SECTION 07100 - WATERPROOFING

City of San Diego, CWP Guidelines

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The WORK of this Section includes providing waterproofing and moistureproofing of concrete surfaces.

1.2 RELATED SECTIONS

A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 07210 Building Insulation
2. Section 07920 Sealants and Caulking

1.3 CODES

A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

1. Uniform Building Code

1.4 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1.	ASTM D 41	Specification for Asphalt Primer Used in Roofing and Waterproofing
2.	ASTM D 226	Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
3.	ASTM D 312	Specification for Asphalt Used in Roofing

1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Manufacturer's product data including catalogue cuts.
2. Manufacturer's installation instructions.
[3. Polystyrene protection board]
[4. Subsurface drainage mat.]

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. **Delivery of Materials**: Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.

B. **Storage**: Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

PART 2 -- PRODUCTS

2.1 GENERAL

A. **General:** Only products certified as complying with the indicated requirements shall be provided.

B. **Products:** Products shall be new, of current manufacture, and shall be the products of reputable manufacturers specializing in the manufacture of such products.

C. **Manufacturer's Recommendations:** Products shall be recommended by the manufacturer for the application indicated.

2.2 WATERPROOFING COATING

A. **Product:** Waterproofing coating shall be a coal tar epoxy resin.

2.3 MOISTUREPROOFING COATING

A. **Product:** Moistureproofing coating shall be a coal tar solution.

2.4 WATERPROOFING MEMBRANE

A. **Product:** Waterproofing membrane shall be minimum [60-inch] wide sheets of heavy-duty rubberized asphalt composite, consisting of [53 to 56 mils] woven polypropylene geotextile with a release liner on the adhesive side. Puncture resistance of the textile shall be [200] pounds. Total thickness of the membrane shall be [65] mils.

2.5 WATERPROOFING MEMBRANE - ALTERNATIVE

A. **Product:** Bentonite composition panels are acceptable alternatives except where membrane is required between concrete slabs or where there is concrete over waterproofing membrane.

2.6 WATERPROOFING PROTECTIVE BOARD

A. **Product:** Protective board shall be ½-inch asphalt impregnated insulation board.

2.7 MOISTUREPROOFING UNDERLAY

A. **Product:** Plastic membrane for moistureproofing underlay shall be polyethylene film with a thickness of 6 mils.

2.8 MOISTUREPROOFING UNDERLAY TAPE

A. **Product:** Pressure sensitive tape shall be 2-inch wide polyethylene tape.

2.9 BELOW-GRADE WATERPROOFING

A. Waterproofing materials for use below grade shall be a cold fluid applied, single coat, high build, water-based polymer-modified asphalt emulsion. For protection, use a **d**-inch thick expanded polystyrene board for vertical surfaces or geotextile for horizontal surfaces. [Subsurface drainage mat shall be a formed plastic sheet with one side smooth with concave dimples and the other side bonded to a geotextile.]

2.10 SHOWER PAN

A. Materials for shower pan construction shall comply with the following:

1. Primer shall conform to ASTM D 41.

2. Regular asphalt for sprinkle-mopping and mopping between layers shall conform to ASTM D 312.

3. Asphalt felts shall be [No. 15] felts conforming to ASTM D 226. Use [3] layers of [225 lbs] per 100 square feet mopping between layers.

4. Approximate total weight of shower pan shall be [135] lbs per 100 square feet.

2.11 MANUFACTURERS

A. Products shall be of the type and manufacture as indicated below (or equal):

1. Waterproofing Coating:

Kopper's Bitumastic 300-M
Porter Maxi Build II

2. Moistureproofing Coating:

Kopper's Bitumastic 50
Porter Tarmastic 100

3. Waterproofing Membrane:

W.R. Grace and Company's "Bituthene"
Protecto Wrap Co.'s "Jiffy Seal"

4. Waterproofing Membrane Alternate:

Volclay Panels
Bentonize Bentonite

5. Waterproofing Protective Board:

Celotex Insulation Board

6. Below-Grade Waterproofing System:

Emulsion: LIQUID BOOT, LBI Technologies, Inc.
Geotextiles: Minadri 300 HV Protection Course

PART 3 -- EXECUTION

3.1 GENERAL

A. **General**: Products shall be installed in accordance with the manufacturer's installation instructions.

3.2 WATERPROOFING COATING

A. **Location:** Waterproofing coating shall be applied to the water side of walls and bottoms of channels or tanks which are common with rooms, tunnels or galleries to be occupied by equipment, piping, conduit, or personnel.

B. **Surface Preparation:** New concrete to be waterproofed shall have aged at least 28 days and allowed to dry to a moisture content recommended by the coating manufacturer. Concrete surfaces shall be sandblasted. Voids and cracks shall be repaired.

C. **Applications:** Prime coat shall be thinned and applied at the rate of approximately 200 to 300 square feet per gallon depending on surface condition. Finish coats shall be applied at the rate of 100 square feet per gallon. Final coat shall be black. Total dry film thickness shall be minimum 20 mils. Drying time between coats shall be as recommended by the coating manufacturer.

3.3 MOISTUREPROOFING COATING

A. **Location:** Moistureproofing coating shall be applied to exterior of outside concrete walls which are below grade and are common with rooms, tunnels or galleries to be occupied by equipment, piping or personnel, unless a "below-grade waterproofing" system is indicated.

B. **Surface Preparation:** Masonry surfaces shall be allowed to age for at least 28 days. Holes or other joint defects shall be filled with mortar and repointed. Loose or splattered mortar shall be removed by scrapping and chipping. Masonry surfaces shall be cleaned with clear water by washing and scrubbing. Muriatic acid shall not be used. After cleaning, masonry surfaces shall be sealed or filled with sealer or block filler compatible with the indicated primer.

C. **Application:** Each prime and finish coat shall be applied at the rate of 70 square feet per gallon. The number of finish coats shall be sufficient to produce a dry film thickness of at least 15 mils. Drying time between coats shall be as recommended by the coating manufacturer.

3.4 WATERPROOFING MEMBRANE

A. **Location:** Waterproofing membrane shall be applied to surfaces indicated.

B. **Surface Preparation:** Concrete surfaces shall be clean, dry and free of voids, spalled areas, loose aggregate, and sharp protrusions, with no coarse aggregate visible.

C. **Application:** Waterproofing membrane shall be applied in accordance with the manufacturer's recommendations. Surfaces shall be clean and primed prior to application of the membrane.

Pipes or conduits entering structures shall be watertight. The protective board shall be placed directly against membrane prior to backfilling. Where the membrane is turned up from the base of the walls, at angles in walls, and at any other place where the membrane may be subjected to unusual strain, strips, consisting of two additional plies of membrane shall be applied.

3.5 MOISTUREPROOFING UNDERLAY

A. **Location:** Unless otherwise indicated, moistureproofing underlay shall be provided under all concrete slabs-on-grade.

B. **Surface Preparation:** Backfilled surfaces to receive moistureproofing underlay shall be leveled off and smoothed over to minimize contact with sharp edges.

C. **Application:** At joints, moistureproofing membrane shall be lapped 6 inches and sealed with pressure sensitive tape. Where pipes and conduits pass through the membrane, they shall be wrapped tightly with separate sheets of membrane which shall then be sealed with tape to the main membrane. Reinforcing steel or wire mesh shall be supported to protect the membrane.

3.6 BELOW-GRADE WATERPROOFING

A. The applicator shall be trained and approved by the manufacturer.

B. **Surface Preparation:** Concrete surfaces shall be no rougher than light broom finish and shall have no dirt, debris, loose material, or release agent or curing compound. Masonry joints shall be struck smooth. Provide a ¾-inch cant of trowel grade waterproofing at vertical transitions and inside corners of less than 90 degrees. Allow cant to cure at least 24 hours.

[C. **Penetration:** Etch metal surfaces of penetrations with 10 percent muriatic acid 3 inches out from the concrete or block surface. Apply 80 mils nominal of trowel grade waterproofing in a 3-inch ring around the penetration and out 3 inches from the wall surface. After trowel grade material cures, spray apply 80 mils nominal on the penetration at least 4½ inches from the wall surface and also spray apply material to the wall surface as indicated below. After sprayed material cures, wrap a polypropylene cable tie snugly around the base of the penetration 2 inches out from the wall surface.]

D. Installation

1. Spray an 80-mil minimum coat, taking care to avoid puncturing the membrane. Test for membrane thickness and repair as necessary.

2. Apply the polystyrene protection board or geotextile. [Subsurface drainage mat shall be applied with the geotextile facing the backfill after moisture has evaporated from the membrane.]

E. Testing and Repair

1. Test the membrane for thickness with a light oiled needle nose depth gauge, taking 4 readings in a one square inch area for each 500 square feet of waterproofed area.

2. Areas thinner than 80 mils shall be built up to 80 mils extending at least 1-inch outside the perimeter of the defective area.

3.7 SHOWER PAN WATERPROOFING

A. **Preparation**: Shower pan waterproofing system shall not be installed until the curbs, recessed studs, and wall backing are provided. The wall studs for the wall backing shall be notched and the backing shall be installed so that the waterproofing system does not project and so that the tile work can be installed straight, level, and aligned.

B. **Installation Requirements**:

1. Shower pan waterproofing shall be installed in accordance with manufacturer's installation instructions.

2. Shower pan shall extend up the walls a minimum of 6 inches above finished shower floors and shall be lapped over the curb at shower entrance.

3. Whenever a curb is not provided at shower stall or shower room, the shower pan waterproofing shall be extended into the adjacent locker room to the nearest floor ridge and installed so that water will drain to the shower drain over the waterproofing system.

C. **Testing**: The shower pan waterproofing system shall be tested after installation by ponding water to at least [2] inches deep and holding it for two hours without any sign of leakage.

** END OF SECTION **