Summary

The collection of papers in these proceedings provides an extensive amount of information including documentation of recent research findings and discussion of important phenomena related to surface texture and pavement friction.

The paper by Henry and Hegmon describes two methods for measuring texture by means of outflow meters (basic and high pressure) and a profile tracer. The use of the high-pressure outflow meter extends work done previously at Penn State University and elsewhere in which only the basic or static outflow meter was used. It is to be expected that skid number-speed gradients at high speeds, namely, 60 mph., would depend to a great extent on high-pressure drainage of water. The profile tracer provides information about the geometrical features of the pavement; whereas, the high-pressure outflow meter data reflects the effects of pavement porosity. Both the geometrical features and porosity of the pavement contribute greatly to the ability of the pavement surface to dispel water and thereby provide contact with the tire.

Papers by Veres et al and Gee et al represent somewhat novel procedures for texture measurement with regard to pavement friction evaluation — those being tire noise and laser light depolarization, respectively. Both procedures lend themselves to fully automatic operations from moving vehicles in normal traffic environments. Test results distinguished various pavements with different surface characteristics. Although additional experimentation needs to be performed, the values obtained compared well with textural and frictional data for the surfaces tested.

Doty's study of the sand patch and static outflow meter methods of surface texture measurement indicated that neither method provides a definitive measure of skid number-speed gradients of pavement surfaces nor are the results definitive enough to use as a basis for a minimum texture depth specification requirement. Limitations of the static outflow meter were also mentioned in the paper by Henry and Hegmon.

Moore's paper was concerned with problems and requirements of designing texture in standard surfaces. He pointed out the fact that wear occurs in every frictional process, so therefore a given standard test surface no longer has the same geometrical features nor gives the same performance after repeated friction tests. It is therefore necessary when designing texture in standard surfaces to adhere to an objective of minimizing wear while, at the same time, ensuring repeatability or reproducibility in the results obtained.

Browne describes the different forms of hydroplaning and presents information concerning influencing factors. A description is given of mathematical techniques that have been developed to assist in the study of hydroplaning and wet traction. The importance of maintaining an adequate level of microtexture is stressed.

Clarke reports on a method for achieving ultra-high surface friction coefficients between tires and wet surfaces, in such a fashion as to be suitable for the overrun areas of runways, in the vicinity of stations and stopping points for rubber-tired mass transit vehicles and at high accident intersections. The ultra-high friction surfaces are achieved by using purposefully designed surface geometrics containing a regular pattern of protuberances which provide a form of interlock with a tire whose tread design is only slightly modified to receive the protuberances.

Britton et al present results of an investigation concerning the development of criteria needed for the design of primary standard reference pavement surfaces. Particular emphasis is placed on the importance of microtexture and its effects on surface drainage and speed gradients.

The paper by Hutchinson et al discusses information that is needed on pavement surface characteristics for use in multidisciplinary traffic accident investigations. Contributing factors which are either not sufficiently researched or not properly appreciated and controlled in accident investigation are described. It is noted that much of the recently available data from skid resistance research is not being recognized by accident investigators even in cases where it could be deemed particularly applicable.

Hayes and Ivey report on work at the Texas Transportation Institute that is part of a national research program devoted to refining the concepts and analytical tools needed to provide design criteria for pavement surfaces from the tire-pavement friction standpoint. The effects of vehicle speed and surface texture on the development of acceleration (or average developable friction) boundaries for a spectrum of automobile/tire systems is presented. It was found that texture values appeared to correlate as well with vehicle performance as did direct friction measurements.

As a group, these papers provide an essential awareness of current knowledge and needed further research at the surface texture frontier of development of pavement skid resistance.