



**COLORADO**  
Department of Transportation  
Office of the Chief Engineer  
Construction Engineering Services Branch  
Standards and Specifications Unit

# Design Bulletin

## Assigning Pavement Smoothness Categories

2024 Number 3, Page 1 of 4

Date: **Revised July 1, 2024** [Supersedes-1/12/2017,  
2/22/2016, 5/8/2014, 2/18/ 2011]

## Assigning Pavement Smoothness Categories

This design bulletin provides guidance to designers for assigning pavement smoothness categories for hot mix asphalt and Portland cement concrete pavements.

### For Hot Mix Asphalt Pavements:

#### MRI Category A (Default when not specified)

1. Use on new construction with or without curb and gutter.
2. Use on construction of 2 or more paving operations (Cold Planing (milling), overlay(s), leveling course, recycling treatments, etc.); (When milling is expected to be a paving operation a note or project special needs to be added stating that grade control on the milling machine is required to be used. Pavement designers may need to add additional over-run estimated for HMA bid quantities or interim HMA surface repair Planned Project Expense or HMA Patching quantities).
3. Should be used on interstate paving regardless of treatment. Region Materials Engineer (RME) should consider Category B if only 1 paving operation is planned.

#### MRI Category B

1. Use on construction of 1 overlay without other Paving Operations.
2. May be used on construction of one layer over an intermediate treatment as directed by the RME.

#### MRI Category C

1. Recycling treatments (Cold in place, hot in place, heater repave) without an overlay
2. May be used on construction of 1 overlay without other paving operations as directed by the RME.
3. Short paving sections for repairs as directed by the RME.
4. Thin overlays (1.5 inches or less) of HMA or SMA without an intermediate treatment

**Curb and gutter matching or ADA ramps should be considered before assigning Categories A, B & C for rehabilitation treatments.**



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**MRI Category D** (switches to Category C when contractor fails to perform pre-construction profiling):

1. Recycling treatments ( ) without an overlay as directed by the RME
2. Thin overlays/leveling courses (less than 1.5 inches) of HMA or SMA without an intermediate treatment as directed by the RME.
3. Urban rehabilitation treatments when smoothness is affected by matching existing curb and gutter and/or numerous intersections and/or utility boxes as directed by the RME. This is not for reconstruction in urban areas.

Category D has no incentive and is tested according to subsection 105.07(c). A Planned Project Expense for pavement smoothness is not needed if the project is only MRI Category D.

### No pavement smoothness category

1. Chip seals
2. Slurry seal
3. Cape seal
4. Micro Surfacing

### For Portland Cement Concrete Pavements:

**MRI Category A (Default when not specified)** is for express ways, interstates and any other PCCP that is not affected by pre-existing curb & gutter, and utility boxes.

**MRI Category B** is for construction that will be affected by pre-existing curb & gutter, numerous intersections/access points, or utility boxes, and for urban construction, has a speed limit greater than 40 mph as directed by the RME.

**MRI Category C** is for urban construction that will be affected by pre-existing curb & gutter, numerous intersections/access points, or utility boxes, and has a speed limit of 40 mph or less as directed by the RME.

### No pavement smoothness category:

PCCP panel replacement will not be subject to incentive payment but will be evaluated by straightedge per subsection 412.47. A project special eliminating the incentive should be added to the project.

Diamond grinding may be assigned a smoothness category with incentive by adding a project special. Pavement condition should be evaluated prior to assigning a smoothness category.



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### For All Pavements:

The Designer with consultation of the RME will assign the pavement smoothness categories. MRI Category A is the toughest specification to meet, so if the plans should have been MRI category B-D, a change while under contract can be made with no cost to CDOT.

Place the pavement smoothness category assignment in the General Notes. MRI Category A is the default smoothness category in the specification if a smoothness category is not listed in the plans. Local agencies using CDOT Specifications shall read and review the above criteria to assign a pavement smoothness category.

When appropriate, divide the project into different sections with different pavement smoothness categories instead of using the easier pavement smoothness category for the whole project

If the designer intends for shoulders to be future driving lanes, add a note to the General Notes stating whether these future driving lanes are subject to smoothness requirements.

The Designer will add a Planned Project Expense for pavement smoothness based on achieving half of the maximum incentive possible for the project.

The Designer will estimate the required number of Flagging Hours, Traffic Control Supervision, Traffic Control Devices, and Uniformed Traffic Control necessary to implement the Department's Quality Assurance portion of this specification. The designer will include these quantities in the quantities table to be bid.

Traffic control for smoothness testing can include but is not limited to:

- Closing a lane of traffic while testing
- Stopping traffic temporarily to set & retrieve triggering devices (cones or reflective tape)
- Flaggers to hold traffic at intersections and on-ramps
- UTC to allow the profiler to test through a signalized intersection without slowing or stopping.

The following examples can be used to assist in assigning smoothness categories:

Example 1: An HMA project has a 6-lane divided highway with a mill and fill treatment with curb and gutter on each side along with a number of manholes and utility boxes. However, the project's middle lane is relatively free from any obstructions. This project would have MRI Category D assigned to the two outside lanes in each direction and MRI Category B in the middle lanes.



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Example 2: An HMA project is a short (<0.1 mile) paving section leading into an intersection or bridge. Because the majority of the pavement would be excluded it could be a good idea to assign this project as Category D.

Example 3: A project has a roundabout in it. The roundabout is considered a turning lane and is excluded from Incentive Payment.

Example 4: A project is a total of 3-miles. Two miles of the project have no curb and gutter. One mile of the project has curb and gutter and a large number of manholes. This project should receive two different smoothness categories for the two sections of the project.

### **References:**

Design Bulletins can be found on the CDOT intranet at:

[https://www.codot.gov/business/designsupport/bulletins\\_manuals/design-bulletins](https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins)