

**CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS**  
**SECTION 03052 WATERPROOFING**

**PART 1 - SCOPE**

This work shall consist of the application of waterproofing materials to portland cement concrete masonry surfaces at the locations indicated on the plans, in accordance with these Specifications and as directed by the Owner.

**PART 2 - MATERIALS AND EQUIPMENT**

2.01 MATERIALS.

Materials used in this construction shall have to meet the following requirements, in addition to the general requirements of these Specifications.

A. Class 1 Damproofing and Waterproofing.

1. Asphalt.

- a. Primer for asphalt seal shall conform to AASHTO M-116.
- b. Asphalt seal for use below ground level shall conform to AASHTO M-115, Type A.
- c. Asphalt seal for use above ground level shall conform to AASHTO M-115, Type B or Type C, as specified.

2. Tar.

- a. Primer for tar seal shall conform to AASHTO M-121.
- b. Tar seal for use below ground level shall conform to AASHTO M-118, Type B.
- c. Tar seal for use above ground level shall conform to AASHTO M-118, Type A.

3. Bituminous Fabric.

Bituminous fabric shall conform to AASHTO M-117.

B. Class 2 Damproofing and Waterproofing.

1. Primer for asphalt seal shall conform to AASHTO M-116.

2. Asphalt seal for use below ground level shall conform to AASHTO M-115, Type A.

3. Asphalt seal for use above ground level shall conform to AASHTO M-115, Type B or Type C as specified.

4. Bituminous fabric shall conform to AASHTO M-117.

5. Plain asphalt plank shall conform to AASHTO M-46.

2.02 CLASSIFICATION.

Waterproofing will be classified and paid for under the following designations described below.

A. Class 1.

Waterproofing Class 1 shall consist of a primer applied cold, followed by four applications of either tar or asphalt sealer applied hot, and three layers of bituminous fabric. Primer for tar sealer shall be creosote, and primer for asphalt sealer shall be asphalt. The bitumen for the sealer, including the bitumen for the fabric, shall be all asphalt or all tar, as indicated on the plans, and shall be of the type specified or indicated.

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B. Class 2.

Waterproofing Class 2 shall consist of a prime coat of asphalt applied cold, four seal coats of asphalt applied hot, with three layers of asphalt saturated fabric and a protection course of asphalt plank. The type of asphalt for seal coats shall be as specified on the plans or otherwise indicated.

2.03 EQUIPMENT.

The equipment required for the satisfactory performance of this construction shall be on the project and approved by the Owner before work will be permitted to begin.

**PART 3 - CONSTRUCTION REQUIREMENTS**

3.01 PREPARATION OF SURFACES

A. Before any surfaces are waterproofed, they shall be given a Class I finish, in accordance with the provisions of Specification Section 03310. Immediately prior to applying the primer, the surface of the concrete shall be thoroughly cleaned of all dust and other objectionable material. The surface of the concrete shall be dry at the time the primer is applied.

B. Joints which are essentially open or are free construction joints, but which are not designed to provide for expansion, shall be first caulked with oakum or lead wool, and then filled, flush with the surface, with hot joint filler.

3.02 APPLICATION.

A. Class 1.

1. Waterproofing shall be applied only in dry weather and when the ambient temperature is above 40°F. Concrete surfaces shall have cured 10 days for portland cement concrete and 7 days for high-early-strength concrete.

2. Surfaces which waterproofing is to be applied upon shall be thoroughly dry and free from frost.

3. Waterproofing shall begin at the lower part of the surface and continue upward, if on inclined or vertical surfaces; and on horizontal surfaces, it shall begin at one end, unless otherwise directed by the Owner, and continue through to the other end.

4. All bitumen, except primer coats, shall be mopped and brushed on the surface to be waterproofed. Spraying will be permitted for primer coats.

5. Mopping shall be so thorough that the surface will be completely covered, and where applied on fabric, it shall so completely cover each layer that the weave will be concealed, and the layers of the fabric entirely separated.

6. Primer shall be uniformly spread over the surface at the rate of not less than 0.2 gallon per square yard, and shall be allowed to cure thoroughly before the subsequent coats of hot bitumen are applied.

7. The hot bitumen coats and coating between fabric shall be applied uniformly. Not less than 0.25 gallon per square yard shall be used in each coating or between layers of fabric on horizontal surfaces and not less than 0.30 gallons per square yard on vertical surfaces.

8. All waterproofing material shall be carried continuously across expansion joints.

9. Bitumen to be applied hot shall be stirred or otherwise agitated to secure uniform heating and

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to avoid local overheating.

10. All surfaces that have been waterproofed with bituminous materials shall be thoroughly cured before backfilling or other material is placed against them.

11. Application temperatures for hot bitumen shall be as follows:

For asphalts:	Min. 250 <sup>0</sup> F – Max. 350 <sup>0</sup> F
For tars:	Min. 200 <sup>0</sup> F – Max. 250 <sup>0</sup> F

12. At the place of beginning waterproofing, and upon the prime coat, a section 2 inches wider than the strip of fabric to be applied and for the full length of the section shall be covered with hot bitumen and the strip of fabric shall be rolled or pressed thereon while the bitumen is hot. Upon 2 inches of this strip of fabric and an area of the adjoining surface equal to 2 inches more in width than a strip of fabric shall be applied a coating of hot bitumen, and a strip of fabric, full width, shall be rolled or pressed thereon, as required for the first strip. Thereafter, full widths of fabric shall be laid as specified for the first strip, and in such manner that each strip will lap the preceding lap by 2 inches. Side laps shall be not less than 2 inches and end laps not less than 12 inches.

13. The second and third layers of fabric shall be applied in the same manner as the first layer of fabric, but the laps of the layers shall not come directly over the laps of either of the other layers. The third layer of fabric shall be completely covered with a coat of hot bitumen.

14. When placing upon vertical or inclined surfaces, the bitumen between two layers of fabric shall be allowed to cool before placing the next layer of fabric.

15. When placing upon horizontal surfaces, one layer may be applied immediately following the preceding layer, but care shall be taken not to disturb the preceding layer.

16. Each strip of fabric shall be laid without folds or creases, and all air bubbles and pockets shall be eliminated.

**B. Class 2.**

1. The asphaltic materials and asphalt saturated fabric for Class 2 waterproofing shall be placed as prescribed above for Class 1 waterproofing.

2. After the final coating of bitumen is applied to the fabric, and while it is hot, the asphalt plank shall be placed upon the bitumen and tightly laid, with the end joints broken in each layer of plank. After the planks are laid, all open cracks shall be filled with hot asphalt and the outer surface of the planks shall be given an application of hot asphalt.

3. The finished surface shall be smooth and true to line and grade.

**3.03 EDGES.**

At the edge of any surface, or where any surface is punctured by drains, pipes, openings, etc., suitable provisions shall be made to prevent water from getting between the waterproofing and the surface waterproofed. All flashings at curbs and against girders, spandrels, walls, etc., shall be constructed with separate sheets lapping the main sheets not less than 12 inches.

**3.04 PROTECTION AND PATCHING**

A. Care shall be taken to prevent injury or damage to the materials applied in waterproofing. Any damage which may occur shall be repaired by patching. Patches shall extend at least 12 inches beyond the outermost portion damaged, and each succeeding layer shall extend at least 3 inches beyond the preceding layer.

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B. Asphalt planks which become damaged shall be removed and relaid or replaced as directed by the Owner.

**PART 4 – MEASUREMENT**

4.01 WATERPROOFING.

A. Waterproofing of the two classes will be measured for payment by the square yard. The area will be obtained by surface measurements of the area completed and accepted.

B. No deduction for areas not waterproofed of 9 square feet or less within the waterproofing area will be made.

**PART 5 – PAYMENT**

5.01 WATERPROOFING.

A. Accepted quantities of waterproofing will be paid for at the contract unit price per square yard, complete in place, for each of the classes listed below that is called for in the Bid Schedule.

B. Payment will be made under:

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
03052-5.01	WATERPROOFING	Square Yard
03052-5.01.01	Waterproofing – Class 1	Square Yard
03052-5.01.02	Waterproofing – Class 2	Square Yard

**END OF SECTION 03052**