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Provincial Smoothness Specifications (MB, SK, AB, BC)

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November, 2012

creating & delivering BETTER SOLUTIONS



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Manitoba Infrastructure and Transportation

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Construction Smoothness Specification

- Profile Index
 - NULL (0mm) blanking band
 - Unit distance of 100m (mm/0.1km)
 - Profile readings are excluded near bridge decks, railway crossing, and existing pavement joints
 - Final pavement profiles for inner and outer wheel path in each lane. PI calculations shall be based on the wheel path with the roughest values.
- PI measured by the Department using an inertial profiler measuring device capable of simulating a profilograph (AASHTO M328 compliant).
 - Working on certification standards for operators and equipment based on AASHTO M328, R54, R56 and R57.

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PROFILE INDEX (0 NULL BAND)			
SPEC RANGE (mm/100m)		Single Lift	Multiple Lift
	<18	\$400	\$400
18	22	\$180	\$180
23	27	\$120	\$120
28	34	\$60	\$60
35	40	\$0	\$0
41	46	-\$45	-\$90
47	52	-\$90	-\$180
53	62	-\$150	-\$300
	>62	CORRECT	CORRECT

Repairs within any 100m section will disqualify the section from bonus assessment.

Negative pay adjustments waived if:

- curves < 600m radius
- curb or curb and gutter
- concrete barrier walls

BUMPS (7.6m Straight Edge)		
SPEC RANGE	Single Lift	Multiple Lift
>8mm - 12mm	-150	-300
>12mm	CORRECT	CORRECT

Grinding accepted as corrective action.

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- PI measured by the Department using an inertial profiler (AASHTO M328 compliant), post-processed to simulate a profilograph.
- Working on certification standards for operators and equipment based on AASHTO M328, R54, R56 and R57.
- Use IRI for Asset Management purposes, in the preliminary stages of investigating the use of IRI for construction acceptance.
 - Recognise the benefit of having a “cradle to grave” system for measurement,
 - work with our industry partners while MTI develops a full understanding of the implications in the use of the IRI as an acceptance tool

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Saskatchewan Ministry of Highways and Infrastructure

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Construction Smoothness Specification


- Profile Index
 - 5mm blanking band
 - Block distance of 100m (mm/0.1km)
- Category II PrI applies to the following circumstances:
 - Curves with radius less than 600 m;
 - Blocks within 50 m of a bridge or railway crossing;
 - Single lift rehabilitation projects where the total thickness of asphalt concrete being placed is 50 mm or less, with the exception of profiled-milled sections;
 - Areas where there is curb and gutter; and
 - The block at each construction limit.
 - Category I PrI for all other cases

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Each Block profiled in accordance with STP 222-5

- Roughness Profile with High Speed Profilograph (inertial profiler and profilograph simulation)
 - Profile Index measured in OWP,
 - 5mm blanking band.
 - 100 m Block Size
 - The bump or dip measured over a 7.6 m section.
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- Odometer Calibration: +/- 1%;
 - Sensor Vertical Height; verified using calibrated using calibration blocks.
 - Accelerometer; bounce acceleration calibration done every day.

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Smoothness Specifications

PRI Range		Pay Adjustment
Multiple Lift, Single Lift > 50mm	Single Lift ≤ 50mm, Curves (R<600m), Curb and Gutter	Top Lift 100m Sub-Lot
0	0-1	\$200
1-2	2-3	\$150
3-4	4-6	\$100
5-6	7-9	\$50
7-10	10-15	\$0
11-12	16-17	-\$25
13	18	-\$50
14	19	-\$75
15	20	-\$100
16	21	-\$150
17	22	-\$200
18	23	-\$300
19	24	-\$400
20	25	-\$500
21	26	-\$600
22	27	-\$800
23	28	-\$1,000
> 23	> 28	Reject

Individual bumps and/or dips of 12 mm or less are considered a part of smoothness.

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Bump Specification

Bump / Dip	Pay Adjustment (\$ per bump or dip)
8.5 to 9.4 mm	-\$100
9.5 to 10.4 mm	-\$200
10.5 to 11.4 mm	-\$400
11.5 to 12.4 mm	-\$600
12.5 to 13.4 mm	-\$800
13.5 to 14.4 mm	-\$1,000
14.5 to 15.4 mm	-\$1,200
15.5 to 16.4 mm	-\$1,400
16.5 to 17.4 mm	-\$1,600
17.5 to 18.4 mm	-\$1,800
> 18.4 mm	Reject

Contractor will be allowed to perform a Class I or Class IV repair on individual bumps and dips that exceed 12 mm.

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AT Current Construction Smoothness Specification

- Profile Index
- 5.8mm blanking band
- Sub-Lot distance of 100m (mm/0.1km)
- Construction type criteria
 - Multi-lift, single lift, curb and gutter.
- Bump and Dip assessment (7.62 m baseline)
 - \$300 per B/D for multi-lift
 - \$100 per B/D for single lift
- 2010, first use of high speed inertial profilers to provide simulated profilograph measurements.

Alberta Transportation



- Finalizing new specification using inertial profilers and IRI criteria.
- Begin implementation in 2013.
 - Initial projects to be tendered shortly.
- Similar in nature to current end product specification.
 - IRI determined on a 100 m subplot basis.
 - Attempt to have similar boundary limits for bonus, penalty and reject.
 - Areas of Localized Roughness – IRI determined in the right wheel path over a 7.62 m baseline.
 - Contractor to provide testing services.
 - Department has option to perform verification testing.

Alberta Transportation



Smoothness Specification

Lot Pri	Payment Adjustment		
	Two or more lifts, $\geq 20\text{mm}$	Single lift, $\geq 45\text{mm}$	HIP, Mill and Inlay, Curb and Gutter or Single Lift < 45
≤ 10	0	0	0
11	-40	0	0
12	-70	0	0
13	-100	0	0
14	-130	0	0
15	-170	0	0
16	-200	-40	0
17	-230	-80	0
18	-260	-120	0
19	-290	-160	0
20	-320	-200	0
21	-350	-240	0
22	-380	-280	0
23	-410	-320	-10
24	REJECT	REJECT	-40
25	REJECT	REJECT	-70
26	REJECT	REJECT	-100
27	REJECT	REJECT	-130
28	REJECT	REJECT	-160
29	REJECT	REJECT	-190
30	REJECT	REJECT	-220
> 30	REJECT	REJECT	REJECT

British Columbia Ministry of Transportation and Infrastructure

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British Columbia Ministry of Transportation and Infrastructure

BC Construction Smoothness Specification

- IRI
- Sub-Lot of 100m
- Smoothness tested by the Ministry
- Class I precision rolling profile measuring instrument
- High Speed Inertial Profilers added 2010
- Pavement profile measured in the center of each driving lane.

- Acceleration, deceleration and turning lanes are tested
- Structures and shoulder areas excluded

- Contractor provides a chalk guideline in the centre of the lane immediately prior to measurement.



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British Columbia Ministry of Transportation and Infrastructure



Smoothness Specification

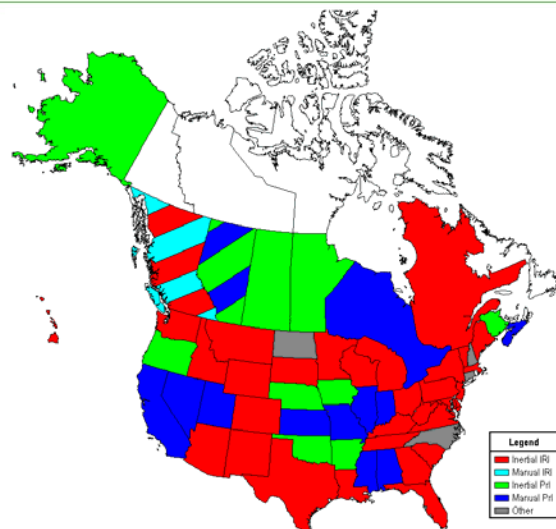
Lot IRI (m/km)	Payment Adjustment	
	Standard	Alternate
≤ 0.80	\$2,000	\$2,000
> 0.80 to . 0.90	\$1,000	\$2,000
> 0.90 to . 1.00	\$500	\$2,000
> 1.00 to . 1.10	\$200	\$1,000
> 1.10 to . 1.20	\$0	\$500
> 1.20 to . 1.30	-\$100	\$250
> 1.30 to . 1.40	-\$250	\$0
> 1.40 to . 1.50	-\$600	-\$300
> 1.50 to . 1.60	-\$1,400	-\$300
> 1.60 to . 1.70	-\$2,000	-\$750
> 1.70 to . 1.80	-\$3,000	-\$750
> 1.80 to . 1.90	REJECT	-\$1,500
> 1.90 to . 2.00	REJECT	-\$2,500
> 2.00	REJECT	REJECT

Bumps And Dips

- Individual deficiencies between 8 mm and 12 mm over 3 m will result in a \$200.00 penalty for each occurrence.
- Less than 12 mm over 3 m will not have remedial work required.
- Deficiencies exceeding 12 mm over 3 m will require remedial work.

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Construction EPS Smoothness Index



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