

## **APWA Porous Hot Mix and Warm Mix Asphalt (PHMA and PWMA)**

Use of Porous Hot Mix and Warm Mix Asphalt is becoming common in Washington State but we haven't had a "standardized" specification for the product until now. This specification, along with its companion specifications, was developed specifically to save local agencies the time and resources necessary to write their own versions.

When utilizing porous asphalt we recommend that the designer begin with the sub base and base then follow with the right mix.

You can begin by building a good surface according to **APWA GSP 2-06.3 - Subgrade for Porous Pavements**.

Follow a good subgrade with a course of a Permeable Ballast Base Course with or without a Crushed Surfacing Choker Course. (Depending on agency preference)

### **Use APWA GSP 4-04 Ballast and Crushed Surfacing** (March 9, 2016 APWA GSP)

Specifications 4-04.2 through 4-04.5

No additional notes

Asphalt Treated Permeable Base (ATPB) may also provide a base course. If used, you do not need the Crushed Surfacing Choker Course or the Permeable Ballast.

### **4-07 Asphalt Treated Permeable Base (ATPB)**

Specifications 4-07.1 through 4-07.5

Notes for this section are as follows:

- 4-07.1 A typical temperature range for ATPB manufacturing would be 260-300°F for Warm Mix Asphalt (WMA) processes or 315-325°F for Hot Mix Asphalt (HMA) processing for PG 70-22ER binders.
- 4-07.3(2) Temperature-viscosity curves are developed for dense graded HMA mixing and compaction applications and should be used as references only. ATPB should typically be mixed at the bottom of the temp.-viscosity curve temperature range or cooler to minimize over compaction during the placement process. WMA processing for ATPB is typically mixed and compacted approximately 30 to 60°F below the bottom of the temperature-viscosity curve temperature ranges shown for dense graded HMA applications.
- 4-07.3(6) A tack coat between the ATPB and the subsequent layer of porous HMA is not generally necessary unless the ATPB has been used for construction staging or if the surface has otherwise become dirty. Newly placed, clean ATPB does not require a tack coat. If the ATPB needs to be cleaned prior to paving, a light tack coat is appropriate.
- 4-07.3(7) Typical temperature range during initial placement would be approximately 225-250°F for WMA ATPB and approximately 250-275°F for HMA ATPB.
- 4-07.3(7) Prior successful projects have incorporated two initial low amplitude vibratory roller passes to seat and orient the ATPB aggregate matrix followed by static rolling to create a final smooth surface without roller marks.

General The use of warm mix asphalt technology is encouraged as it generally minimizes issues related to over consolidation of the ATPB during placement.

**Finish your project with the use the following set of GSPs**

5-04 Hot Mix Asphalt (March 9, 2016 APWA GSPs)

Specifications 5-04.1, 5-04.2, 5-04.3, 5-04.3(1), 5-04.3(2), 5-04.3(7)A, 5-04.3(8)A, 5-04.3(8)A1, 5-04.3(8)A6 - Opt 1 and Opt 2, 5-04.3(9), 5-04.3(10)A, 5-04.4 and 5-04.5

Notes for these specifications are as follows:

5-04.3(2) A typical temperature range would be 250-275°F for Warm Mix Asphalt (WMA) or 275-300°F for Hot Mix Asphalt (HMA).

5-04.(3)7A Temperature-viscosity curves are developed for dense graded HMA mixing and compaction applications and should be used as references only. Porous HMA should typically be mixed at the bottom of the temp.-viscosity curve temperature range or cooler to minimize draindown. Porous WMA (PWMA) is typically mixed and compacted approximately 25 to 35°F below the bottom of the temperature-viscosity curve temperature ranges.

5-04.3(9) Typical temperature range would be 225-250°F for WMA and 250-275°F for HMA.

5-04.3(10)A Prior successful projects have incorporated one initial low amplitude vibratory roller pass to seat and orient the PHMA/PWMA aggregate matrix followed by static rolling to create a final surface without roller marks.

General The use of warm mix asphalt technology is encouraged as it minimizes issues related to asphalt drain down during production, hauling and testing of the PHMA.

**Aggregates for Porous Hot Mix Asphalt/ Warm Mix Asphalt (PHMA/PWMA)**

All specifications in this section have been included in Division 5 specifications.