

New TxDOT Profiler Certification Tracks

Emmanuel Fernando¹ and Magdy Mikhail²

¹Texas A&M Transportation Institute, Texas A&M University System, College Station, Texas 77843-3135, U.S.A., e-fernando@tamu.edu.

²Maintenance Division, Texas Department of Transportation, Austin, Texas 78731, U.S.A., Magdy.Mikhail@TxDOT.gov

ABSTRACT

The existing smoothness specifications used by the Texas Department of Transportation (TxDOT) requires certification of inertial profilers for ride quality assurance testing. Currently, inertial profilers are certified based on profile measurements collected on dense-graded hot-mix asphalt concrete sections. However, the same profilers are used to measure smoothness of asphalt, Portland cement concrete, and flexible base sections with distinctly different textured surfaces than the dense-graded asphalt sections on which these profilers were certified. There is a need to build additional sections to certify profilers over the range of textured surfaces on which they will be used. This paper presents TxDOT's new profiler certification tracks and results from initial tests done with different profiling systems to verify the applicability of TxDOT's existing profiler certification standards on the new pavement surfaces. The new sections comprise transversely tined and longitudinally tined continuously reinforced concrete pavements (CRCP), permeable friction course, and chip seal sections. As expected, only the Roline laser passed TxDOT's profiler certification requirements on the one-inch longitudinally tined CRCP section. On the half-inch and one-inch transversely tined CRCP sections, the single-point and 19mm lasers met all of the existing TxDOT profiler certification requirements. However, the Roline laser, as configured, failed to meet the IRI accuracy tolerance on the half-inch transversely tined section, with the test data showing evidence that the Roline measurements along the right wheel path were affected by the half-inch transverse tines. The results from other tests done on the new sections are presented, and recommendations based on these results are offered.

Keywords: Inertial profiler certification, ride quality measurement, inertial profilers, single-point laser, wide-spot laser, wide-footprint laser, International Roughness Index.