

Quality of Asphalt Construction Riding Quality (IRI)

Road Pavement Forum

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Contents

- Objective and Role
- Surface regularity
- Payment adjustment
- Discussion on IRI achieved
- Coordination

Objective

- SANRAL requires high quality in pavements
 - especially riding quality (IRI)
- This presentation to encourage discussion on achieving IRI requirements

Surface regularity specification — BASE/SURFACING

(f) Surface regularity

Replace the subclause with the following:

“For new base layers and rehabilitation of existing base layers where the layer or part thereof (in depth) is required to be reworked or recycled over a length of 600 m or more and over the full width of a traffic lane or shoulder wider than 2.0 m (to be surfaced) the roughness of the base layer will be determined by using an inertial laser profilometer capable of producing a class 1 vertical measurement resolution, and a class 3 longitudinal sampling distance as defined in ASTM standard (E950-09). If the inertial laser profilometer is unavailable the roughness of the base layer can be determined by using an ARRB Walking Profiler or Face Dipstick® Profiler. However, these latter instruments are not suitable for mass measurements. Shoulders less than 2.0 m wide (to be surfaced), will be assessed according to measurements obtained from the adjacent lane.

Requirement is the same for *base* and *surfacing*



Payment adjustment BASE

Table B3405/1
PAYMENT ADJUSTMENT FOR BASE LAYER

Average IRI _{100 m} (m/km)	New Pavement Construction
<1.30	1.050
1.31 to 1.40	1.050
1.41 to 1.50	1.025
1.61 to 1.70	1.010
1.71 to 1.80	1.000
1.81 to 1.90	0,990
1.91 to 2.00	0,975
2.01 to 2.10	0,955
2.11 to 2.20	0,930
2.21 to 2.30	0,900
2.31 to 2.40	0.865
2.41 to 2.50	Reject
2.51 to 2.60	Reject
2.61 to 2.70	Reject
2.71 to 2.80	Reject
2.81 to 2.90	Reject
2.91 to 3.00	Reject
>3.01	Reject

IRI for Base



- The base IRI requirement:
 - ❖ is to ensure that final riding quality on surfacing is achieved
- Base IRI serves as input for payment adjustment on surfacing
- Almost only possible to reach bonus payment with computerized control on grader
 - Tighter specification for initial survey (beacons)!
- Surface preparation critical
 - Smooth G1 is better, good for seals but not good for asphalt

Continuous paving – Shuttle buggy

How to achieve these high standards?

“(h) Transfer of mix to paver

Asphalt shall be transferred from the haul trucks to the paver by means of a materials storage and transfer vehicle (“shuttle buggy”) and no material shall be transferred directly from the haul vehicle into the paver.

The material storage and transfer vehicle must be able to store and transfer hot-mixed asphalt material from a truck to a paver to ensure continuous paving. It must contain an anti-segregation auger which remixes materials just before they are delivered to the asphalt paver.”

The Train on Site



Continuous paving - SUPPLY

- Having a Shuttle Buggy just one component of achieving quality
 - Continuous paving required to achieve quality
- Excellent planning is required
 - Distance from plant
 - Traffic on the route
- Skilled and dedicated operators and staff necessary
- And **continuous** supply
 - Continuous supply required for continuous paving to achieve quality
 - Irregular supply cause extra transverse joints
 - Almost all joints fail IRI
 - Fixing a joint leads to two joints!

Supply problems

➤ Demand for various products

- SANRAL projects
 - Four N7 projects requires A-E2
 - N2 project A-R1
 - And other mixes!
- COLTO mix
- Special mixes (e.g. Province: A-R2 on Rooiels, etc)
- Private clients

➤ Limited capacity at plant

- One site: 100 tonne/hr required for 6 hrs – thus 600 tonne/day
- Plant can produce 120 tonne/hr (say) – very little room for error
- Not enough bins! Store 250 tonne in bin only

➤ Supply problems overcame by night work (or weekends), extra cost

Coordinated effort required

- It is clear that contractor must use quality advanced equipment
- Advanced planning essential, even during design (accurate survey)
- Material supply material supply material supply!!
- Increase plant capacity
 - Especially storage capacity
- Less variation in material specification
- Authorities?

Thanks