House
Legislative
Analysis
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PAVEMENT DEMONSTRATION PROJECTS

Senate Bill 563 with House committee amendments
First Analysis (12-11-01)

Sponsor: Sen. Thaddeus G. McCotter
House Committee: Transportation
Senate Committee: Transportation and Tourism

THE APPARENT PROBLEM:

Under state law, the Department of Transportation is required to perform a "life-cycle cost analysis" for each project in which total pavement costs, funded entirely or partly by the state, exceed $1 million. The department then must design and award paving projects that use material having the lowest life-cycle cost. These requirements were added in 1997 to establish an objective and systematic process for the department to use in selecting pavement for highway projects. Apparently, however, the life-cycle cost law interferes with the department's ability to try out new types of pavement or methods of paving through demonstration projects. Under the law, life-cycle cost must be based on the history of a design, which is not available for an untested product or technique. See *BACKGROUND INFORMATION* below. In order to avoid triggering the life-cycle cost requirement, the department must keep demonstration projects relatively small. However, according to department personnel, the smaller a project is, the less realistic or accurate the results will be. Therefore, it has been suggested that the department be permitted to engage in a limited number of demonstration projects without regard to the life-cycle cost law.

THE CONTENT OF THE BILL:

Senate Bill 563 (S-4) would amend Public Act 51 of 1951, the Michigan Transportation Fund law, to do the following:

-Permit the Department of Transportation to conduct up to four pavement demonstration projects each year to evaluate new construction methods, materials, or design, notwithstanding provisions of the act requiring a life-cycle cost analysis for projects in which total pavement costs exceed $1 million funded in whole or part with state funds.

-Allow the department to offer or conduct a pavement demonstration project in which all or a portion used either concrete or asphalt, as determined by the department.

-Provide that the total cost of contracts awarded for demonstration projects using asphalt and concrete could not exceed a difference of more than 20 percent between those paving materials in any two-year period.

-Require the department to make a final report for each demonstration project following its demonstration life, which could be shorter than the actual pavement life of the material used for the project, that assessed the cost-effectiveness and performance of the pavement materials and design used in the project, and compared the results to the pavement material identified under the department's standard pavement selection process.

-Require the department director to report annually to the legislative transportation committees regarding the status of each project.

Under the bill, each project would have to include measurable goals and objectives for determining its success. Demonstration projects would have to be selected based on any of the following criteria: pavement designs intended to increase pavement life expectancy; pavement designs intended to improve performance, including friction, surface stress, noise reduction, and improvement of ride quality; or, comparisons of performance of various types of pavement.

MCL 247.651i

HOUSE COMMITTEE ACTION:

The members of the House Transportation Committee adopted one amendment to the Senate-passed version of the bill. That amendment alters the manner in which the final report for each demonstration project would be written, in order to allow for a comparative evaluation of new and standard materials.

Specifically, under the Senate-passed version of the bill, the Department of Transportation would be required to make a final report for each demonstration project following the demonstration life of the project (which could be shorter than the actual pavement life of the material used for the project), which would assess the cost-effectiveness of that project. The House Committee members retained the cost-effectiveness report, but deleted the final phrase "of the project." Instead, members of the committee inserted: "the cost-effectiveness and performance of the pavement materials and design used in the project and compares the results to the pavement material identified under the department's standard pavement selection process."

BACKGROUND INFORMATION:

Public Act 51 of 1951 defines "life-cycle cost" as the total of the cost of the initial project plus all anticipated costs for subsequent maintenance, repair, or resurfacing over the life of the pavement. Life-cycle cost must compare equivalent designs and be based upon Michigan's actual historic project maintenance, repair, and resurfacing schedules and costs as recorded by the pavement management system, as well as include estimates of user costs throughout the entire pavement life. (The pavement management system attempts to ensure that a disproportionate share of pavement does not become due for replacement or major repair at the same time.)

FISCAL IMPLICATIONS:

The House Fiscal Agency notes that the bill's effect on state costs cannot be estimated. In the short-term, costs could be affected by the competitiveness of bids for demonstration projects. If few contractors were willing to bid on demonstration projects, contract bid prices could be higher than would be obtained under a more competitive bid environment. On the other hand, some contractors might submit a lower than normal bid in order to win a contract and demonstrate the efficacy of new materials or innovative pavement designs. If demonstration projects resulted in improved pavement designs and lower life-cycle costs, the bill could, in the long-term, result in lower state costs.

Further, the agency notes there would be no direct effect on local costs except to the extent that demonstration projects increased or decreased state trunkline project costs, and were within cities or villages with populations of 25,000 or more. These municipalities are required by Section 1c of Public Act 51 to participate in state trunkline construction and reconstruction projects, from 8.75 percent to 12.5 percent, depending on population. (12-10-01)

ARGUMENTS:

For:

This bill would give the Department of Transportation the leeway it needs to take innovative approaches to pavement. Currently, if a project will cost over $1 million, the department must perform a life-cycle cost analysis, which must be based on historical information. Since an experimental technique or untested product has no history, however, the analysis cannot be completed. To avoid this limitation, the department limits its demonstration projects to those that cost less than $1 million. Due to the expensive nature of highway construction, this means that the projects must be relatively small. A small project, however, will not necessarily produce an accurate result, particularly in terms of measuring the cost-effectiveness of a new paving material or an innovative method of surfacing. By permitting the department to conduct up to four demonstration projects each year without implementing a life-cycle cost analysis, the bill would expand the state's ability to experiment with new approaches to highway construction. This could, in turn, lead to safer, quieter, smoother, and less costly roadways.

Response:

It has been suggested that the demonstration projects should be equitably divided between the asphalt industry and the concrete industry. According to committee testimony, concrete now receives only about 30 percent of the state's paving dollars. The bill at least should hold the industry harmless.

For:

The bill would help prevent the type of situation that occurred with respect to a five-mile stretch of I-275 in Livonia and Farmington Hills, which originally

was built in 1970 and needed to be resurfaced. When the Department of Transportation re-paved this section of highway in 1999, it used an experimental technique called random tining. According to the department, this technique was recommended by a consultant hired by Farmington Hills, due to citizens' concerns about the noise that could result from traditional concrete paving. The random tining left tiny grooves in the concrete that were supposed to improve safety by adding traction, as well as decrease noise. Instead, it increased noise levels to a decibel level of about 83 (said to be similar to a garbage disposal at a close range), which many neighboring residents found to be unbearable. In order to remedy this problem, the department recently reground the pavement with a process called diamond cutting, reportedly at a cost to the state of $1.5 million to $2 million.

The random tining used in 1999 evidently had been tested in areas of Wisconsin by researchers from Marquette University and transportation officials from several states, including Michigan. The department, however, had not conducted a demonstration project with random tining before using it on the five-mile stretch. Under the bill, for future projects, MDOT could first try out an experimental technique and avoid the situation that occurred on I-275. The bill's reporting requirements also would help prevent this type of scenario.

Against:

As a result of the life-cycle cost law, the Department of Transportation now has a state-of-the-art process of making pavement decisions based on cost-effectiveness. The bill would set that aside in order to do something that could result in greater costs. The state currently does not have enough money for all of the projects that are already planned.

Response:

Allowing the Department of Transportation to test new products would not diminish existing projects. The department would select demonstration projects from the projects on its five-year plan. According to a department engineer, demonstration projects typically do not increase costs significantly.

POSITIONS:

The Department of Transportation supports the bill. (12-11-01)

The Michigan Concrete Paving Association supports the bill. (12-11-01)

The Lafarge Corporation (a manufacturer of cement and other building materials) supports the bill. (12-11-01)

Analyst: J. Hunault

■This analysis was prepared by nonpartisan House staff for use by House members in their deliberations, and does not constitute an official statement of legislative intent.