

PN 555 -1/20/12 – SURFACE SMOOTHNESS FOR BRIDGES AND APPROACHES

1.0 DESCRIPTION: The Surface smoothness requirements of C&MS 451.12 are modified as follows for bridge encounters defined as 25 feet (7.6 m) of entry pavement, entry approach slab, bridge deck, exit approach slab and 25 feet (7.6 m) of exit pavement including all joints and pavement transitions within this length of roadway.

2.0 MATERIALS AND EQUIPMENT: Provide smoothness measuring equipment conforming to Supplement 1058. Provide a certified profiler who is on the approved list on the Office of Technical Services website. Furnish the Department's approval letter of the profiler and the operator to the Engineer prior to commencing work. Furnish equipment meeting the requirements of C&MS 257.02 for performing corrective diamond grinding.

3.0 SMOOTHNESS MEASUREMENT: Collect surface smoothness measurements for both wheelpaths in each proposed travel lane during one continuous pass. The wheelpaths are located parallel to the centerline or baseline of the roadway or ramp and approximately 3.0 feet (1.0 m) inside all lane edges, measured transversely. Start the profile measurement approximately 250 feet (76 m) before the approach slab/pavement interface at the entry end and continue to approximately 250 feet (76 m) after the approach slab/pavement interface at the exit end. Ensure the profiler will meet the surface smoothness requirements per 451.12 for the bridge encounter.

Notify the engineer a minimum of 24 hours prior to surface smoothness measurements. Do not perform any measurements until all final wearing courses are in place within the bridge encounter lanes being measured and all concrete surfaces have reached specified curing and loading requirements. Remove all dirt and debris from the surface of the travel lanes prior to performing the surface smoothness measurements. Provide temporary pavement markings for all travel lanes that are of sufficient size to be visible during surface smoothness measurements. Ensure the path of the profiler is parallel to the lane edges at all times during data collection.

Develop an International Roughness Index (IRI) according to ASTM E 1926 for the bridge encounter using a continuous 25 foot (7.6 m) base length analysis for each wheelpath and calculate the Mean IRI (MRI) for each travel lane. The MRI is the average of the IRI values for the right and left wheelpaths in each travel lane. Submit two copies of the summary report from ProVAL conforming to Supplement 1112 and two electronic copies of all bridge encounter profiles in ProVAL compatible format to the Engineer of which one copy of the summary report and one electronic copy of the profiles will be submitted to the Office of Technical Services.

Provide necessary traffic control and survey stationing for all surface smoothness measurements.

4.0 MANDATORY CORRECTIVE WORK: For bridge encounters exceeding 265 feet (80 m) in length, corrective work is required for each travel lane with an MRI above 130 inches per mile (2.08 m/km). Perform corrective action to reduce the MRI for each corrected lane to 100 inches per mile (1.58 m/km) or less. The MRI threshold does not apply to bridge encounters less than 265 feet (80 m) in length.

Corrective work is required where the IRI in any 25 foot (7.6 m) segment of the bridge encounter exceeds 250 inches per mile (3.94 m/km), except in segments that include a steel armored expansion joint system, where the limit would be 350 inches per mile (5.52 m/km). Perform corrective action to reduce the IRI for each corrected lane to 250 inches per mile (3.16 m/km) or less, except in segments that include a steel armored expansion joint system, reduce the IRI for each corrected lane to 350 inches per mile (4.74 m/km), or less. Do not perform corrective diamond grinding within 1.5 feet (0.45 m) of a steel armored expansion joint system installed prior to the corrective work. Do not exceed 0.5 inches (13 mm) of material removed by corrective diamond grinding without approval of the Engineer.

If corrective work is required, develop a corrective work plan. At least 7 days before beginning corrective work, submit one copy of the following information to the Engineer: (1) corrective work plan; (2) all IRI and MRI analyses; and (3) all collected road profiles in ProVAL compatible format and one copy of the information will be sent to the Office of Technical Services; Attn.: Infrastructure Management Section, 1980 W. Broad St., Columbus, OH 43223. Do not begin corrective work until receiving the Engineer's acceptance of the corrective work plan.

Upon completion of the corrective work, re-measure surface smoothness according to these specifications. Re-groove diamond ground surfaces according to 511.20, if the existing grooves are less than 0.08 inches (2 mm) deep, at no additional cost to the Department.

PN 555 Designer Notes: This note should be included on all projects with new bridge decks and approach slabs and at least 100 feet of approach pavement on each side of the approach slabs.

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