Better asphalt

Better Asphalt Skid resistance of asphalt is an important safety factor to be considered for the driving public. The resistance to skidding assures that a car can stop in a safe distance and becomes critical on cornering and in high-risk situations. Surface friction is the primary factor affecting skid resistance and improved testing in recent years has indicated several methods and materials that can increase surface friction. These include texture, texture depth, aggregate properties, and mixture composition. Along with the materials, application techniques and sealers can also present improved skid resistance to asphalt.

The topic of skid resistance, largely ignored for the last 3 decades, has begun to receive additional attention around the world. Several major research projects have taken place and are currently in progress. The National Cooperative Highway Research Program has a major study currently underway to evaluate skid resistance. The study is not yet complete, but it does show promise in offering improvements in skid resistance through the use of finer grade aggregates. However, due to the fine grade of the aggregate, water may be slow to run off and create a wet condition hazard. Friction is created where the rubber meets the road. The composition of the open coarse grade and its components are a first consideration. The microtexture, the fine aggregate in an asphalt mixture, is most influential force creating the necessary surface friction between the pavement surface and automobile tires (Williams). Over time, the surface wears away and exposes the coarse aggregate. Coarse aggregate size becomes a major consideration on the surface to improve skid resistance. Recent tests in the United Kingdom has indicated that 6 to 10 mm chips at a 1. 4 mm depth offered improved skid resistance at high speeds (United States Department

of Transportation). Phosphorus slag aggregates have been used conjunction with dense graded hot mix surface course mixes for pavements in the United States where high wet skid resistance was a particular consideration (Turner-Fairbanks).

Specialized sealants and surface coatings are another area that has received recent attention in increasing skid resistance. Slurry seals along with new products such as Ralumac or Novachip have been used to successfully improve skid resistance. Extensive research in New Zealand has confirmed that Calcined Bauxite sealant greatly increases surface friction and dramatically increases highway safety (Dunlop). An added benefit to Calcined Bauxite is its ability to sustain high skid resistance after years of high traffic use. The addition of high polished surface value (PSV) chips to the sealant coat also increases surface friction. Aggregates with a polished surface value of greater than 60 is recommended to maintain the desired level of friction over time (Summers).

Additional material additives, mechanical application considerations, and proper surface draining all contribute to increased skid resistance. Crushed glass has been shown to have some promise as an additive to asphalt to increase surface friction (Murphy, West, and Page). Tining and grooving the surface can also increase skid resistance. Depth and width of tining should be varied with respect to aggregate size and composition. A surface design incorporating larger aggregates can increase the ability of the roadway to shed excess water and reduce the potential for hydroplaning.

Works Cited

Dunlop, R J.. International Surface Friction Conference. Christchurch/NZ: 1

May 2005. 12 Mar, 2006. .

Murphy, Kenneth H., Randy C. West and Gail C. Page. Addition of Crushed Glass to Asphalt Paving Mixtures. Gainsville, FL: State of Florida Department of Transportation, April 1991. 12 Mar, 2006. Summers, C J. Skid Resistance and High Friction Surfacing 2000. 12 Mar. 2006 .

Turner-Fairbanks Highway Research Center. User Guidelines for Waste and Byproduct Material in Pavement Construction Unk. 12 Mar., 2006 .

United States Department of Transportation. Open Graded Friction Courses 26 December 1990. 12 Mar., 2006 .

Williams, S. G. Surface Friction Measurements of Fine-Graded Asphalt Mixtures . Fayetteville, AR. Arkansas Highway and Transportation Department. 12 Mar. 2006