

Resumé of First International Skid Prevention Conference

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This report is a brief summary of the First International Skid Prevention Conference held at the University of Virginia in Charlottesville, September 8-12, 1958. It contains an explanation of the need for the conference, an account of the formation of the Steering Committee and subcommittees, together with an enumeration of the conference objectives. Information is also given concerning the type of sessions held and the conference program. The individual papers and discussions and the final subcommittee reports will be published in a conference Proceedings. Reports of the individual subcommittees present the status of existing knowledge of the subject, inventory deficiencies in present knowledge and practices, and enumerate areas in which additional research is needed. Several of the subcommittee reports also contain definite recommendations relating to ways and means of furthering the knowledge of the various aspects of the traction problem and of improving this particular phase of highway safety.

● **THE PROBLEM** of providing adequate traction between the vehicle tire and the pavement surface is a highly important one for only by adequate traction is it possible to start, steer and stop vehicles. The problem is accentuated by increased traffic and is important in the great road building program in which the nation is now engaged. The Interstate System is being designed to incorporate high geometric and structural design standards but the question may be raised as to whether adequate attention is being given to road surface properties which have such an important influence on the safety of the traveling public.

Engineers who have conducted tests find that in some instances pavements which are quite adequate structurally may, when subjected to a heavy volume of traffic for only a relatively few months, become dangerously slippery when wet. Also such tests often reveal a wide range in the coefficient of friction of pavements attributable to various construction materials and road surface textures. Some state highway departments have adopted the practice of performing skid tests or friction measurements on sections of pavement that appear to be accident prone or those on which skidding accidents resulting in fatalities occur. The problem of slipperiness is also encountered on airfield pavements, instances have been reported where pilots have had difficulty in stopping airplanes on wet pavements.

While some outstanding research has been performed on various phases of the problem, much more needs to be known, both quantitatively and qualitatively, about the frequency and nature of various kinds of skidding, causes, and the relationship of the various elements involved. Many of the studies conducted in this country have been reported only to groups interested in particular phases of the problem. Highway engineers, for example, are not intimately familiar with the role of the driver, the vehicle, the brake, or the tire in skidding accidents, nor are the specialists in these fields aware of all the problems the highway engineer must face. It was felt that much could be gained by an exchange of information between representatives from the various special fields, all of whom are working on certain phases of the skidding problem.

An examination of the many methods employed for measuring road surface friction lent emphasis to the need for such an exchange of information. It was found that at least a dozen such methods were in use in this country, and European agencies, working independently, had developed a number of others. In addition, very notable approaches had been made recently by some agencies in the developing of laboratory

equipment to evaluate pavement surfaces and materials. Yet the full value of these various testing methods was not being realized because little effort had been made to correlate results obtained from them. It was necessary that the various independent groups exchange information on the many elements involved in measuring road slipperiness if the scope of needed research were to be narrowed and years of uncorrelated effort avoided.

When this reasoning was applied to the general problem of skidding it became apparent that rapid progress in skid prevention required that the various specialty fields would have to exchange information. Such an exchange would require a survey of what is now known and a clarification of what is not known. It was for the purpose of providing such an exchange that the First International Skid Prevention Conference was called.

FORMATION OF STEERING COMMITTEE AND SUBCOMMITTEES

Discussions of the need for the conference began early in 1957. While it was recognized that the skidding problem was of interest to a large number of various types of organizations, both here and in Europe, it was believed that the conference could best be planned by a few individuals who were active in the field. Subsequently, a Steering Committee was organized of individuals representing organizations vitally affected. This group was composed of some 20 individuals representing 17 organizations. The Steering Committee was responsible for the over-all planning of the conference, the establishment of the objectives, and decisions on numerous details concerning not only the conference itself, but the policies relating to publication of the Proceedings and many other items. An organizational meeting of the Steering Committee was held late in 1957 and four 1-day meetings were held during the past year. The author served as Co-Chairman of this group with Dr. W. H. Glanville, Director of the British Road Research Laboratory.

Early in the deliberations it became apparent that for planning and organizing the conference, each phase of the program could best be planned by a subcommittee. Five distinct areas of the problem were recognized and a subcommittee chairman was appointed from the Steering Committee to organize and plan each phase. The subcommittee chairmen were given considerable latitude as to the selection of membership, but it general, they selected men on the basis of qualifications, interest in the problem, and willingness to contribute.

Recognizing that the analysis of frictional forces necessary to accomplish accelerations, steering and stopping was important to the friction problem one subcommittee, headed by K. A. Stonex of the General Motors Proving Ground, was concerned with "The Relationship of Vehicle Dynamics to Skidding." Another important phase of the problem relates to the human element. This subcommittee operated under the chairmanship of Burton Marsh, Director, Traffic Engineering and Safety Department of the American Automobile Association. Paramount to the skidding problem are the tire and the pavement surface. John H. Cox of the Firestone Tire and Rubber Company, and Chairman of the Technical Committee of the Tire and Rim Association, was chairman of a subcommittee concerned with "The Relationship of Tire Design and Composition to Skidding." R. A. Moyer, Research Professor of the University of California, and A. T. Goldbeck, Engineering Consultant of the National Crushed Stone Association, were co-chairmen of a committee on "The Relationship of Road Surface Properties to Skidding." The fifth subcommittee was concerned with a "Review of the Laboratory and Field Methods of Measuring Road Surface Friction."

In addition to the above subcommittees, two others were organized to assist the Steering Committee in handling certain details. Carl Fritts, Vice-President of the Automotive Safety Foundation, was chairman of a Ways and Means Committee, which solicited organizations for financial support in carrying on the conference. A Public Information Committee handled news releases and advised on certain policies relating to the publication of the conference Proceedings.

OBJECTIVES

In addition to the formation of subcommittees for arranging the conference program, the Steering Committee also established the objectives of the conference for the guidance of the subcommittees. It was established that the International Skid Prevention Conference would have as its ultimate objective the reduction of skidding and skidding accidents to the fullest extent possible. To this end the immediate objectives of the conference were established as:

1. To exchange available information within each of the individual fields and between these fields relevant to the problem of adequate traction.
2. To inventory existing knowledge of the subject.
3. To inventory existing deficiencies in present knowledge and practices.
4. To develop a comprehensive program of research.
5. To demonstrate and correlate test results of existing equipment and methods for measuring skid resistance and initiate a program to develop standard testing procedures.

PROGRAM

The conference was sponsored by the University of Virginia in cooperation with 34 other agencies. It was held in Newcomb Hall, the new student activities building in Charlottesville, September 8-12, 1958. It should be mentioned that the program developed was a full one starting on Monday morning and lasting through until Friday noon. One session was devoted to opening ceremonies including a welcome by the President of the University of Virginia and a keynote address by Dr. Ned H. Dearborn, President of the National Safety Council. One-half day sessions of papers and discussions were scheduled by three of the subcommittees and full-day sessions from 8:15 to 5:00 p. m. were arranged by the other two. In addition, three subcommittees held informal open committee evening sessions.

The summary session on Friday morning was devoted to reports from the five subcommittees outlining the success of the committees in meeting the objectives established for the conference. Since in some instances these reports were of a tentative nature, further consideration was given them by the subcommittees and today the subcommittee chairmen are presenting final reports.

Exclusive of committee reports and discussions a total of 57 formal papers were presented to the group at eight sessions. Attendance at the conference was in the neighborhood of 200 individuals who came from 23 different states and three foreign countries. What is even more interesting is that these individuals represented a wide variety of backgrounds, interests, and organizations such as governmental agencies, research groups, automobile manufacturers, the tire industry, safety associations and universities.

PROCEEDINGS

The Steering Committee decided that one excellent contribution that could be made by the conference would be the publishing of all papers and discussions developed at the meeting. In addition to all papers and discussions the reports of the five subcommittees will be included in the Proceedings. These reports contain not only a summary of the status of present knowledge of the various phases of the skidding problem but also many of them inventory existing deficiencies in present knowledge and practices and contain recommendations as to possible approaches for further research in some of the areas where additional work is needed. Progress is being made on publishing the Proceedings and copies will be available some time after February 1st. Copies will be sent to all those who registered, contributed, or participated in the conference. Others desiring copies can obtain them from the University of Virginia by purchase. This publication is believed to be invaluable to all those interested in the subject.

CORRELATION STUDY

One of the objectives as established by the Steering Committee was the demonstra-

tion and correlation of test results of existing equipment and methods of measuring skid resistance. With the cooperation and assistance of several agencies and individuals such a study was conducted prior to the conference. Measurements were made with several test vehicles on Virginia pavements exhibiting a wide range of skid resistance. Some tentative results were given at the conference and a final report was included.

AN APPRAISAL

It seems appropriate to review the conference in retrospect attempting to appraise its accomplishments. There is perhaps little need to comment specifically at this time on the findings and recommendations of the five subcommittees as these will be presented by the individual chairmen.

The First International Skid Prevention Conference grew out of the need for an exchange of information among representatives of the several organizations concerned with the general problem of skid prevention. It is believed that this conference fulfilled successfully this need. The participants included capable men from all fields relevant to the skid problem and from them will come an imposing volume of information. These papers and discussions comprise an inventory of existing knowledge and pose particular problems for which solutions are needed.

In general, there seemed to be a good measure of agreement in most of the items raised at the conference. This is encouraging in that problems are being defined even if the best solution is not now apparent. Discussions at the conference did indicate areas in which future research may prove most fruitful.

For example, it developed that present data on skidding accidents was lacking and it was noted that benefit may be obtained from effective instruction in driving techniques. Another important point made at the conference was that many skidding accidents might be avoided if an anti-locking brake could be perfected. While improvements are being made in tire design and composition there appears to be a need for a better informed public in this respect. Undoubtedly one of the greatest improvements can come from the pavement surface itself. It is believed that this facet of the problem—the construction of surfaces having adequate skid resistance—deserves greater attention from highway engineers and administrators.

Finally, it is believed that the conference provided a valuable impetus to the work necessary for a drastic reduction in skidding and skidding accidents. If this impetus can be maintained and ways and means can be found for implementing the findings and recommendations of the subcommittees there can be no question that the conference successfully accomplished its objectives.

ACKNOWLEDGMENTS

The enthusiastic support given to the conference by all who attended and participated, and the financial assistance given by several organizations, are appreciated by the Steering Committee.