**PART 1 - GENERAL**

**1.01 SUMMARY**

A. Provisions of Division 01 apply to this section.

B. Section Includes: Sheet waterproofing in locations indicated including:

1. Sheet waterproofing on vertical walls below grade enclosing occupied spaces.

2. Sheet waterproofing in planters.

3. Drainage sheets and protection boards.

4. Strip waterproofing at sills, under roof edges, valleys, eaves, ridges and other flashings as indicated.

5. High-temperature resistant sheet underlayment on rigid insulation under metal roofing.

6. Monolithic Membrane Waterproofing (Fabric Reinforced) application for all substrates other than concrete.

C. Related Sections:

1. Section 03 30 00: Cast-In-Place Concrete.

2. Section 04 22 20: Concrete Unit Masonry.

3. Section 07 12 00: Waterproofing

4. Section 07 14 00: Fluid Applied Waterproofing.

**1.02 SUBMITTALS**

A. Manufacturer's Qualifications: Provide a list of projects of similar design and complexity completed within the past 5 years.

B. Installer's Qualifications: Submit a certificate, prepared by the waterproofing system manufacturer, stating waterproofing applicator is certified by the waterproofing material manufacturer and, upon completion, submit a certificate stating that waterproofing systems have been installed in conformance with reviewed submittals and manufacturer's recommendations.

C. Product Data: Submit manufacturer's Product Data including installation instructions.

D. Shop Drawings: Submit Shop Drawings indicating each condition of the Work. Indicate all adjoining Work, and indicate methods of adhesion and attachment, laps, and related conditions.

E. Samples: Submit Samples, not less than 12 inches square, of each type of composite sheet membrane, mounted on plywood. Submit 12 inch square Samples of each type of drainage and protection board.

**1.03 QUALITY ASSURANCE**

A. References:

1. ASTM E 96 - Water Vapor Transmission of Materials; Method B.

2. ASTM E 154 - Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs.

B. Qualifications of Manufacturer: Sheet membrane waterproofing system shall be manufactured by a firm with a minimum of 20 years experience in the production of self-adhesive sheet membrane waterproofing.

C. Qualifications of Installer: A firm which has at least 3 years experience in work of the type required by this section, and is recommended by manufacturer to install the specified products.

D. Pre-Installation Conference and Inspection: After review of submittals but before starting installation of the Work of this section, conduct a meeting at the Project site attended by the PI, Architect, OAR, Contractor and FUSD waterproofing applicator and a technical representative of the waterproofing material manufacturer. The waterproofing applicator and material manufacturer's technical representative shall inspect the substrates to receive Work of this section and report defective conditions to PI, Architect, OAR and Contractor.

E. Manufacturer's Representative: Provide arrangements necessary to have a trained representative of the manufacturer visit the Project site on a weekly basis during membrane waterproofing Work to review installation procedures.

F. Materials shall comply with current State of California and local Air Quality Management District requirements for volatile organic compounds.

**1.04 DELIVERY, STORAGE AND HANDLING**

A. Deliver materials in original, unopened containers or packages with manufacturer's labels intact.

B. Store materials at the Project site under cover and maintain in dry condition. Protect from damage from excessive temperature and construction operations. Do not double-stack pallets of membrane. Protect mastic and adhesive from moisture and excessive heat. Store drainage composite or protection board flat and above grade. Provide cover on top and all sides of pallets and provide for adequate ventilation. Protect surface conditioner from freezing.

**1.05 PROJECT CONDITIONS**

A. Apply sheet waterproofing materials only in dry weather and when outside temperature is above 40 degrees F and below 90 degrees F

B. Do not apply sheet waterproofing materials to damp or wet surfaces unless specifically approved in writing by manufacturer.

**1.06 WARRANTY**

1. Manufacturer shall provide a 5 year material warranty.

B. Installer shall provide a 5 year labor warranty.

**PART 2 - PRODUCTS**

2.01 ACCEPTABLE MANUFACTURERS

1. Sheet waterproofing shall be as manufactured by W.R. Grace & Co., W.R. Meadows, Inc., or equal.
2. Fabric Reinforced Monolithic Membrane shall be as manufactured by American Hydrotech, Inc., or equal.

**2.02 MATERIALS**

A. Sheet waterproofing material shall be self-adhesive, cold-applied such as W.R. Grace Bituthene 4000, W.R. Meadows Mel-Rol, or equal. The material shall be a self-adhesive, cold-applied composite sheet consisting of a thickness of 0.056 inches of rubberized asphalt and 0.004 inches of cross-laminated, high density polyethylene film specially formulated for use with water-based surface conditioner. Provide rubberized asphalt membrane covered with a release sheet, which is removed during installation. No special adhesive or heat shall be required to form laps.

B. Surface conditioner: W.R Grace Bituthene 4000, W.R. Meadows Mel-Rol, or equal, latex based surface conditioner.

C. Adhesives fillets and sealers: Types as recommended by manufacturer for installation with specified membrane sheet.

D. Prefabricated Drainage Sheet:

1. For vertical surfaces: Hydroduct 2, Mel-Drain 5035B, or equal, consisting of a dimpled high impact polystyrene core and a needle punched non-woven filter fabric adhered to one side of the core. A film shall be adhered to the other side of the core.

2. For horizontal surfaces: Hydroduct HSF, Mel-Drain 7555, or equal, consisting of dimpled high impact polystyrene core and an extra heavy woven filter fabric bonded to the core.

E. Protection board for horizontal surfaces shall be 1/8 inch thick asphalt-impregnated hardboard; APOC, W.R. Meadows PC-2, or equal. Protection board for vertical surfaces shall be 1 inch thick expanded polystyrene.

F. Strip waterproofing sheet for sills, under copings and flashings where indicated:

1. W.R. Grace "Vycor", W.R.Meadows "Air-Shield", Johns Manville "NordShield", or GAF "Weatherwatch" 0.040 inches thick, consisting of polyethylene sheet and rubberized asphalt, self adhering.

2. Primer for composite strip waterproofing: Water based primer, recommended by strip waterproofing manufacturer.

1. High temperature resistant sheet underlayment: "Vycor Ultra", GAF StormGuard HT Leak Barrier, or equal, self-adhesive roofing underlayment designed for use in high temperature applications, consisting of a thickness of 0.076 inches of butyl rubber based adhesive and 0.004 inches of cross-laminated, high density polyethylene and backed by a protective plastic release liner.
2. Fabric Reinforced Monolithic Membrane 6125 system with two layers rubberized asphalt membrane with spunbound polyester fabric reinforcing sheet between.

**PART 3 - EXECUTION**

**3.01 PRELIMINARY WORK**

A. Inspect and verify condition of substrates and related Work, in the presence of the manufacturer’s technical representative. Do not start installation of membranes until defects in substrates have been corrected. Concrete shall be smooth, dry, and free of voids. Masonry shall have a parge coat applied. Wood decks shall be clean, dry, and free from projecting nails, splinters, and foreign materials.

**3.02 APPLICATION OF MEMBRANE ON VERTICAL WALLS BELOW GRADE ENCLOSING OCCUPIED SPACES AND IN PLANTERS**

A. Surface Conditioning: Install surface conditioner and allow to dry to surfaces to be covered with membrane the same day.

B. Corner Treatment: Pretreat inside corners with liquid membrane compound, to form a fillet or use formed reinforcement fillet recommended by manufacturer. Smooth all surfaces of outside corners.

C. Horizontal Surfaces: Install 9 inch wide strips of membrane material over construction joints, cracks, and grouted joints. Seal expansion joints as recommended by manufacturer. At drains and vertical projections, install two layers of membrane sheet extended out not less than 6 inches in all directions, and seal. At drains, extend the membrane into the clamping ring and seal. Over prepared surfaces install membrane in one layer and roll into place. Lap sheets 2‑1/2 inches at edges and ends.

D. Vertical Surfaces: Install membrane vertically in heights to 8 feet. Lap seams 2‑1/2 inches. Roll membrane with hand roller. Extend membrane over top of foundation walls, planter walls and parapet walls, except where reglets are provided for termination.

**3.03 PREFABRICATED DRAINAGE SHEET**

A. Vertical Surfaces: Install rolls of vertical drainage sheet over the completed membrane, starting at the base of the wall. Peel the fabric back approximately 12 inches from the lower edge. Where drainage pipe occurs, install the drain core behind the pipe and extend the fabric over the outside of the pipe. Adhere the drainage sheet to the wall using strips of adhesive as recommended by manufacturer.

B. Horizontal Surfaces: Adhere the drainage sheet to the membrane with strips of adhesive. Butt adjacent panels together and overlap fabric onto the previous panel. At corners, cut the core and cover the core with filter fabric or tape.

**3.04 COMPOSITE STRIP WATERPROOFING**

A. Provide at sills, copings, eaves, ridges, and under other flashing as indicated. Do not fold over exposed edges. Prime concrete and masonry surfaces as recommended by manufacturer. Cut the membrane into 10 to 15 foot lengths and reverse roll. Separate membrane from release paper, press firmly into place, and roll to eliminate bubbles and assure full adhesion. Lap sides of sheets not less than 3.5 inches and ends not less than 6 inches.

**3.05 HIGH TEMPERATURE RESISTANT UNDERLAYMENT**

A. Seal joints in insulation as recommended by manufacturer. Prime insulation at rate of one gallon per 500 square feet if recommended by manufacturer. Over prepared surfaces install membrane in one layer and roll into place. Lap sheets 3‑1/2 inches at edges and 6 inches at ends. Roll firmly into place to obtain full adhesion of sheets to substrate.

* 1. **APPLICATION OF MONOLITHIC MEMBRANE FOR ALL SUBSTRATES OTHER THAN CONCRETE**

## Membrane Application

* + 1. Install the rubberized asphalt membrane at a rate to provide a continuous, monolithic coat of 90 mil (approximately 2.3 mm), into which is fully embedded a layer of spunbound polyester fabric reinforcing sheet, followed by another continuous monolithic coat of membrane at a minimum thickness of 125 mil or approximately 3.2 mm. Total membrane thickness to be provided is 215 mils or approximately 5.5 mm.
    2. Overlap fabric reinforcing sheet 1 to 2 inches (25.4 – 50.8 mm) with membrane between sheets.

**3.07 PROTECTION BOARD**

A. Cover all surfaces, vertical and horizontal, with protection board, unless indicated otherwise. Install with adhesive recommended by manufacturer, and compatible with membrane materials.

**3.08 TESTS OF MEMBRANES**

A. All horizontal membranes shall be subjected to standing water test after completion, but before protection board is applied. Tests shall be conducted as soon as possible after completion of membrane in each area. When membrane installation is completed, seal drain, sandbag perimeter, fill membrane with water to height of not less than 2 inches, pond test for not less than 24 hours, repair all leaks or defects disclosed, and test until results are satisfactory. Remove all sandbags, plugs and drain when testing is completed. Clean surfaces of membrane.

**3.09 PROTECTION**

A. Protect the Work of this section until Substantial Completion.

* 1. **CLEANUP**

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

**END OF SECTION**