PART 1 GENERAL

1.1 SECTION INCLUDES
A. Fluid applied membrane waterproofing air/vapor barrier at shotcrete structures.

1.2 RELATED REQUIREMENTS
A. None

1.3 REFERENCE STANDARDS
I. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a.

1.4 SUBMITTALS
A. See Section 01 3000 for submittal procedures.
B. Product Data: Provide data for membrane.
C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
D. Manufacturer's Installation Instructions: Indicate special procedures.
E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

15 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacture of fluid-applied waterproofing membranes with three years experience.
B. Installer Qualifications: Company specializing in installation of fluid-applied waterproofing approved by manufacturer.

16 FIELD CONDITIONS
A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application and until cured.

17 WARRANTY
A. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS
2.1 MANUFACTURERS
A. Hot-Applied Rubberized Asphalt Waterproofing Manufacturers:
B. Cold-Applied, Water-Based Asphalt Emulsion Waterproofing Manufacturers:
C. Fluid-Applied one component elastomeric asphalt emulsion liquid membrane:

2.2 MEMBRANE AND FLASHING MATERIALS
A. Elastomeric AirNapor barrier membrane: Air Bloc 06 WB as basis of design.
   1. Capable of resisting water head of 10 feet and preventing moisture migration to interior, tested in accordance with ASTM D5385.
   2. Suitable for installation over concrete substrates.
   3. Tensile Strength: 20 psi, measured in accordance with ASTM D412.
   4. Ultimate Elongation: 1200 percent, measured in accordance with ASTM D412.
   5. Tear Strength: 150 lb/inch, measured in accordance with ASTM D624.
   6. Water Vapor Permeability: 0.02 perm inch, measured in accordance with ASTM E96/E96M.
   7. Adhesion: Greater than 150 psi, measured in accordance with ASTM D4541.
B. Hot-Applied Rubberized Asphalt Waterproofing: Elasticized rubberized asphaltic compound, hot-applied and quick-setting.
   1. Cured Thickness: 0.03 inches (0.75 mm), minimum.
   2. Suitable for installation over concrete substrates.
   3. Tensile Strength: 15 psi (0.103 MPa), measured in accordance with ASTM D412.
4. Ultimate Elongation: 500 percent, measured in accordance with ASTM D412.
5. Hardness: 60, measured in accordance with ASTM D2240, using Type A durometer.
6. Tear Strength: 150 lbf/inch (26.3 N/mm), measured in accordance with ASTM D624.
7. Water Vapor Permeability: 0.014 perm inch (0.801 ng/Pa/s/m), measured in accordance with ASTM E96/E96M.
8. Adhesion: Greater than 150 psi (1.03 MPa), measured in accordance with ASTM D4541.

C. Water-Based Asphalt Emulsion Waterproofing:
   1. Cured Thickness: 60 mils (0.060 inches) (1.52 mm), minimum.
   2. Suitable for installation over concrete substrates.
   3. Elongation: 1000 percent, measured in accordance with ASTM D412.
   4. VOC Content: Less than 20 g/L when tested in accordance with 40 CFR 59 Subpart D (EPA Method 24).
   5. Water Vapor Permeability: 0.02 perm inch (0.030 ng/Pa/s/m), measured in accordance with ASTM E96/E96M.
   6. Peel Adhesion: According to ASTM D412, for the following substrates:
      a. High Density Polyethylene Film: 12.2 pound-inches (2.14 kN/m).
      b. Concrete and Concrete Masonry: 14.1 pound-inches (2.47 kN/m).
      c. Glass Fiber Mat Faced Gypsum Board: 13.1 pound-inches (2.94 kN/m).
   7. Adhesion: Greater than 150 psi (1.03 MPa), measured in accordance with ASTM D4541.

2.3 ACCESSORIES
   A. Surface Conditioner: primers, compatible with membrane compound; as recommended by membrane manufacturer.
   B. Sealant for Substrate Surfaces: As recommended by membrane manufacturer.
   C. Protection Board: Type capable of preventing damage to waterproofing due to backfilling and construction traffic.
      1. Use one of the following:
         a. Asphalt impregnated wood fiberboard, 1/4 inch (6 mm) thick.
         b. Polystyrene foam board, 1 inch (25 mm) thick.

PART 3 EXECUTION
3.1 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
   C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
D. If substrates have not been cement parged to acceptable smoothness, apply cementitious patching and rubber float smooth. Allow 14 days curing time and apply approved manufacturer's priming materials to patches or cementitious parged areas.

E. Verify that items that penetrate surfaces to receive waterproofing are securely installed.

3.2 PREPARATION

A. Protect adjacent surfaces not designated to receive waterproofing.

B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer’s instructions. Vacuum substrate clean.

C. Do not apply waterproofing to surfaces unacceptable to manufacturer.

D. Seal cracks and joints with sealant using methods recommended by sealant manufacturer.

3.3 INSTALLATION

A. Apply waterproofing in accordance with manufacturer's instructions to specified minimum thickness.

B. Apply primer or surface conditioner at a rate recommended by manufacturer. Protect conditioner from rain or frost until dry.

C. At joints and cracks less than 1/2 inch (13 mm) in width including joints between horizontal and vertical surfaces, apply 12 inch (300 mm) wide strip of joint cover sheet.

D. At Building Foundation walls: Apply extra thickness of waterproofing material at comers, intersections, and angles.

E. At Building Foundation walls: Seal membrane and flashings to adjoining surfaces. Install termination bar at top horizontal edges per manufacturer's details.

F. Seal membrane and flashings to adjoining surfaces. Install termination bar at all edges. Install counterflashing over all exposed edges.

3.4 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions.

B. Place protection board directly against drainage panel; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.

C. At Building Foundation walls: Apply extra thickness of waterproofing material at comers, intersections, and angles.

D. At Building Foundation walls: Seal membrane and flashings to adjoining surfaces. Install termination bar at top horizontal edges per manufacturer’s details.

3.5 FIELD QUALITY CONTROL

A. Owner will provide testing services in accordance with Section O 1 45 23. Contractor shall provide temporary construction and materials for testing.
B. Prior to any backfill and coverage of wall with drainage panel, Architect shall inspect building and shotcrete walls for full coverage and flashing of building foundation walls and shotcrete applications.

C. Flood to minimum depth of 1 inch (25 mm) with clean water. After 48 hours, inspect for leaks.

D. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test. Repair damage to building.

E. When area is proven watertight, drain water and remove dam.

3.6 PROTECTION

A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION