

## **HR-152 Investigating Pavement Surface Variations**

**Key Words:** Profilometer, Pavement smoothness, Ride quality

### **ABSTRACT**

The measurement of pavement smoothness has been the concern of highway engineers for more than 70 years. This roughness is referred to as "ride quality" by the traveling public. Pavement smoothness evaluating devices have attempted to place either a graphical or numerical value on the public's riding comfort or discomfort.

The 25 foot California Profilometer proved to be the most reliable and productive tool from a testing standpoint of all the different testing methods considered. It offered a continuous, graphical profile of the surface variations. Ease of mobility, short assembly time, and low maintenance were other reasons the Cox Profilometer was selected in the development stage.

Several states have adopted a specification for surface smoothness requiring the pavement surface to be tested by placing a straightedge on the surface, parallel to the centerline. Most agencies limit the surface deviations to 1/8 inch in a 10 foot span; this is also the present Iowa specification. However, this specification is no longer adequate to determine rideability of newly constructed pavements. Higher traffic speeds and the need for safety and comfort of the traveling public necessitate a testing machine which will detect longer wavelength roughness.

The long range objective of research on measurement of pavement surface variations is to provide a safer, smoother riding pavement for the traveling public. The purpose of this research project was to determine the feasibility and advisability of utilizing a mechanical device or other means to measure the surface deviations, in either a 25 foot or 50 foot span on a routine testing basis.