

# **Asphalt Paving Specifications**

## **Warm Mix Asphalt Provisions**

### **Section xxxx General Description:**

Warm Mix Asphalt (WMA) is the generic term used to describe the reduction in production, paving and compaction temperatures achieved through the application of one of several WMA technologies. The producer shall submit a mix design for Warm Mix Asphalt production, or submit a statement that details production and testing items that require attention if the design is performed by standard HMA practice. The design shall be in accordance with Section xxxx Mix Requirements. Some modifications to asphalt mixture plants may be necessary to accommodate the WMA technologies as noted in Section xxx Construction. All provisions for the production and placement of conventional hot mix asphalt (HMA) mixtures as stipulated in Section xxxx Construction are in force except as noted below.

### **Section xxxx Mix Requirements:**

Warm Mix Asphalt (WMA) may be produced by one or a combination of several technologies involving hot mix asphalt plant foaming processes and equipment, mineral additives, or chemicals that allow the reduction of mix production temperatures by as much as 100°F. Apply all mix design requirements for hot mix asphalt to the development of the WMA mix design. A Warm Mix Asphalt (WMA) mixture design shall identify the technology to be used. The producer shall comply with the manufacturer's recommendations for incorporating additives and WMA technologies into the mix. Comply with the manufacturer's recommendations regarding receiving, storage, and delivery of additives. Maintain supplier recommendations on file at the asphalt mixing plant and make available for reference while producing WMA.

Warm Mix Asphalt (Additive): For WMA using additives, the design shall be performed using the additive. Each WMA design shall specify the production temperatures recommended by the WMA additive manufacturer to be used in production of Warm Mix Asphalt.

Warm Mix Asphalt (Foaming): For WMA using foamed asphalt technology, a design may be developed using conventional hot mix asphalt temperatures in accordance with CDOT CPL 5115.

## **Section xxxx Construction Requirements:**

Asphalt Mixing Plant: Modify the asphalt mixing plant as required by the manufacturer to introduce the WMA technology. Plant modifications may include additional plant instrumentation, the installation of asphalt binder foaming systems and/or WMA additive delivery systems, tuning the plant burner and adjusting the flights in order to operate at lower production temperatures and/or reduced tonnage.

Equipment: Use an equipment and WMA technology capable of producing an asphalt mixture that meet specification requirements and is workable at the minimum placement and compaction temperature desired, regardless of storage or haul distance considerations.

Placement: Place WMA only on dry, unfrozen surfaces and only when weather conditions allow for proper production, placement, handling and compacting. The minimum delivery, placement, and compaction temperatures should be reviewed to accommodate the WMA reduced temperature and achieve workability and density requirements. Documentation that demonstrates a proven history of the WMA technology's ability to be placed and compacted at the reduced temperatures may be required. A test strip or initial production verification requirement can be used to demonstrate placement and compaction at the reduced temperature. Minimum ambient paving temperature limitations may be lowed by 10°F. Do not lower ambient paving temperatures to below freezing.

When the mixture contains unmodified asphalt binders (PG 58-28, PG 64-22) the Contractor is allowed to compact below 185°F, provided the Contractor can demonstrate that there is no damage to the finished mat.

When the mixture contains modified asphalt binders (PG 76-28, PG 64-28, PG 70-28, PG 58-34) the Contractor is allowed to compact below 230°F, provided the Contractor can demonstrate that there is no damage to the finished mat.

*{CAPA WMA, 2012 version}*