Remove paragraph below if Option #2 is selected

PART 2 - Manufacturer's Warranty: Manufacturer's standard form in which waterproofing manufacturer agrees to furnish waterproofing material to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to perform as specified under normal use within warranty period specified.

SCHEDULE 0 - Access for Repair: Owner shall provide unimpeded access to the Project and the waterproofing system for purposes of testing, leak investigation, and repair, and shall reinstall removed cladding and overburden materials upon completion of repair.

SCHEDULE 1 - Cost Limitation: Manufacturer's obligation for repair or replacement shall be limited to the original cost of the material

SCHEDULE 2 - Warranty Period: 5 years from date of Substantial Completion

SCHEDULE 3 - Applicator will provide a 2-year labor

Option #2 (B): Remove paragraph below if Option #1 is selected

PART 3 - Manufacturer's Warranty: Upon installation completion and manufacturer acceptance of the work required by this section, the waterproofing materials manufacturer will provide to the project Owner, a written fifteen (15) year No Dollar Limit AussieGuard® waterproofing warranty, covering both materials and labor. Issuance of Manufacturer's Waterproofing Warranty requires the following:

SCHEDULE 0 - Waterproofing system products shall have been provided by a single manufacturer

SCHEDULE 1 - Pre-Installation Conference. **Reference Section 1.04 (Quality Assurance), Section E**

SCHEDULE 2 - Installation inspected by an approved 3rd Party Independent Inspection Firm. **Reference 1.04 (Quality Assurance), section C (Independent Observation).**

SCHEDULE 3 - Waterstop manufactured and supplied by the waterproofing membrane manufacturer must be installed in all applicable concrete construction joints and around applicable penetrations. **Reference Specification Section 031500- Waterstops**

SCHEDULE 4 - Applicator will provide a 2-year labor warranty.

PART 4 - PRODUCTS

4.1 MANUFACTURERS

- A. Basis-of-Design Products: Provide waterproofing products manufactured by **AVM Industries, Aussie 570 Hot Rubber**. www.avmindustires.com
- B. Source Limitations: Provide waterproofing system materials and accessory products from single source from single manufacturer.

4.2 PERFORMANCE REQUIREMENTS

- A. General: Waterproofing system shall be capable of performing as a continuous watertight installation and as a moisture drainage plane transitioned to adjacent flashings and discharging water to the building exterior. Waterproofing shall accommodate normal substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without resultant moisture deterioration.
- B. Compatibility: Provide waterproofing system materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by waterproofing manufacturer based on testing and field experience.

4.3 WATERPROOFING MEMBRANE

- A. Hot Fluid-Applied Rubberized Asphalt Waterproofing: Single component, 100 percent solids; hot fluid-applied, rubberized asphalt formulated for application of not less than 215 mils, applied in two applications in conjunction with an interlayer of reinforcing fabric.
 - 1. Basis of Design Product: **AVM Industries, Aussie 570 Hot Rubber**

Technical Information			
Property		Requirement	Test Method
Recommended application temperature		380°F-400°F (193°C-204°C)	
Flow, 104°F (60°C)		3 mm Max	CGSB 37.50-M89
Cone Penetration	77°F (25°C)	110 Max	CGSB 37.50-M89
	122°F (50°C)	200 Max	CGSB 37.50-M89
Toughness		5.5 Joule Min	CGSB 37.50-M89
Toughness Ratio		0.04 Min	CGSB 37.50-M89
Adhesion Rating		1 Min	CGSB 37.50-M89
Water Vapor Permeance		1.7 ng/Pa. / Sq. Meter Max	CGSB 37.50-M89
Water Absorption		0.35g max gain or 0.18g max loss	CGSB 37.50-M89
Low Temperature Flexibility, -13°F (-25°C)		Pass	CGSB 37.50-M89
Crack Bridging, -13°F (-25°C)		Pass 10 cycles	CGSB 37.50-M89
Heat Stability, 5 hours		Pass	CGSB 37.50-M89
Viscosity at Application Temperature		2-15 seconds	CGSB 37.50-M89
Flash Point, C.O.C.		500°F (260°C) min or 45°F (25°C) min above recommended application temperature.	CGSB 37.50-M89
Packaging	Approximate Shipping Weights		Coverages
Box / 75 Boxes per Pallet	30 Lbs per Box / 2,250 Lbs per pallet		1.35 Lbs/Sqft @215 Mils
AVM Primer 570 4.7 gal. pails	40 Lbs		200-300 sqft/Gal
AVM Mat 570 (4'x360')	13.5 Lbs		4,320 Sq. Ft.
			VOC
			0 G/L
			350 G/L
			N/A

4.4 ACCESSORY MATERIALS

- A. General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete waterproofing system meeting performance requirements, and compatible with waterproofing material and adjacent materials.
- B. Substrate Patching Material: Waterproofing manufacturer's standard trowel-grade filler material.
- C. Primer: AVM approved primer meeting VOC limitations and recommended for substrate by waterproofing manufacturer.
- D. Reinforcing Fabric: Waterproofing manufacturer's standard spun-bonded polyester fabric
 1. Basis of Design Product: **AVM Mat 570**
- E. Elastomeric Sheet: Thermoset neoprene rubber sheet not less than 60 mil (1.52 mm).
 1. Basis of Design Product: **AVM Neoprene Flashing 570**
- F. Metal Termination Bar: standard aluminum or stainless-steel termination bar, with stainless steel fasteners.
- G. Joint Sealant: single-component Polyether, approved by waterproofing manufacturer for adhesion and compatibility with waterproofing and accessories.
 1. Basis of Design Product: Aussie Seal M
- H. Protection Course: [Waterproofing manufacturer's standard protection course material recommended for application.] [Provide the following:]

1. Smooth-surfaced modified bitumen sheet, 94 mils thick.
 - a. Basis of Design Product: **Aussie 570 Protection Sheet**

4.5 DRAINAGE PANELS

- A. Drainage Mat: Composite mat with drainage core, filter fabric.
 1. Polypropylene core with nonwoven, needle-punched polypropylene fabric face and polymeric film backing; flow rate 21 gpm per foot per ASTM D 4716 and compressive strength of 15,000 psf.
 - a. Basis of Design Product: **AVM Drain Board 6000**
 2. High compressive strength polypropylene core with nonwoven, needle-punched polypropylene fabric face and polymeric film backing; flow rate 21 gpm per foot per ASTM D 4716 and compressive strength of 21,000 psf.
 - a. Basis of Design Product: **AVM Drain Board 9000**

4.6 INSULATION

- A. Insulation, General: Comply with Section 07 21 00 "Thermal Insulation."
- B. Board Insulation: Extruded-polystyrene board insulation according to ASTM C 578, square or shiplap edged.
 1. Type VI, 40-psi minimum compressive strength.
 2. Type VII, 60-psi minimum compressive strength.
 3. Type V, 100-psi minimum compressive strength.

4.7 INSULATION DRAINAGE PANELS

- A. Unfaced, Plaza-Deck, Insulation Drainage Panels: Extruded-polystyrene board insulation, ASTM C 578, Type VII, 60-psi (414-kPa) minimum compressive strength; unfaced; with ship lapped or channel edges and with one side having ribbed drainage channels.
- B. Geotextile-Faced, Plaza-Deck, Insulation Drainage Panels: Extruded-polystyrene board insulation, ASTM C 578, Type VII, 60-psi minimum compressive strength; with tongue-and-groove edges, with one side having grooved drainage channels, and faced with manufacturer's standard, nonwoven-geotextile filter fabric.

PART 5 - EXECUTION

5.1 EXAMINATION

- A. Surface Condition: Before applying waterproofing materials, examine substrate and conditions to ensure substrates are fully cured, smooth, clean, dry, and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion, and conditions comply with manufacturer's written recommendations.

1. Verify concrete and masonry surfaces are visibly dry, have cured for time period recommended by waterproofing manufacturer, and are free from release agents, curing agents, laitance, and other contaminants. . Test for waterproofing adhesion per manufacturer's recommended method. Notify Architect of unsatisfactory conditions.
 2. Test for capillary moisture per manufacturer's recommended method.
 3. Verify masonry joints are filled with mortar and struck flush.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

5.2 INTERFACE WITH OTHER WORK

- A. Sequencing of Work: Coordinate sequencing of waterproofing work with work of other sections that form portions of building envelope moisture control to ensure that flashings and transition materials can be properly installed and inspected.
- B. Subsequent Work: Coordinate waterproofing work with work of other sections installed subsequent to waterproofing to ensure complete inspection of installed waterproofing and sealing of waterproofing penetrations necessitated by subsequent work.

5.3 PREPARATION

- A. Clean, prepare, and treat substrates in accordance with waterproofing manufacturer's written instructions.
1. Mask adjacent finished surfaces.
 2. Remove contaminants and film-forming coatings from substrates.
 3. Remove projections and excess materials and fill voids with substrate patching material.
 4. Prepare and treat joints and cracks in substrate per ASTM D 4258 and waterproofing manufacturer's written instructions.
- B. Detail Preparation: Prepare non-moving shrinkage cracks, large cracks, construction joints, expansion joints, projections and protrusions, penetrations, drains, and changes in plane in accordance with waterproofing manufacturer's written instructions and details, using accessory materials specified.
1. Adhere strips of elastomeric sheet to moving joints and large cracks by embedding in a layer of hot rubberized asphalt and overlay with coat of hot rubberized asphalt.
- C. Transitions to Adjacent Materials: Install elastomeric and composite reinforced flashing to form connect and seal waterproofing material to adjacent components of building waterproofing system, including, but not limited to, roofing system waterproofing, exterior fenestration systems, door framing, and other openings
1. Seal top of through-wall flashings to waterproofing with continuous transition strips of type recommended by waterproofing manufacturer for application.
 2. Install elastomeric sheets at terminations of waterproofing membrane according to manufacturer's written instructions.
 3. Install termination bars and mechanically fasten to top of elastomeric flashing sheet at terminations and perimeter of waterproofing.

5.4 WATERPROOFING INSTALLATION

- A. General: Apply waterproofing material to form a seal with strips and transition strips and to achieve a continuous waterproofing according to waterproofing manufacturer's written instructions. Apply waterproofing material within manufacturer's recommended application temperature ranges.
- B. Primer: Apply primer to substrates at required rate, using roller, brush, or airless spray. Allow to dry. Reprime areas if required by manufacturer's written instructions.
- C. Heat and apply rubberized asphalt according to manufacturer's written instructions. Heat rubberized asphalt in an oil- or air-jacketed melter with mechanical agitator specifically designed for heating rubberized asphalt.
- D. Start application with manufacturer's authorized representative present.
- E. Hot Fluid-Applied Rubberized Asphalt Waterproofing, reinforced: Apply waterproofing in total wet film thickness recommended in writing by waterproofing manufacturer, but not less than 215-mil wet film thickness, applied in two or more equal coats applied using methods recommended by waterproofing manufacturer, as follows:
 - 1. Apply first coat at minimum thickness of 90 mils.
 - 2. Thoroughly embed reinforcing fabric in first coat while still liquid, with slight overlap of fabric edges.
 - 3. Apply second coat at not less than 125 mils and as required to achieve total thickness of not less than 215 mils.
- F. Terminations: Install terminations of waterproofing membrane in accordance with ASTM C 898 and ASTM C 1471, as applicable to application, at not less than minimum height recommended by waterproofing manufacturer. Overlap waterproofing on to intersecting construction a minimum of 24 inches.
- G. Do not cover waterproofing until it has been tested and inspected by Owner's testing agency.
- H. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates and reapply waterproofing components.

5.5 PROTECTION INSTALLATION

- A. Protection Course: Cover waterproofing with protection course prior to backfilling or subjecting installation to traffic. Overlap joints.
- B. Drainage Panel: Place and secure drainage panels using methods that do not penetrate waterproofing. Face geotextile away from deck substrate. Lap edges and ends of geotextile.
- C. Insulation: Install one or more layers of board insulation as required, staggering joints. Fit within 1/2 inch of projections and penetrations.
 - 1. On vertical surfaces, set insulation units into rubberized asphalt according to insulation manufacturer's written instructions.
 - 2. On horizontal surfaces, loosely lay insulation units according to insulation manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

5.6 FIELD QUALITY CONTROL

- A. Contractor's Inspector: Contractor shall engage manufacturer's qualified Inspector full-time during the Work to perform tests and inspections, including documenting of waterproofing prior to concealment.
 - 1. Contractor's Inspector shall measure membrane thickness with pin tester at least once for every 100 sq. ft.
 - 2. Provide written report of tests and inspections.
- B. 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.
 - 1. Testing includes EVFM inspection prior to concealing waterproof membrane as specified in Section 07 72 73 "Membrane Leak Detection System."
- C. Coordination of Testing: Cooperate with testing agency. Allow access to work areas and staging. Notify testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection.
 - 1. Do not cover Work until testing and inspection is completed and accepted.
- D. Reporting: Forward written inspection reports to the Architect within 10 working days of the inspection and test being performed.
- E. Correction: Correct deficient applications not passing tests and inspections, make necessary repairs, and retest as required to demonstrate compliance with requirements.

5.7 CLEANING AND PROTECTING

- A. Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.
- B. Protect waterproofing from damage from subsequent work. Protect waterproofing materials from exposure to UV light for period in excess of that acceptable to waterproofing manufacturer; replace overexposed materials and retest.

END OF SECTION