



## ASPHALT PAVEMENTS - A STANDARD OF EXCELLENCE FOR SMOOTH ROADS

### Questions and Answers

#### *What does it mean to have smooth roads?*

Happy motorists. A national survey of motorists funded by the Federal Highway Administration showed that a smooth ride is the top priority of the traveling public. Smoothness enhances the perception of comfort and reduces annoyance for drivers and passengers.

Greater fuel efficiency. Results from an asphalt pavement test track in Nevada showed that trucks could save 4.5 percent of their fuel cost by running on a smoother surface.

Less wear and tear on vehicles. Results from the same Nevada test track showed a significant reduction of frame, suspension, and engine component problems when the pavement smoothness was improved.

Longer pavement life. The Arizona Department of Transportation estimates that their new smoothness requirements will result in a 10 percent increase in the life of their pavements. What's more, they are finding that it is costing them no more to build them this way.

#### *How seriously do highway agencies take roughness?*

Very seriously.

Georgia was recently identified as having the smoothest roads in the country. Ninety-five percent of the roads in Georgia are surfaced with Hot Mix Asphalt (HMA), and all of the roads tested had an IRI of less than 75 inches per mile.

Similarly, the Arizona DOT recently changed its smoothness specifications so that highways being built there are required to be 27 percent smoother than those constructed previously. They accomplished this by working with the HMA industry and offering incentives for pavements that were smoother than required. The contractors rose to the occasion and met the challenge of providing the public what it wanted.

#### *How is road roughness measured?*

The International Roughness Index (IRI) is one measure of ride quality. It is reported in inches of bumps per mile of road. To determine IRI, a mechanical device travels over a road or highway and measures the height of the bumps affecting ride comfort. The height of the bumps per mile of road is then added together. The higher the IRI, the rougher the road. Not all states use the IRI for measuring smoothness, but it will be used as a frame of reference for this discussion.

#### *What is considered a smooth road?*

According to a University of Michigan publication, airport runways and superhighways have IRI values in the range of 10 to 110 inches per mile, while damaged pavements run from 250 to 680 inches per mile.



### *To what standards are road contractors held when they build roads?*

While some agencies have the same requirements for the smoothness of HMA and concrete pavements, many actually have stricter requirements for asphalt.

Asphalt pavements may be specified to have IRI values of less than anywhere between 60 to 80 inches per mile. The state of Georgia targets an IRI of 54 inches per mile on all newly constructed asphalt pavements.

### *Why are asphalt roads held to a higher standard?*

Because they can be.

In a 1999 report to Congress, the General Accounting Office (GAO) noted that "Concrete roads may produce rougher (smoothness) readings than asphalt roads, even if the concrete road is of very high quality. Features such as joints between sections can contribute to the roughness of concrete highways."

Highway agencies posed the challenge of building smoother roads, and the asphalt industry answered with the development of improved equipment and construction techniques.

### *How well do asphalt pavements perform?*

Wisconsin. Construction records for the years of 1995 to 1999 indicate that asphalt pavements had an average IRI of 62 inches per mile, indicating that the road users are getting excellent value for their tax dollars.

Kentucky. Records dating back to 1981 indicate that asphalt roads in Kentucky's system of parkways and toll roads as well as on its interstate highways are consistently performing to a level of ride quality better than required during construction.

Washington. In a study of 300 miles of Interstate 90 from Spokane to Seattle, the 55 sections of asphalt pavements had an average IRI of 55 inches per mile, with a range of 38 to 82 inches per mile. The surfaces of these pavements range in age from 2 to 12 years old and their roughness values are well below the maximum 110 inches per mile suggested by the University of Michigan for airports and superhighways.

### *Conclusion*

Working with public agencies, the asphalt pavement industry is ensuring that asphalt is the standard of excellence when it comes to smooth roads.