



Pneumatic Rollers and modified Asphalt Paving Mixtures.

This memo is designed to address the use of Pneumatic Tire Rollers (PTR) when Polymer Modified Asphalts are being specified on a project.

The issues when specifying polymer modified asphalts begin with affinity of the binder to adhere to the rubber compounds for the tires of the PTR. Release agents can be effective when the placement of APM do not include polymer binders but are typically not used with Polymer Modified Binders. This pickup can and will be more detrimental to the long-term life of the asphalt pavement than not using the PTR for compaction. The density requirements for any APM do not change because the binders change. The density requirements must be met in APM's with or without Modified binders. It is up to the placing contractor to meet the local requirements for density. The issue becomes a time effort for the placement contractor. They may need to alter the type and number of steel wheel rollers, the spacing of the rollers and the initial and final compaction timing for the roller operations. All of the decisions about the number and type of rollers on a project will be determined by the contractor and based on the in-place density being achieved and the amount of effort which is being applied to the APM

The Colorado Department of Transportation has specifically eliminated the use of PTR's when polymers are specified in a special provision dated February 2011.

The following is the design bulletin verbiage. The text highlighted in red on page 2 specifically addresses polymers and SMA mixtures.

Sample project special: 401hmacptr

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REVISION OF SECTION 401 HOT MIX ASPHALT COMPACTION (PNEUMATIC TIRE ROLLERS)

Section 401 of the Standard Specifications is hereby revised for this project as follows:

In subsection 401.17, first paragraph, delete the second sentence and replace with the following:

Both steel wheel and pneumatic tire rollers will be required on this project. If the Contractor has demonstrated that all of the manufacturer's recommendations were followed and the pneumatic tire roller is detrimental to the finished surface of the HMA, the Engineer, in cooperation with the Contractor and the Region Materials Engineer, may waive the pneumatic tire roller requirement.

INSTRUCTIONS TO DESIGNERS AND REGION MATERIALS ENGINEERS (delete instructions from final draft):

Use one of the two plant mix pavement compaction project special provisions on projects having Hot Mix Asphalt.

The designer should consult the Region Materials Engineer for guidance on roller requirements.

For specialty paving or proprietary products, the Region Materials Engineer may consult the manufacturer's recommendations.

Use this Project Special Provision that requires pneumatic tire rollers on projects that have one or more of the following conditions:

- Non-polymerized Binder Mixes
- Leveling Courses
- Hot In-Place Recycling
- Cold In-Place Recycling

Pneumatic tire rollers should not be used on projects that have one or more of the following:

- Stone Matrix Asphalt Mixes

- Highly Modified or Rubberized Polymer Binder Mixes

Pneumatic tire rollers should be considered for the following projects only when Region experience has shown it to be appropriate: - Polymerized Binder Mixes

We hope this will help clarify the request or requirements being discussed about the requirements to utilize a PTR in the future.

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