

ELEVATION – FROST PINS

General Description

Survey equipment is used to compare the elevation of steel pins embedded in the road with special frost free benchmark reference points.

The elevation data not only provides information on frost heave activity, but also provides information that is useful for the analysis of design presumptions and information that might relate to mechanisms that control the component of longitudinal profile that relates to ride. One design aspect

that can be evaluated is the role of materials (particularly thick sub-base layers) that are not as frost heave susceptible in the structural performance of a pavement. The ride aspect that can be examined is to identify if the sub-grade type, or thick sub-base layers have any effect on seasonal changes in longitudinal profile that affect ride.

COLLECTION FREQUENCY

November thru April weekly measurements are taken.

Data Processing

The elevations are made with an electronic bar code rod and level that is capable of providing elevation readings to the 0.1 mm (0.004 in.) resolution. The ‘accuracy’ of the elevation readings are much lower than the instrument resolution because of operator and environmental factors, but the accuracy should be approximately on the order of 1 to 2 mm (0.04 to 0.08 in.).

For more information:

For more information about MnROAD and the Road Research program at Mn/DOT:

Tim Clyne
Minnesota Road Research
Office of Materials
Phone: 651-366-5473
E-mail: Tim.Clyne@dot.state.mn.us

Ben Worel
Minnesota Road Research
Office of Materials
Phone: 651-366-5522
Email: Ben.Worel@dot.state.mn.us

www.dot.state.mn.us/mnroad

