SP 400S SMOOTHNESS OF PAVEMENT SURFACES

(*10-2-2015*)

A. Description

This Work consists of performing pavement smoothness testing and providing test results. The contractor shall also provide all required test equipment.

B. Equipment

- Ten (10) foot Rolling Straightedge
- Ten (10) foot Standard Aluminum Straightedge (2”x4” Extruded Aluminum)
- Class 1 Inertial Profilometer

C. Rolling Straightedge Pavement Tolerances

The finished surface of each course of each pavement type (SP 302, SP 402 and SP 404) on the traveled lanes, shoulders, and non-mainline travel areas shall be tested on tangent grades and vertical curves during paving operations with a ten (10) foot Rolling Straightedge.

SP 302, SP 402 and SP 404 - The finished surface of each pavement type shall be free from roller marks and shall not vary more than a) three eighths (3/8) inch for SP 302; b) one quarter (1/4) inch for SP 402; or c) one-eighth (1/8) inch for SP 404 when evaluated with a ten (10) foot straightedge in the longitudinal and transverse direction. In the longitudinal direction, a smoothness reading shall be made along the entire length of the new pavement. In the transverse direction, smoothness readings shall be made continuously across the full width of the pavement to ensure a uniform cross-slope. When more than five hundred (500) square feet of a lane mile exceeds the specified tolerance, the Contractor shall remove the deficient area to the depth of the final course of pavement and replace with new material. Skin patching shall not be permitted. Isolated high points may be ground off providing the course thickness complies with the thickness specified on the plans. High point grinding will be limited to five hundred (500) square feet per lane mile.

SP 404 only - For traveled lanes and non-mainline travel areas, the Chief Engineer may elect to use a fifteen (15) foot maximum string line set at each end an equal distance above the roadway. Variations in measurements taken from any point along the taut line to the road surface that exceed one quarter (1/4) inch will be considered outside the tolerance requirements. Should the results of this method be in conflict with the straightedge method, the string line results shall govern when the one-quarter (1/4) inch tolerance is exceeded.

Any part of the surface course not meeting the tolerances of the rolling straight edge or string line shall be planed using diamond blades, Micromilling, or removed for the full depth of the surface course and replaced to meet the correct thickness and cross section as shown on the plans. Repairs, replacements and correction of the pavement shall be completed at the expense of the Contractor, and no further payment will be allowed.

D. Class 1 Inertial Profilometer Pavement Tolerance (Surface Course)

The Commission will rate the general rideability of all finished surface courses (mainline roadway travelled lanes & interchange ramps) using a Class 1 Inertial Profilometer, as specified in ODOT Supplement 1058. The profilometer will make two

(2) valid measuring runs in each lane, in the intended direction of travel, covering the entire project. The data will be analyzed using the Half Car IRI. All data pertaining to smoothness will be compiled and reported in 0.05 mile sections. Each section shall be reported as a separate Half Car IRI number. Do not rate pavement within forty (40) feet of a bridge deck or approach slab in any section. The Contractor shall place the asphalt concrete surface course to a Half Car IRI of forty-five (45) inches per mile or less for each 0.05 mile section. Corrective work is required for all sections that exceed a Half Car IRI of forty-five (45) inches per mile.

At the end of the first day of placement of SP 404, the Contractor shall run a Class 1 Inertial Profilometer to check the smoothness of the initial placement of SP 404. The cost of this profiling shall be considered incidental to Item SP 404. This initial profiling shall not be a substitute for the required comprehensive project profiling as required in this specification. The Contractor shall provide the Profilometer data to the Chief Engineer prior to starting the next day's placement of SP 404. If the Profilometer testing results exceed the requirements as specified herein for finished surface course, the Contractor is to provide a Corrective Action Plan and hold an additional Pre-Pave Meeting to review all adjustments to the paving operations to achieve the smoothness specified herein. The Contractor may not restart placement operations of the SP 404 until the Corrective Action Plan to correct the deficient pavement and all future pavements has been approved by the Chief Engineer.

Comprehensive Project profilometer testing of the entire length of the Project will be accomplished immediately upon completion of the surface course paving and prior to use of the pavement by any traffic. The testing shall be performed by the Contractor's testing lab and witnessed by an OTIC Representative. The Contractor is to provide unedited raw data, in Proval format, immediately upon completion of testing. Analyzed test results shall be provided to the OTIC Representative within forty-eight (48) hours of the testing. The Contractor's schedule is to reflect this forty-eight (48) hour evaluation time, as the opening of the zone to Turnpike traffic will not be permitted pending acceptable results of the profilometer testing and other quality control test evaluations.

Where areas exceed the tolerance, the rideability will be considered unacceptable and shall be immediately corrected per an approved Corrective Action Plan. All Contractor Corrective Action Plans shall include files supportive of the latest version of the Proval software and evaluations for simulated diamond grinding of the deficient areas.

No payment will be made for the surface course of any 0.05 mile section of pavement that exceeds a Half Car IRI of forty-five (45) inches per mile until corrective work has been completed by the Contractor and the pavement retested to verify the IRI has been reduced to forty-five (45) inches per mile or less per 0.05 mile section.

E. Corrective Actions

Corrective Action Plans shall be submitted for approval by the Chief Engineer prior to the commencement of any corrective work, when the specified tolerance(s) is/are exceeded on an area greater than five hundred (500) square feet per lane mile.

The Contractor is to mark all deficient areas on the pavement as part of the Corrective Action Plan. Deficient Areas are defined as any section with a Half Car IRI above forty-five (45) inches per mile, or exceeding the tolerance of the straightedge and/or rolling straightedge as defined in this specification or in SP 400.

Corrective measures shall be applied to the full lane width of the pavement. The corrected areas shall have uniform texture and appearance. Corrected pavement surfaces shall be retested to assure adherence to both the straightedge and Class 1 Inertial Profilometer tolerances. Raw profilometer data shall be provided immediately to the Chief Engineer and the analysis shall be provided within forty-eight (48) hours after correcting the pavement surface. The Contractor is to make the required, approved corrections for pavement smoothness before making the pavement thickness determinations. All Profilometer runs required to verify corrections in the surface course shall be performed by the Contractor at the Contractor's expense. The cost of all labor, equipment, and material used for the corrective work shall be borne solely by the Contractor.

The following Corrective Actions are permissible for correcting deficiencies of SP 404, SP 402 and SP 302:

1. Deficient Areas less than 500 square feet per lane mile

   Diamond Grinding, Micromilling, or other profiling devices approved by the Chief Engineer

   Diamond Grinding Equipment shall meet or exceed the following minimum specifications, and shall be submitted for approval with the Corrective Action Plan.

   - Minimum Gross Weight 35,000 pounds including grinding head
   - Minimum of a twelve (12) foot wheel base
   - Minimum grinding head of forty-eight (48) inches in width and centrally mounted between wheel bases from front to back
   - Capable of Controlling Grade and Slope and/ or survey grade and controls provided by the Contractor to re-establish without jeopardizing plan grade and slope
   - Vacuum System capable of removing all standing slurry leaving roadway in a damp condition
   - All grinding slurry is to be contained and disposed of in accordance with SP 105

   Micromilling Equipment shall meet or exceed the following minimum specifications, and shall be submitted for approval with the Corrective Action Plan.

   - Power driven, self-propelled machine having sufficient power, traction and stability to remove the thickness of asphalt concrete and/or Portland cement concrete
   - Cutting teeth shall be carbide tipped; the teeth shall be assembled in a cutting head mounted on a machine designed, maintained and operated so as to produce a surface free from grooves, ridges, gouges or other irregularities detrimental to the safe operation of vehicles in traffic.
   - Cutting head shall be a minimum of six (6) feet wide with a maximum tooth spacing of 0.2 inch.
   - Micromilling machine shall be a minimum of sixteen (16) feet long and capable of providing a uniformly varying depth of cut and cross slope while the machine is in motion.
   - Waste material generated shall be removed shortly after micromilling to prevent the residue from flowing across lanes used by the traveling public or into gutters or drainage facilities; the disposal of the waste material shall be in accordance with SP 105.

2. Deficient Areas greater than 500 square feet per lane mile

   a) Removal of the Surface Course by Milling and Replace the Specified Surface Course. When more than five hundred (500) square foot of a lane mile exceeds the specified tolerance, the Contractor shall remove the deficient area to the depth of the course of pavement and replace with new material in accordance with the Specifications.

   b) Removal and Replacement of the entire asphalt pavement section, using asphalt concrete meeting the Contract requirements.

F. Basis of Payment

The cost of all labor, equipment, and material used for the smoothness testing and corrective work shall be considered incidental to the pavement pay items.