Economics of Design Standards for Low-Volume Rural Roads

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ABRIDGMENT

•THIS paper is a condensation of a portion of the final report of NCHRP Project 2-6. Low volume is defined as less than 400 vpd; yet some two million miles of rural road, or two-thirds of the total in the United States, fall within this category.

The paper examines current standards for roadbed width (shoulder break to shoulder break) for roads of comparable volumes and shows the wide diversity among them. It explores the rationale underlying these standards and finds that they have almost no scientific, engineering, or economic base; rather they are blended from past practices, political considerations, and the financial "facts of life." Also, standards such as those of AASHO, that are imposed from "the top down" by higher levels of government are usually among the most exacting.

The paper presents a set of derived costs and benefits to highway agencies and highway users through a range of roadbed widths and demonstrates that, from an economic standpoint, there is little or no justification for wide roadbeds and none for shoulders. It then explores accidents and accident costs to see if they offer justification for wider roadbeds or shoulders, either on economic or humanitarian grounds. It is found that wider roadbeds do not improve the accident experience of low-volume rural roads, and that, even if such improvements eliminated all accidents of given classes, the savings would be trivial in amount.

The paper concludes that present-day standards for low-volume rural roads which are expected to remain rural in character should be modified as follows:

1. Abandon the concept of continuous constant width cross sections; they are costly, since they require that a road be reconstructed from end to end. Substitute standards based on spot improvements.

2. If there are to be standards for roadbed width, they should stipulate maximums rather than minimums, and encourage the use of narrower roadbeds where they can be shown to be economical.

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