



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, Florida 32399-0450

THOMAS F. BARRY, JR.
SECRETARY

December 17, 2002

This Memo Has Expired

MEMORANDUM NO. 32-02

TO: DISTRICT CONSTRUCTION ENGINEERS

FROM: *for* Ananth Prasad, State Construction Engineer *David Wack*

COPIES: District Bituminous Engineers, David Sadler, Bill Albaugh, Tom Malerk, Bruce Dietrich, Greg Schiess(FHWA), Jim Warren(ACA)

SUBJECT: Test Specification Section 330-12.7 Pavement Smoothness Incentive/Disincentive

A copy of the test Specification Section 330-12.7: Pavement Smoothness Incentive/Disincentive is attached for your use.

Prior to a statewide implementation of this specification, I would like to try one or two test projects in each District to evaluate the performance of the specification. The pilot projects suggested by the State Pavement Design Office and our Office are listed as follows:

<u>DIST</u>	<u>COUNTY</u>	<u>FIN. I.D. NO.</u>	<u>POSTED SPEED</u>	<u>LOCAL NAME</u>	<u>LETTING DATE</u>
1	Highlands	19443525201	65	US 27	10/30/02
1	Manatee	20100925201	70	I - 75	10/30/02
2	Suwannee	21273435201	60	SR 20/ US 27	7/24/02
2	Duval	21334625201	65	SR 9A	8/21/02
3	Jackson	40392315201	65	SR 75 (US 231)	9/25/02
3	Jefferson	21944815201	65	SR 57 (US 19)	4/24/02
4	Palm Beach	40613015201	55	SR - 710/ Beeline Hwy	7/31/02
4	Palm Beach	40794615201	65	Palm Beach Resurface	5/22/02
5	Sumter	40776415201	60	SR 471	8/28/02
5	Volusia	40413115201	55	SR 415	7/31/02
6	Monroe	40563915201	55	SR 5/ Overseas Hwy	4/24/02
6	Monroe	40564015201	55	SR 5/ Overseas Hwy	4/24/02
7	Hernando	25485715201	60	US 98 (SR 700)	4/24/02
7	Hillsborough	40374015201	70	I - 275 (SR 93)	9/25/02
8	Indian River	40914215201	70	Turnpike Mainline	10/29/02

The above pilot projects can include the test Specification in the Contracts by Supplemental Agreement. If you think that any pilot project is not suitable for the test specification, please let us know the reasons and provide the substitute to our Office. If you have any questions, please contact David Wang at (850) 414-4152, or (SC) 994-4152.

APS/dw
Attachment

330-12.7 Pavement Smoothness Incentive/Disincentive:

330-12.7.1 General: For FC-5 mixtures, bid price adjustments based on a smoothness incentive/disincentive will be applicable to mainline FC-5 placed on Superpave Traffic Levels D and E. Bid price adjustments will be based on the RN. Only those LOTs tested in accordance with this subarticle will be eligible for bid price adjustments.

330-12.7.2 Testing Requirements: Upon completion of the friction course, the pavement smoothness of each lane will be determined by a single pass of the Laser Profiler furnished and operated by the Department in accordance with FM 5-549. In no case will the pavement be re-tested once the smoothness is determined.

330-12.7.3 Bid Price Adjustment for Smoothness: For evaluation purposes, each lane will be divided into 0.1 mile [0.1 km] LOTs. The total payment for smoothness will be determined in accordance with the following:

$$\text{Total smoothness payment} = A \times B \times C$$

Where:

A = Maximum smoothness payment \$500.00 /0.1 mile LOT [\$310.00 /0.1 km LOT],

B = Smoothness Factor = $(P - 70.0) / 25.0$,

$P = P_a - (2 \times P_b)$

P_a = The percent of the total number of LOTs with a RN ≥ 4.21 ,

P_b = The percent of the total number of LOTs with a RN < 4.10 ,

C = Total number of LOTs

(The values of P_a , P_b and C are obtained from the computer printout summary of the RN data).

The Smoothness Factor (B) will be rounded to two decimal places and must have a maximum value of 1.00. Any negative resultant value is considered as 0.00.

The bid price for the friction course will be adjusted by dividing the total smoothness payment by the total quantity of friction course being accepted. The maximum payment for smoothness will be limited to 3 % of the original Contract amount. Adjustment of bid unit price for bituminous material does not apply to the smoothness payment

ARTICLE 330-12 (of the Supplemental Specifications) is expanded by the addition of the following new Subarticle:

**SURFACE REQUIREMENTS.
(REV7-8-02)**

SUBARTICLE 330-12.6 (of the Supplemental Specifications) is deleted and the following substituted:

330-12.6 Acceptance Testing for Pavement Smoothness by Laser Profiler: The Department will perform acceptance testing on the completed pavement surface with regard to smoothness. The pavement smoothness will be determined by a Laser Profiler on Limited Access or other high-speed roadways where the design speed is equal to or greater than 50 miles per hour [80 km per hour]. Testing will be performed on mainline traffic lanes only.

Ramps, acceleration and deceleration lanes, bridge approaches, and other areas not suitable for testing with the Laser Profiler will be tested for acceptance in accordance with 330-12.3.

The pavement smoothness as determined by the Laser Profiler will be expressed as a Ride Number (RN), in accordance with ASTM E 1489.

330-12.6.2 Requirements for Last Layer Prior to Friction Course: Straightedge the pavement behind the compaction operation. Correct all deficiencies in excess of 3/16 inch [5 mm] in accordance with 330-12.4.

330-12.6.3 Acceptance Criteria for Friction Course: Upon completion of the friction course, the pavement smoothness of each lane will be determined by a single pass of the Laser Profiler furnished and operated by the Department in accordance with FM 5-549. In no case will the pavement be retested once the smoothness is determined. For evaluation purposes, the pavement will be divided into 0.1 mile [0.1 km] LOTs. Upon completion of the testing, the Engineer will furnish a test report documenting the RN of each individual LOT. The RN will be calculated to two decimal places. The acceptance criteria for pavement smoothness is shown in Table 330-3.

Table 330-3	
Ride Number (RN)	Method of Acceptance
Greater than or equal to 4.00	Acceptance with full payment
3.99 to 3.70	See Note 1
Less than 3.70	See Note 2
Note 1: For all LOTs with a RN ranging from 3.70 to 3.99, correct all deficiencies in excess of 3/16 inch [5 mm] within the LOT as identified by the 15 foot [4.572m] rolling straightedge. Perform all corrections in accordance with 330-12.4 (a). Upon completion of the corrections, straightedge the pavement with a 15 foot [4.572m] rolling straightedge as observed by the Engineer. Assure that there are no deficiencies greater than 3/16 inch [5 mm] in the LOT.	
Note 2: For all LOTs with a RN less than 3.70, remove and replace the entire LOT in accordance with 330-12.4.	

Where the Engineer elects to waive the correction on the friction course, the Department will reduce the pay quantity for Asphalt Concrete Friction Course by the amount of friction course that the Contractor would have removed and replaced if the Contractor had made the correction. The reduction in pay for the amount of friction course will be determined by multiplying 528 feet [100 m] by lane width by the average spread rate times the bid unit price. Reduction in pay for Lump Sum projects will be in accordance with 9-2.2.1.

Use on limited access or other high-speed roadways where the design speed is equal to or greater than 50 miles per hour [80 km per hour]

The Engineer may waive the corrections and penalties if the deficiencies are caused by manholes, valve boxes, intersections, etc. that are beyond the control of Contractor.

ARTICLE 330-12 (of the Supplemental Specifications) is expanded by the addition of the following new Subarticle:

330-12.7 Pavement Smoothness Incentive/Disincentive:

330-12.7.1 General: For FC-5 mixtures, bid price adjustments based on a smoothness incentive/disincentive will be applicable to mainline FC-5 placed on Superpave Traffic Levels D and E. Bid price adjustments will be based on the RN. Only those LOTs tested in accordance with this subarticle will be eligible for bid price adjustments.

330-12.7.2 Testing Requirements: Upon completion of the friction course, the pavement smoothness of each lane will be determined by a single pass of the Laser Profiler furnished and operated by the Department in accordance with FM 5-549. In no case will the pavement be re-tested once the smoothness is determined.

330-12.7.3 Bid Price Adjustment for Smoothness: For evaluation purposes, each lane will be divided into 0.1 mile [0.1 km] LOTs. The total payment for smoothness will be determined in accordance with the following:

$$\text{Total smoothness payment} = A \times B \times C$$

Where:

A = Maximum smoothness payment \$500.00 /0.1 mile LOT [\$310.00 /0.1 km LOT],

B = Smoothness Factor = $(P - 70.0) / 25.0$,

$P = P_a - (2 \times P_b)$

P_a = The percent of the total number of LOTs with a RN =4.21,

P_b = The percent of the total number of LOTs with a RN < 4.10,

C = Total number of LOTs

(The values of P_a , P_b and C are obtained from the computer printout summary of the RN data).

The Smoothness Factor (B) will be rounded to two decimal places and must have a maximum value of 1.00. Any negative resultant value is considered as 0.00.

The bid price for the friction course will be adjusted by dividing the total smoothness payment by the total quantity of friction course being accepted. The maximum payment for smoothness will be limited to 3 % of the original Contract amount. Adjustment of bid unit price for bituminous material does not apply to the smoothness payment