

Louisiana Proposed Specification (Special Provision) Surface Tolerance Requirements

This special provision is intended to replace all current requirements as they apply to Surface Tolerance. 502.10; 501.12(c)(5), 502.12(c)(4) are deleted and replaced with the following.

S-502.10 Surface Tolerance Requirements for Asphaltic Concrete:

502.10(A) Description:

This section outlines the method of measurement and the acceptance limits for quality assurance including corrective actions and/or payment adjustments for asphaltic surfaces. Longitudinal surface profile is defined by the International Roughness Index, IRI, as measured with an inertial profiler. Control of transverse, cross slope and grade shall be measured in inches using a metal 10 foot static straight edge.

The contractor shall furnish an inertial profiler to measure both wheelpaths with laser or infrared height sensing equipment. The contractor shall also furnish an approved 10-foot (3.0-m) metal static straightedge for transverse acceptance testing.

Surface tolerance testing will be required on roadway travel lanes, airport wearing and binder courses, and shoulder and parking area wearing courses. For the purposes of surface tolerance requirements, the wearing course is defined as the final lift placed. The binder course is defined as the last lift placed prior to the final lift.

502.10 (B) 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 section. The inertial profiler shall measure both wheelpaths and shall comply with ASTM E950, Class I or II. All inertial profilers must be approved by the Materials Engineer Administrator. The profiler must be capable of reporting an electronic and paper copy of daily results as described herein, Table 4. It shall be capable of providing measurements of surface profile using both the Profile Index (PI) and International Roughness Index (IRI), based on a quarter car model.

502.10 B1. Certification:

Initial Certification: The department shall evaluate and certify each inertial profiler annually. The department will affix certification stickers to each calibrated inertial profiler with a serial number and necessary profiler settings clearly marked. The department will certify that each inertial profiler is capable of

producing accurate IRI values on at least two test sections when five test runs are made on each of the two test sections. The required precision is +/- 3%, based on the standard deviations of the mean IRI value of the five test runs. Bias is defined as the mean IRI value and shall be within +/- 5% of the reference IRI value, established by the department, for each wheel path and each calibration verification site.

Verification of certification: For each project, a department representative will observe on-site calibration and shall verify the profiler settings on or before the first day of binder course paving. The department may require re-calibration or re-certification at any time.

502.10 C. Transverse, Cross Slope and Grade:

502.10 C1.. Transverse Surface Tolerance: The contractor shall control the transverse surface finish. Table 1 tolerances will not be exceeded. The department will test the surface of the binder and wearing courses at selected locations in the transverse direction for conformance to surface tolerance requirements of Table 1. Corrections shall be made as directed in accordance with Heading (F) "Correction of Deficient Areas."

502.10 C2.. Cross Slope: When the plans require the section to be constructed to a specified cross slope, the contractor shall take measurements at selected locations, using a stringline, slope board or other comparable method. The contractor shall control the cross slope so that the values shown in Table 1 will not be exceeded. Cross slope variations allowed in Table 1 shall apply to each lane constructed.

502.10 C3.. Grade: When the plans require the pavement to be constructed to a grade, tests for conformance shall be run at selected locations, using a stringline or other comparable method. The contractor shall control grade variations so that the tolerances shown in Table 502-3 are not be exceeded. Grade tolerances shall apply to only one longitudinal line, such as the centerline or outside edge of pavement. The contractor shall make corrections in accordance with Heading F of this subsection.

502.10 D. Longitudinal Surface Tolerance

502.10 D1. Quality Assurance:

502.10 D1(a) Contractor responsibilities: The contractor shall report an average International Roughness Index (IRI) number in inches per mile and shall be measure and report the average IRI value for each wheelpaths on every 0.05 mile segment of highway. The average right and left wheelpath shall be reported as the segment average and the mean of each segment average shall be reported as the subplot average. The contractor shall measure the top two lifts of the roadway travel lanes. Final acceptance will be based on the last measurement taken on the final wearing course of the travel lanes (the top or last lift placed). Measurement of the center two lanes will be required for airports

502.10. D1(b) Reporting: The contractor shall provide a copy of the IRI report Table 4. The average subplot values and individual IRI values shall conform to the requirements listed in Tables 2 and 3. The contractor shall provide a daily report of ride quality to the engineer. The contractor shall test the pavement during the first work day following placement, but in no case any later than 7 calendar days. The measurement of "Short" sections, less than 528 feet, shall be included in adjacent sublots. Isolated rough areas will not be allowed. Any 0.05 mile section and all individual wheel path measurements of the binder and wearing course shall meet the requirements of Table 3. The contractor shall make corrections in accordance with Subsection 502.xx. A DOTD inspector will be present for the final test run and will immediately receive a copy of the results.

502.10D1(c) Measurement for incentive pay: At the completion of construction of the wearing course travel lanes, the contractor in the presence of a DOTD representative shall measure a continuous profile from the start station to the end station of the construction project for the purpose of determining qualification for incentive. Refer to Subsection 510.10.G. Bridges and 300 feet of approaches shall be excluded.

502.10 D2. Acceptance:

The department will review each subplot report as provided by the contractor. Each subplot will be accepted according to the Longitudinal Surface Tolerance, Table 2 and Table 3, based on the IRI profile report provided by the contractor. The department may elect to perform and utilize independent ride quality test results for acceptance at any time.

502.10 E. Deficient Areas: The contractor shall correct areas not meeting Table 3 requirements for individual wheelpath measurements in a 0.05 mile segment.

502.10 E1. Deficiencies in Wearing Course: The contractor shall correct deficiencies in the final wearing course by diamond grinding and applying a light tack coat removing and replacing, or furnishing and placing a supplemental layer of wearing course mixture at least 1 1/2 inches (30 mm) compacted thickness for the full width of the roadway meeting specification requirements at no direct pay. If the supplemental layer does not meet specification requirements to the satisfaction of the engineer, it shall be removed and replaced or otherwise corrected by methods approved by the engineer.

502.10 E2. Deficiencies in Binder Courses: The contractor shall correct deficiencies in binder course, transverse, cross slope, and grade to meet specification requirements at no direct pay. Corrections shall be made before subsequent courses are constructed.

502.10 E3. Deficiencies in shoulder transverse, cross slope and grade: The contractor shall correct deficiencies in these areas by grinding at the project engineers direction.

502.10 E4. Excluded areas: The department will review the profile report obtained for each binder and wearing course on a subplot basis. In special cases or extenuating circumstances, the engineer may isolate or exclude sections of the profile. These special cases or extenuating circumstances may be curb and gutter sections which require the adjustment of cross-slope in order to maintain adequate drainage, manholes, catch basins, valve and junction boxes, street intersections, or other structures located in the roadway which cause abrupt deviations in the profile. This specification exclusion will not be used to simply isolate sections of road that are in poor condition when the project is let.

502.10 E5.Areas outside travel lanes: Ramps less than 1500 feet, tapers, shoulders and medians, or sections of pavement surfaces as directed by the engineer such as 300' bridge approaches will not be included in the ride quality index for payment purposes, but shall meet a maximum average of 110 IRI in a subplot when directed by the engineer.

502.10 F PAYMENT:

Incentive Pay: To be considered for incentive pay, payment for all wearing course mix shall be 100% and the average payment for surface tolerance must meet the requirements for 100 % pay. Grinding to meet incentive or 100% pay is not allowed. An incentive payment equal to 10% of the value of the wearing course will be paid if the contractor achieves a project average of 45 IRI as measured at the completion of the project.

Payment for lot: Pay adjustments will apply to individual lots. Payment will be determined for each subplot and averaged to determine payment for the lot.

**TABLE 1
REQUIREMENTS FOR SUPERPAVE ASPHALTIC CONCRETE MIXTURES**

TRANSVERSE, CROSS SLOPE, AND GRADE REQUIREMENTS			
Surface Tolerance Variation, in. (mm) ⁴ Roadway Travel Lane	Transverse ²	Cross Slope ²	Grade ¹
Wearing Courses ³	1/8 (3)	3/8 (10)	1/2 (15)
Binder Courses	1/4 (6)	1/2 (15)	1/2 (15)
Shoulder Wearing Course	3/16 (5)	3/4 (20)	3/4 (20)

¹ Based on 10 feet (3.0 m).

² Applicable only when grade is specified.

³ For longitudinal surface tolerance acceptance requirements see Table 2

⁴ For longitudinal surface tolerance requirements see Section E above

**TABLE 2
PAYMENT ADJUSTMENT SCHEDULES
FOR LONGITUDINAL SURFACE
TOLERANACE**

Maximum International roughness

Percent of Contract Unit Price/Lot ¹				
Percent of Contract Unit Price	100%	90%	80%	50% or Remove
Category A (in/mile) Multi-Lift New Construction and Overlays of More than two Lifts	<65	65-75	NA	>75
Category B (in/mile) One or Two Lift Overlay Construction Over Cold Planed Surfaces and Two- Lift Overlays	<75	75-89	NA	>89
Category C (in/mile) Single-Lift Overlays Over Existing Surfaces	<85	85-95	95-110	>110
Shoulders	<110	NA	NA	>110 Pay 70% or Remove
Incentive Pay, Final Completion, Average of All Travel Lanes (with no lot less than 100% pay)	≤ 45 +10% of the value of the wearing course (plan quantities)			

⁽¹⁾ or Portion of lot placed on the project.

⁽²⁾ At the option of the engineer.

**TABLE 3
INDIVIDUAL WHELLPATH
DEFICIENT AREA LIMITS**
Maximum International roughness

	WEARING COURSE	BINDER COURSE
CATEGORY A	89	105
CATEGORY B	89	110
CATEGORY C	110	N/A

Table 4
Report Requirements (Inertial profiler shall have reporting feature capable of providing a one page report with the following information)

Equipment ID (ie serial number or certification number)	From Station	To Station	Distance	DATE TESTED	
				IRI-1	IRI-2
Operator Name					
Project Engineers Representative	25025	25290	0.05	45	45
File name(ie...electronic file name)	25289	25554	0.05	45	45
English or Metric	25553	25818	0.05	45	45
Project Number	25817	26082	0.05	45	45
Route Number	26081	26346	0.05	45	45
Parish	26345	26610	0.05	45	45
Sublot Number	26609	26874	0.05	45	45
	26873	27138	0.05	45	45
From Station	27137	27402	0.05	45	45
To Station	27401	27666	0.05	45	45
	27665	27930	0.05	45	45
Pavement layer	27929	28194	0.05	45	45
First lift being constructed ____	28193	28458	0.05	45	45
Intermediate lift ____	28457	28722	0.05	45	45
Last lift being constucted	28721	28986	0.05	45	45
Travel Lane ____ -	28985	29250	0.05	45	45
Shoulder ____	29249	29514	0.05	45	45
Turn Lane	29513	29778	0.05	45	45
Other paving.	29777	30042	0.05	45	45
	30041	30306	0.05	45	45
	30305	30570	0.05	45	45
Filter 1 setting (1=_name of filter__)	30569	30834	0.05	45	45
Filter 2 setting (2=____)	30833	31098	0.05	45	45
Filter 3____	31097	31362	0.05	45	45
Wavelength 1	31361	31626	0.05	45	45
Wavelength 2	31625	31890	0.05	45	45
Wavelength 3____	31889	32154	0.05	45	45
	32153	32418	0.05	45	45
Comments					

Average IRI for Sublot