CALIBRATION OF BRAKE FORCE TRAILERS AND SKID-RESISTANCE PHOTO-INTERPRETATION

R. Schonfeld, Department of Highways, Ontario

•THE slope calibration method, used by the Department of Highways, Ontario, for the past several years, has several desirable features. It allows for the redistribution of the trailer load during braking; the precision is of the order of ±1.0 skid number point; and routine periodic calibrations can be performed in minutes, and workshop facilities are not needed. In this method, the wheel torque is measured while the trailer wheel is in a skid-resisting state and the tire patch point is relocated. In other skid-trailer calibration methods that use torque measurements, the skid numbers are calculated for the wheel-hitch load distribution of a nonresisting tire. The relocation of the tire patch point can produce significant differences in the skid test results obtained by the torque measuring technique for different tires (1).

Three pairs of wooden wedges are used. A metal plate faced with slip-resisting abrasive paper is placed on top of the wedges. The wedges are about a foot long and have a slope of 20 to 100, 30 to 100, and 40 to 100.

The wheel load W_x of a given trailer for slope x is obtained on a weigh scale with the wheels resting on the wedges. N_x is the calculated wheel load component normal to slope x.

For calibration checks, the braked trailer is placed on each pair of wedges in turn, and the wheel torque is recorded. The trace on the electronic recorder multiplied by the ratio of the ordinary wheel load N_o to the component normal to the slope is skid number X for the wedge slope x.

The demands on the services of a skid trailer are heavy, and it is often difficult to avoid delays when the pavement skid resistance of actual or suspected potential accident locations has to be evaluated. The Department of Highways is using photo-interpretation of skid resistance (2), and it appears that, even in its present state of development, the method helps to reduce the number of problem locations by positively identifying pavement textures in the lower, middle, and higher ranges of skid resistance.

REFERENCES

1. Goodenow, G. I., Kolhoff, T. R., and Smithson, F. D. Tire-Road Friction Measuring System—A Second Generation. Proving Ground Section, General Motors Corp., 1968.
2. Schonfeld, R. Photo-Interpretation of Skid Resistance. Highway Research Record 311, 1970, pp. 11-25.

Sponsored by Steering Committee for Workshop on Anti-Skid Program Management and presented at the workshop.