Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, Florida 32399-0450

THOMAS F. BARRY, JR.
SECRETARY

September 6, 2001

THIS MEMO IS EXPIRED

MEMORANDUM NO: 16-01

TO: **DISTRICT CONSTRUCTION ENGINEERS**

FROM: Greg Xanders, State Construction Engineer

COPIES: Bill Albaugh, Tom Malerk, Greg Schiess, Jim Warren, District Bituminous Engineers

SUBJECT: **TEST PROJECT FOR PAVEMENT SMOOTHNESS ACCEPTANCE SPECIFICATION**

A a copy of the Pavement Smoothness Acceptance Specification that was developed by Flexible Pavement Smoothness Committee recently is attached.

The purpose of this specification is to replace the existing 15-foot rolling straightedge acceptance testing method by laser profiler testing method. This fast and reliable testing device can be used without disruption to traffic and no maintenance of traffic is required during testing so that worker safety and duration of the acceptance tests will be greatly improved by this laser profiler system.

Prior to statewide implementation, I would like to try this specification on one or two projects in each District to evaluate the performance. Please incorporate this specification on an ongoing project by a Supplemental Agreement (SA). The selected project shall be on Interstate Highway or high speed roadway without intersection profiles from side streets, traffic lights, tool booths, etc. so that a fairly constant speed can be maintained to minimize the negative effect of braking and acceleration of the test vehicle.

In order to evaluate the effectiveness of this specification, please provide a copy of your SA to my office for our reference. If you have any questions, please contact David Wang at (850)-414-4152, or Suncom 994-4152.

GX/wc
Attachment

HOT BITUMINOUS MIXTURES – PAVEMENT SMOOTHNESS.

Article 330-13 (of the Supplemental Specifications) is expanded by the following:

330-13.6 Acceptance Testing for Pavement Smoothness by Laser Profiler:

330-13.6.1 General: The Department will test the pavement smoothness for acceptance by Laser Profiler on Interstate Highway or high speed roadway (design speed is equal to or greater than 55 miles per hour). Testing will be performed on mainline traffic lanes only. Pavement surfaces on ramps, acceleration and deceleration lanes, bridge approaches, sections next to the existing pavements and other areas not suitable for testing with the Laser Profiler shall be tested for acceptance with the 15 foot rolling straightedge in accordance with 330-13.3.
Additionally, a small distance of roadway decided by the Engineer before and after the sections to be tested is excluded from this acceptance. These excluded small distances are to provide sufficient acceleration and deceleration length for the test equipment. Excluded sections will be accepted with the 15 foot rolling straightedge in accordance with 330-13.3. A Ride Number (RN) established by Laser Profiler will express the quality of the pavement smoothness of a section being tested. The RN is derived from a mathematical processing of the longitudinal profile measurements to produce a ride quality or smoothness on a scale from 0 to 5. The RN will be determined in accordance with ASTM E 1489.

330-13.6.2 Contractor's Responsibility: All pavement courses placed shall be subjected to visual inspection during construction to produce a smooth surface of uniform texture and free from segregation, sand streaks, sand spots, voids, flushed areas. If the intermediate course is to be opened to the public traffic, Engineer will ride over the intermediate layer to determine if the pavement has unacceptable deficiencies such as humps, depressions or significant ripples. The Engineer may require the Contractor to perform a 15 foot rolling straightedge testing on the questionable sections of the intermediate layer to identify the defective areas. Correct all deficiencies in excess of 3/8 inch prior to the next layer paving.

330-13.6.3 Acceptance Criteria for Last Layer Prior to Friction Course: Upon completion of the last layer prior to friction course, the pavement smoothness of each lane will be tested by a single pass of the Laser Profiler furnished and operated by the Department in accordance with the FM 5-549. Profiling will begin and end within 100 feet from each bridge approach pavement or existing pavement that is joined by the new pavement. In no case will the pavement be retested once the quality of the smoothness is determined. After the Laser Profiler test, the Engineer will produce a test report printed in 0.01mile interval along with an average Ride Number value. Correct all deficiency areas where the RN values are less than 3.70 in accordance with 330-13.3.3.

330-13.6.4 Acceptance Criteria for Friction Course: Upon completion of the friction course, the pavement smoothness of each lane will be tested by a single pass of

the Laser Profiler furnished and operated by the Department in accordance with the FM 5-549. Profiling will begin and end within 100 feet from each bridge approach pavement or existing pavement that is joined by the new pavement. In no case will the pavement be retested once the quality of the smoothness is determined. For evaluation purpose, the pavement will be divided into sampling LOTs of one-tenth (0.1) lane mile each. The Engineer will produce a test result report and every LOT will exhibit a Ride Number. The acceptance schedule for the pavement smoothness is shown on the following table:

Table 330-6
Acceptance Schedule for Smoothness

Ride Number (RN)	Method of Acceptance
$\geq$ 4.21	Acceptance with price adjustment per 330-13.5
$\geq$ 4.10	Acceptance with full payment
4.09 to 3.70	Engineer's Ride Test to determine the acceptance
3.69 to 3.50	Correct deficiencies at no cost to the Department
Less than 3.50	Remove and replace at no cost to the Department

Engineer will ride over all the defective sections with RN values ranging from 4.09 to 3.70 to determine if the roughness of the defective areas is acceptable. If Engineer does not find the humps, depressions or significant ripples, the defective sections can be accepted with full payment. When the Engineer judges that the humps, depressions or ripples are unacceptable, the Contractor shall correct the unacceptable deficiencies identified by the Engineer by an approved method with no deficiency exceeding 3/16 inch [5 mm]. Engineer will ride over those corrected sections afterward to verify the quality of the correction. If unacceptable humps, depressions or ripples are still found, the Contractor shall remove and replace the friction course of the defective area in accordance with 330-13.4 at no cost to the Department. When the Contractor is in doubt about Engineer's judgment, check the questionable sections with a 15 foot rolling straightedge in accordance with the acceptance criteria specified in 330-13.3.4.
Correct all the defective sections with RN values ranging from 3.69 to 3.50 in accordance with 330-13.4 with no deficiency exceeding 3/16 inch [5 mm] at no cost to the Department.
The Engineer may waive corrections specified in Table 330-6 if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the ride quality of the pavement and corrective action would unnecessarily mar the appearance of the finished pavement.
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 100 feet by lane width by the average spread rate times the bid unit price.