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**STATEMENT OF E. DEAN CARLSON
EXECUTIVE DIRECTOR
FEDERAL HIGHWAY ADMINISTRATION
U.S DEPARTMENT OF TRANSPORTATION
BEFORE THE
HOUSE APPROPRIATIONS COMMITTEE
SUBCOMMITTEE ON TRANSPORTATION
MAY 12, 1993
USE OF RECYCLED PAVING MATERIAL**

Mr. Chairman, Members of the Committee, thank you for providing me the opportunity to appear before you to provide testimony on the Federal Highway Administration's (FHWA) efforts to implement the provisions of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) that mandate the use of asphalt pavement containing recycled tire rubber. We are working hard to fulfill the requirements of the ISTEA regarding recycled paving materials, while attempting to ensure that their use meets all proper worker health, environmental, and pavement performance standards.

Background

There are two main processes for adding recycled tire rubber (also known as "crumb rubber" material, or CRM) to asphalt paving mixtures. The first, known as the "wet process," involves blending CRM into asphalt cement before the binder material is mixed with the aggregate. The other method, known as the "dry process," adds CRM to the mixture as a substitute for some of the aggregate material. Both of these processes can be traced back to the 1960s, the wet process having been developed in Phoenix, Arizona, and the dry process in Sweden. At least ten variations of these two methods are in use today.

The FHWA has administered various technology transfer programs involving the use of CRM since the early 1970s. Many States have used these programs to design and build experimental projects, with varying degrees of success. Many States are currently evaluating projects using rubber-modified asphalt and rubber-modified hot mix asphalt mixtures. For our part, in addition to the demonstration programs, we cosponsored three national seminars on CRM in the 1980s and continue to provide technical support to the States and industry on the use of CRM technology. We have also issued publications on CRM, including "State of the Practice: Design and Construction of Asphalt Paving Materials with Crumb Rubber Modifier" (May 1992), and "Crumb Rubber Modifier Workshop Notes" (January 1993).

The ISTEA Requirements

Section 1038(b) requires the Department of Transportation (DOT) and the Environmental Protection Agency (EPA) to conduct a study to determine: 1) the threat to human health and the environment associated with the production and use of asphalt pavement containing recycled rubber; 2) the degree to which asphalt pavement containing recycled rubber can be recycled; and 3) the performance of asphalt pavement containing recycled rubber under various climate and use conditions. The DOT is to conduct that part of the study relating to the performance of rubber-modified asphalt pavement, and work with the EPA to determine the potential for recycling the pavement. The EPA is to conduct that part of the study concerning the health and environmental effects of the pavement. The study is also to examine the use of other waste materials in pavement.

Under § 1038(d) of the ISTEA, States must begin using CRM in asphalt paving materials in 1994. The amount of CRM each State must use is based on a percentage of the total tons of asphalt laid in each State under the Federal-aid highway program; on January 1, 1995, each State must certify that five percent of the total asphalt tonnage laid under the

Federal-aid highway program contains CRM, and that amount increases each year until it reaches 20 percent in 1997 and thereafter. The Secretary of Transportation may waive the minimum utilization requirement for any three-year period on a determination, made with the concurrence of the Administrator of the EPA, that reliable evidence exists indicating substantial health, environmental, recycling, or performance concerns associated with the use of rubber-modified asphalt. Section 1038(d) also contains provisions allowing the use of other recycled materials, as well as provisions mandating penalties for a State's failure to use the required amounts of CRM, waivers for individual States by the DOT under certain enumerated circumstances, and for reductions of a State's quota upon a joint determination by the DOT and the EPA that a State does not have enough tires available for use to meet the required minimum percentage.

FHWA Implementation Efforts

The FHWA and the EPA have formed a Study Coordination Group to develop, execute, and manage the research necessary to undertake the study required by § 1038(b). The initial phase of the study is nearing completion and we are working with the EPA to develop a synthesis of all available information for the study. We plan to continue evaluating long-term performance and recycling of rubber-modified asphalt. We expect to complete the study by the June 18, 1993, deadline. To date, the EPA has found no firm scientific evidence to suggest that the use of rubber-modified asphalt presents greater environmental or health risks than regular asphalt paving material.

In order to assist the States and industry in implementing this legislation, we held seven workshops in February and March in various locations across the country. A total of more than 1,400 agency and industry representatives attended the two-day meetings. The workshops provided a technical understanding of the design and construction practices of

CRM technology for State highway agencies and the paving industry. The workshops were well received by both agency and industry participants.

In addition, to date the FHWA has responded to over 40 requests for presentations from the American Association of State Highway and Transportation Officials (AASHTO), State DOTs, and industry on § 1038 and CRM technology. These presentations provide technical support in preparation for the minimum utilization requirements beginning in 1994. We will continue to respond to State DOT and highway industry requests for technical assistance.

Along with the EPA, we are also developing a program for a national symposium on the use of waste materials in highway paving. This symposium should define the state-of-the-practice for highway reuse of products, applications, and ideas, and will help us to undertake the extended study required under § 1038(b) of the use of other recycled material in highway devices and appurtenances. The symposium is scheduled to take place October 19-22, 1993, in Denver, Colorado. To date, at least 50 papers have been submitted for presentation at the meeting.

Issues

There have been concerns expressed about the increased initial costs posed by conversion to rubber-modified asphalt. Preliminary indications are that the cost for CRM exceeds the current cost for standard asphalt mixes by 20 to 100 percent, depending on the type of process used.

Furthermore, with the exception of a handful of States, experience with asphalt pavements containing recycled rubber has been limited to a few experimental test sections, or less. Many States have expressed reluctance to use CRM widely without more experience

with the technology. The FHWA, through our workshops, publications, and technical support, continues to address this issue.

The addition of CRM to asphalt will require modifications to paving contractors' equipment. Many suppliers of asphalt pavement are small businesses, and they are concerned about their ability to recoup the cost of this additional equipment and still remain competitive. The paving industry is also concerned that, as this additional technology is in the developmental stage, equipment bought this year may quickly become obsolete.

Finally, State agencies and paving contractors are concerned by the lack of long-term performance data. The early uses of CRM asphalt occurred primarily in the southwest United States and concentrated on asphalt surface treatments. The use of CRM in hot mix asphalt did not begin until the late 1970s. As a result, there is very little long-term performance data available for evaluating the cost-effectiveness of asphalt pavements containing crumb rubber.

Conclusion

The FHWA has made major efforts, through our workshops, publications, and technical support, to prepare the States and the asphalt paving industry for the advent of the ISTEA's rubber-modified asphalt requirements. We, along with the EPA, are working to find solutions to the concerns expressed by the States and industry as a result of beginning widespread CRM use in 1994.

We will continue to work with the EPA in order to complete the study required by § 1038 by the June 18, 1993, deadline.

Thank you again for this opportunity to appear before the Committee today. I will now be glad to answer any questions you may have.