**California DOT**

**1. Briefly summarize your current pavement smoothness requirements.**

For HMA pavement, there are smoothness requirements for straightedge, profilograph measurements for "must-grinds", and Profile Index with zero blanking band. Section 39 of the Standard Specification says:

39-1.12 SMOOTHNESS

39-1.12A General

Determine HMA smoothness with a profilograph and a straightedge.

Smoothness specifications do not apply to OGFC placed on existing pavement not constructed under the same project.

If concrete pavement is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade ordered.
2. Remove and replace HMA if the finished surface is lower than 0.05 foot below the grade ordered.

39-1.12B Straightedge

The top layer of HMA pavement must not vary from the lower edge of a12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-1.12C Profilograph

Under California Test 526, determine the zero (null) blanking band Profile Index (PI0) and must-grinds on the top layer of HMA Type A, Type B, and RHMA-G pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

For OGFC, only determine must-grinds when placed over HMA constructed under the same project. The top layer of the underlying HMA must comply with the smoothness specifications before placing OGFC.

Profile pavement in the Engineer's presence. Choose the time of profiling.

On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI0 must be at most 3 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature from 1,000 to 2,000 feet, including pavement within the super-elevation transitions, the PI0 must be at most 6 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit final profilograms.

Submit 1 copy of profile information in Microsoft Excel and 1 copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Engineer and to: Smoothness@dot.ca.gov

The following HMA pavement areas do not require a PI0. You must measure

these areas with a 12-foot straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than or equal to 0.25 foot
2. HMA sections of city or county streets and roads, turn lanes and collector lanes that are less than 1,500 feet in length

The following HMA pavement areas do not require a PI0 and you must measure them with a 12-foot straightedge:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet, including pavement within the super-elevation transitions of those curves
2. Within 12 feet of a transverse joint separating the pavement from:
    2.1. Existing pavement not constructed under the same project
    2.2. A bridge deck or approach slab
3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and super-elevation rates greater than 6 percent are present on:
    4.1. Ramps
    4.2. Connectors
5. Turn lanes
6. Areas within 15 feet of manholes or drainage transitions
7. Acceleration and deceleration lanes for at-grade intersections
8. Shoulders and miscellaneous areas
9. HMA pavement within 3 feet from and parallel to the construction joints formed between curbs, gutters, or existing pavement

For Concrete pavement, the current smoothness specification is based on the zero blanking profile index (PI) measured with the California profilograph. Section 40 of the Standard Specification says:

The Engineer accepts concrete pavement for smoothness in compliance with the following:

1. For tangents and horizontal curves having a centerline radius of curvature 2,000 feet or more, the PI0 must be at most 3 inches per 0.1-mile section.
2. For horizontal curves having a centerline radius of curvature from 1,000 to 2,000 feet including concrete pavement within the super-elevation transitions of those curves, the PI0 must be at most 6 inches per 0.1-mile section.
3. If using a profilograph to measure smoothness, the surface must not have individual high points greater than 0.3 inch.
4. If using a straightedge to measure smoothness, the surface must be within 0.02 foot of the straightedge's lower edge.

**2. Do the requirements apply to both PCC and HMA?**

See no. 1.

**3. Are you considering changes in the future? (Next 2 to 3 years)**

Yes, developing specifications that require measurements with IRI equipment and payment including disincentive/incentive for measurements outside a specified range.

**4. If yes, what indices are you considering using?**

Caltrans intends to adopt the International Roughness Index (IRI) as the specified smoothness parameter for both concrete and asphalt pavements.