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USE ON SPECIFIED PORTLAND CEMENT CONCRETE PROJECTS REQUIRING IRI SURFACE TOLERANCE REQUIREMENTS

STATE PROJECT NO. SPECIAL PROVISION

IRI SURFACE TOLERANCE REQUIREMENTS FOR PORTLAND CEMENT CONCRETE PAVEMENT (03/09): Amend Section 601 of the 2006 Standard Specifications and the Supplemental Specifications as follows.

Delete subsections 601.11, Surface Tolerance Requirements, and substitute the following.

601.11 SURFACE TOLERANCE REQUIRMENTS

(a) General: This subsection outlines the method of measuring surface tolerance and the acceptance limits for quality control and assurance, including corrective actions and/or payment adjustments for portland cement concrete pavement (PCCP) surface tolerance. Longitudinal surface profile is measured in inches per mile (mm per km) and reported as the International Roughness Index (IRI) in accordance with DOTD TR 644. The measurements are obtained using an inertial profiler.

In accordance with TR 644, the contractor shall furnish a DOTD Certified inertial profiler for quality control and acceptance, to measure both wheel paths simultaneously with laser or infrared height sensing equipment. Inertial profilers shall be capable of testing the finished surface in the longitudinal direction for conformance to the surface tolerance requirements listed in this subsection.

The Department will evaluate and verify the accuracy of the inertial profiler annually using static and dynamic tests in accordance with DOTD TR 644. Approved profilers will have a DOTD decal indicating the date of profiler verification and profiler system parameter settings. These settings shall be verified by the inspector before the first day of paving and randomly thereafter.

The contractor shall also furnish an approved 10-foot (3.0 m) metal static straightedge for quality control and acceptance testing for transverse, cross slope and grade.

(b) Surface Testing: Quality Control & Quality Assurance: The initial start of the project's paving operations are critical to ensure proper paving operations, hence it is imperative IRI surface profile results be furnished to the engineer as soon as possible during these startup days.

For each project, a Department representative will observe the daily set up procedure and pre-operation tests, which shall be performed by the contractor in accordance with the manufacturer's procedures and DOTD TR 644. A copy of the manufacturer's setup procedure, pre-operation procedures, and operating procedure for measuring surface tolerance shall be available at all times during measurement.

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1. Reporting: The contractor shall report an average IRI number in inches per mile (mm per km) and shall measure and report the average IRI value for each wheel path on every 0.05-mile (0.08 km) segment of highway. The IRI values for the inside and outside wheel paths shall be averaged and reported as the segment average and the mean of each segment average shall be reported as the subplot average. For each segment, the individual wheel path IRI values shall conform to the requirements of Table 2.

The contractor shall provide the engineer, via a USB flash drive, a complete copy of all IRI reports and data, capable of being loaded into ProVal software and straight edge measurements. The contractor shall test the pavement as soon as possible but no later than 72 hours following placement. A DOTD inspector will be present for the test run and will immediately receive a copy of the IRI results. **The Department may elect to perform and utilize its own or independent ride quality test results for acceptance at any time.**

(c) Exceptions and Exclusions:

1. Excluded Areas: The Department will review the profile report on a subplot basis. In special cases or extenuating circumstances, the engineer shall give consideration to isolating or excluding sections or wheel paths of the profile. These special cases or extenuating circumstances may be curb and gutter sections that require the adjustment of cross-slope in order to maintain adequate drainage, manholes, catch basins, valve and junction boxes, cutouts for street intersections, bridges, railroad crossings, expansion joints or any other structure located in the roadway that may cause an abrupt deviations in the profile as determined by the PE.

2. Secondary Areas: The following shall have a maximum IRI average of 115 in a subplot: Ramps less than 1500 feet (460 m), tapers, shoulders without rumble strips, medians, continuous turn lanes, 100 feet (30 m) from bridge ends or sections of pavement surfaces as directed by the engineer.

An acceptable riding surface is required for small hand-finished tie-in areas, driveway turnouts, parking areas, and any other area established by the project engineer. For these areas, deviations in excess of 1/4 inch in 10 feet (5mm in 3.0 m) shall be corrected as measured with a 10 foot (3.0 m) metal static straightedge.

(d) Corrections: The contractor shall correct areas not meeting Table 2 requirements for individual wheel path measurements on a 0.05 mile (0.08 km) segment. **Additionally, perform corrective action on any individual bump (must grind) where the irregularity is more than 1/4 inch (6 mm) when tested with a 10 foot (3 m) straightedge.** Corrections shall be made using a profile-grinding device, approved by the engineer, or by removing and replacing the pavement as directed. The use of bush hammers or other impact devices will not be permitted. In areas where corrections are made the contractor shall reestablish tines by an approved method to provide a uniform texture conforming to Subsection 601.08(h). Corrective work will be at no direct pay and shall be completed prior to determination of pavement or shoulder thickness.

On those areas where corrective action is taken, the pavement shall be profiled again, or as many times as necessary, by the contractor to verify that corrections have produced an Average

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IRI index in compliance of the Table 2 requirements. Following all corrective action on the section, IRI results will be provided to the engineer to confirm compliance with Table 2.

(e) Acceptance Surface Testing:

(1) Travel Lanes: After the contractor has completed the corrective work and verification for each segment, it will be tested for final surface tolerance acceptance. For PCCP, the lot (aka the testing section) is defined as one mile of one lane or project length whichever is shorter. The average lot values shall conform to the requirements listed in Table 1. A DOTD inspector will be present for the final test run and will immediately receive a copy of the IRI results and data via USB flash drive. The contractor shall provide the engineer a copy of the IRI report. Acceptance of each lot will be in accordance with Tables 1 and 2, based on the IRI profile report. The Department may elect to perform and utilize its own or independent ride quality test results for acceptance at any time.

The contractor shall furnish an approved 10-foot (3.0 m) metal static straightedge for quality control and acceptance testing for transverse, cross slope and grade.

(2) Corrections: After final acceptance, further surface testing or corrections will not be allowed.

Table I
Pavement Adjustment Schedule for Longitudinal Surface Tolerance, Maximum International Roughness Index, inches per mile (mm per km)

Percent of Contract Unit Price		102% ¹	100%	98%	50% or Remove and Replace ²
Category I: Design Speed ≥ 60 mph	IRI in/mi (mm/km)	≤65 (1025)	≤75 (1185)	76-84 (1186-1344)	>85 (1345)
Category II: Design Speed ≥ 45 mph and < 60 mph	IRI in/mi (mm/km)	≤75 (1185)	≤85 (1345)	86-94 (1346-1499)	>95 (1500)
Category III: Design Speed < 45 mph	IRI in/mi (mm/km)	N/A	≤115 (1815)	116-129 (1816-2054)	>130 (2055)

¹Incentive Pay Requirements:

- Applies to each travel lane based on the one mile, or project length, lot (test section)
- Must equal or be less than the average IRI indicated for bonus payment.
- No IRI segments for each lot shall be less than 100% pay. (i.e. for a one lane-mile lot, none of the 20 (0.05 Mile/0.08 km) segments shall exceed the IRI specified for 100% pay)
- Grinding is not allowed to achieve incentive payment.

²At the option of the engineer

Table 2
Individual Wheel Path Deficient Area Limits
Maximum International Roughness Index, inches per mile (mm per km)

Any 0.05 Mile (0.08 km) Segment		PCCP: Longitudinal Direction
Category 1	IRI in/mi (mm/km)	≤95 (1500)
Category 2	IRI in/mi (mm/km)	≤105 (1660)
Category 3	IRI in/mi (mm/km)	≤140 (2210)