

2. Perpendicular to Centerline of Roadway.

The finished surface of all base, binder, and wearing surface layers shall not vary more than 1/4 of an inch {6 mm} from a 10 foot {3.0 m} straightedge placed perpendicular (at a right angle) to the centerline of the roadway anywhere on the surface.

Unless shown otherwise on the plans, the slope shall not vary by more than 0.20 % from the required slope in any 10 foot {3.0 m} distance over which the slope is measured without the Engineer's written approval. (If, for example, a 2.0 % slope is required, the measured slope shall not be greater than 2.2 % or less than 1.8 %.)

3. Parallel to Centerline of Roadway.

The surface shall not vary more than 1/4 of an inch {6 mm} from a 16 foot {4.8 m} straightedge placed parallel to the centerline anywhere on the surface. A 16 foot {4.8 m} rolling straightedge, equipped with marking capability, may be used in lieu of the fixed straightedge if approved by the Engineer.

The finished surface shall not vary more than 3/8 of an inch {9 mm} in any 25 foot {8 m} section from a taut string applied parallel to the surface at the following locations: 1 foot {300 mm} inside of the edges of pavement, at the centerline, and at other points designated by the Engineer. The variance from the designated grade shall not increase or decrease by more than 1/2 of an inch {12 mm} in 100 feet {30 m}.

(b) Edge Requirements.

Unless shown otherwise on the plans, surface, binder, and leveling pavement edges not confined by curbing or other structures may be lightly tamped behind the placement operation as a preventative measure against cracking and bulging during the rolling process. This procedure shall also be required on the initial edge of a longitudinal cold joint. These edges shall be neatly shaped to line behind the breakdown roller and shall be trimmed as necessary after final rolling, to an accurately lined string or wire providing a maximum tolerance of 2 inches {50 mm} outside the theoretical edge of pavement, with a maximum variation from a true line of 1/2 of an inch {12 mm} in 10 feet {3 m} and a slope not flatter than 1:1. Edges that are distorted by rolling shall be corrected promptly.

(c) Smoothness Requirements.

The smoothness requirements and testing covered in this Subarticle shall apply for pay factor adjustments as indicated in the table below only if Item 410-I Smoothness Testing - Certified Inertial Profiler is included on the plans or in the proposal.

1. Testing Device.

a. Description.

The testing device shall be an inertial profiler that satisfies the requirements of ALDOT-448, "Evaluating Pavement Profiles," including the portable storage device(s) referenced herein. Portable storage devices containing profile measurements shall become the property of the Department at the time the measurements are taken.

b. Equipment Requirements.

The inertial profiler shall be a certified, non-contact, laser-based device capable of simultaneously measuring both wheelpaths meeting all the requirements of ALDOT-448.

Portable storage device(s) for the inertial profiler shall be furnished in sufficient quantities for all calibration, test runs, and actual tests deemed necessary by the Engineer. Unless approved in advance by the Engineer, all portable storage devices provided by the Contractor will take the form of commonly available 2G USB flash drives.

2. Testing Procedure.

a. Description.

The testing device shall be an inertial profiler that satisfies the requirements of ALDOT-448, "Evaluating Pavement Profiles," including the portable storage device(s) referenced herein. Portable storage devices containing profile measurements shall become the property of the Department at the time the measurements are taken.

	410-I Smoothness Testing - Certified Inertial Profiler
Open Graded Friction Course Layer	Data Collection Required & Pay Factors Apply
Wearing Surface Layer	Data Collection Required & Pay Factors Apply

Smoothness testing shall be performed and reported daily until the contractor demonstrates the ability to achieve a Mean Roughness Index (MRI) value of less than 65 in/mile. If the Contractor demonstrates the ability to achieve a MRI value of less than 65 in/mile then the Contractor may elect to perform and report the smoothness testing at a frequency he determines but not to exceed 5 working days production.

b. Smoothness Requirements.

The results of the inertial profiler tests shall be evaluated by Department personnel as outlined in ALDOT-448.

If a Mean Roughness Index (MRI) value of 120 inches per mile {2.0 m/km} is exceeded in any test section of any daily paving operation, the paving operation will be suspended as soon as possible after results of the unacceptable test section are obtained. The paving will not be allowed to resume until corrective action is taken by the Contractor.

When the MRI is more than 65 inches per mile {1.0 m/km}, per section, a unit price reduction will be assessed. When the MRI is less than 40 inches per mile {0.6 m/km} per section, a unit price increase will be added. The price adjustments are given in Table 1.

Mean Roughness Index Inches/Mile/Section {meters/Kilometer/Section}	Contract Price Adjustment Percent of Pavement Unit Bid Price
Under 40 {Under 0.6}	105 - (MRI/8) {105 - (MRI/0.12)}
40 to less than 65 {0.6 to less than 1.0}	100
65 thru 120.0 {1.0 thru 2.0}	100 - [(MRI - 65)/2.75] {100 - [(MRI - 1.0)/0.05]}
Over 120.0 {Over 2.0}	Unacceptable

For Pay Item 410-I, any price adjustment for smoothness considerations will be applied to the theoretical tonnage {metric tonnage}, calculated using the plan specified rate of placement, placed in those sections testing under 40 in/mile, or more than 65 inches/mile {0.6 m/km, or more than 1.0 m/km} per section.

410.06 Correction of Deficiencies and Defects.

Deficiencies in surface smoothness as determined in Subarticle 410.05(a) shall be remedied to the extent practicable by rolling while the material is still workable. Otherwise the layer shall be removed and replaced as necessary to obtain required smoothness. "Skin patching" of a surface layer to correct low areas or heating and scraping to correct high areas will not be permitted. Overlays of not less than 80 pounds per square yard {45 kg/m²} may be authorized by the Engineer for surface smoothness deficiencies provided all material in the overlay is without additional cost to the Department.

Deficiencies in thickness shall be remedied as specified in Item 410.03(f)1.

All areas containing excessive or deficient amounts of liquid asphalt binder, all areas showing unacceptable segregation of materials, and all areas unbonded after rolling shall be removed and replaced at no cost to the Department. Unacceptable segregation of a hot and warm mix asphalt mat is defined as any area in which two six inch {150 mm} cores are taken and the average percent liquid asphalt binder content of the cores have an absolute difference greater than 0.50 percentage points of the design liquid asphalt binder content, or the combined gradation analysis of the two cores on