

SECTION 180 - RIDE QUALITY FOR PAVEMENTS

180.01 GENERAL

This section relates to ride quality performance for pavement construction.

The locations specified in Table 180.091 are exempt from lot testing under this Contract.

180.02 PERFORMANCE REQUIREMENTS

The finished surface of the pavement shall have a smooth longitudinal profile and comply with the minimum ride quality requirements specified. The upper limits for roughness at various locations are specified in Table 180.092.

180.03 DEFINITIONS

Continuous Traffic Lane - A length of traffic lane which can be tested in a single test run uninterrupted by areas exempted from ride quality assessment.

International Roughness Index (IRI_{qc}) - The international measure of ride quality measured and recorded by modern Class 1 profile measuring devices in cumulative metres per kilometre in each wheel path and averaged together. For the purposes of this specification, roughness measurement is to be based on the IRI_{qc} quarter car model.

Individual Lane Roughness Value - The mean value of the two wheel path IRI_{qc} values measured on a 100 m sub-section of a traffic lane.

Mean Lane Roughness Value - The mean of the Individual Lane Roughness Values within the lot as determined by the appropriate test method.

Measuring Device - The device used for measurement of roughness shall be:

- (a) capable of measuring the longitudinal road surface profile along one or both wheel paths at least every 250 mm with a precision in elevation of 0.5 mm over a wave band of 1 to 30 metres;
- (b) calibrated according to the relevant test methods.

180.04 MEASUREMENT AND REPORTING OF RIDE QUALITY

(a) Scope of Testing

Unless noted otherwise in Table 180.091, the surface of all pavement construction shall be tested for ride quality.

(b) Lot Testing

All work shall be tested in lots of continuous traffic lane. A lot shall be defined as the length and width of each continuous traffic lane constructed including any freeway ramps but excluding shoulders and turn lanes. The Contractor shall provide 24 hours notice to the Superintendent of when ride quality testing will be undertaken and the limits for each lot.

The maximum length of the lot shall be restricted to 2 km of continuous traffic lane.

The minimum length of the lot shall be the lesser of the total job length or 500 m.

(c) Measurement of Ride Quality

The Contractor shall measure the longitudinal road surface profile of each lot in accordance with the relevant Test Method applicable to the particular test equipment being used ~~as listed in Section 175.~~

Ride quality measurement shall be undertaken within three months after the application of the surfacing.

~~For contracts with a Defects Liability Period of two years or more, measurement of ride quality shall be repeated no earlier than three months or later than one month before the end of the Defects Liability Period.~~

(d) Reporting of Test Results

Results shall be processed and reported for each 100 m sub-section. Any sub-sections less than 100 m shall be included with the sub-section immediately preceding it and the individual roughness calculated over the longer sub-section. The Contractor shall provide the Superintendent with a copy of all test results representing the final roughness survey of completed pavement together with the calculated values of the individual and mean lane roughness for each lot.

180.05 PERFORMANCE STANDARDS

The Contractor shall comply with the requirements for both the Maximum Individual Lane Roughness and Maximum Mean Lane Roughness as follows:

(a) Individual Lane Roughness

Where an Individual Lane Roughness Value in any 100 m sub-section is greater than the specified Maximum Individual Lane Roughness Value specified in Table 180.092, the Contractor shall rectify work within the sub-section to comply with this requirement. The minimum length of rectification work undertaken shall be 100 m.

All rectified 100 m sub-sections shall be re-tested following completion of rectification work.

(b) Mean Lane Roughness

Where the Mean Lane Roughness Value of a lot is greater than the Mean Lane Roughness specified in Table 180.092, the work shall be rectified unless the Superintendent agrees to accept the work at a reduced payment. Where the lot is to be rectified, the minimum length for any rectification work undertaken shall be 100 m. Where the Superintendent agrees to accept the lot at a reduced payment, a deduction to the contract sum shall be made in accordance with Clause 180.06.

The Contractor shall re-test the lot following completion of any rectification work.

180.06 PAYMENT DEDUCTION PROVISIONS

Where a deduction in payment is to be made for failure to comply with the specified Maximum Mean Lane Roughness for a lot, the deduction shall be made in accordance with the following formula:

$$\text{Deduction to Contract (\$)} = \frac{A \times D \times C}{100}$$

Where: A = Area of lot in square metres.
D = Percentage deduction as specified in Table 180.061
C = Unit Cost as specified in Table 180.093

Table 180.061 Percentage Deduction for Failure to Comply with the Specified Maximum Mean Lane Roughness Value

Increase in IRI	% Deduction
0.01 - 0.10	1
0.11 - 0.20	2
0.21 - 0.30	3
0.31 - 0.40	4
0.41 - 0.50	5
0.51 - 0.60	6
0.61 - 0.70	8
0.71 - 0.80	10
> 0.80	Rectify

180.07 PAYMENT RETENTION

Where the Contractor is required to carry out measurement of ride quality within three months of the end of the Defects Liability Period, retention of payment shall apply.

The amount of retention shall be calculated using the following formula:

$$\text{Retention (\$)} = 0.03 (A_1 \times C_1 + A_2 \times C_2 + \dots) + E$$

where: A_1 = the total area of pavement with the same unit cost as shown in Table 180.093

C_1 = the appropriate unit cost from Table 180.093

E = an amount equal to the value of deductions calculated using Clause 180.06 and the test results at Practical Completion

180.08 PAVEMENT RECTIFICATION

The Contractor shall bear the full cost of any necessary rectification work including the cost of any additional work required to the underlying or adjacent pavement to comply with this section. All rectification work shall be carried out in accordance with the requirements of the specification.

180.09 — SCHEDULE OF DETAILS

(a) The locations shown in Table 180.091 are exempt from ride quality assessment.

Table 180.091 — Locations Exempted from Ride Quality Requirement

Serial	Locations exempt from Ride Quality Assessment
##:	##include intersections, widenings etc. exempt from testing (refer to Guide Notes):

(b) The ride quality to be achieved at each location is to be in accordance with Table 180.092.

Table 180.092 - Standard of Ride Quality

Location	Maximum Individual Lane Roughness Value for any 100 m Subsection	Maximum Mean Lane Roughness Value for Lot
All	2.7	2.0

(c) The unit cost (C) to be used for calculation of any payment deduction made in accordance with the deduction provision specified in Clause 180.06 shall be in accordance with Table 180.093.

Table 180.093 — Basis of Payment Deduction

Location	Unit Cost \$ per sq m
NA	NA