

Vermont: Flexible Design Standards

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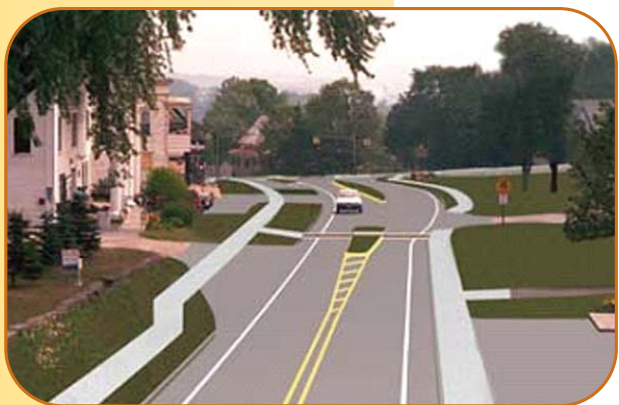
Description

Compared to the multilane arterials and extensive traffic congestion in many of the country’s major population centers, Vermont’s transportation system and traffic problems are modest in scale. Aside from the Interstate system and a few arterials in Burlington, the State’s road network is almost entirely two-lane. Low population growth rates and the largely rural character of the State have kept highway expansion needs to a minimum. Yet the small scale of Vermont’s communities also means that even relatively minor roadway improvement projects can have a significant impact on the character of the community. In the 1990s, the Vermont Agency of Transportation (VTrans) was finding that its efforts to bring state roads up to design standards – through shoulder widening, horizontal and vertical realignment, and other means – were increasingly meeting community opposition, especially in the State’s historic town and village centers. Residents would ask why the road needed to be so “big and straight,” impacting their front yard as well as the village common areas.

As the number of stalled projects accumulated, the agency took another look at its design practices. “The majority of projects needed design exceptions,” notes VTrans project manager Scott Rogers. “We concluded that perhaps we were using the wrong standards.” For example, agency standards called for “rural typical” cross-sections of two 12-foot travel lanes and two eight-foot shoulders in villages too small to be designated as urban areas, but where such widths were nevertheless incompatible with the existing right-of-way.

VTrans undertook a 21-month process to develop a new and more flexible set of design standards that would allow the agency to apply lower-impact practices where appropriate. The standards were developed with input from a wide range of stakeholders including other state agencies, local governments as represented through Vermont’s regional Transportation Advisory Committees, and bicycle and pedestrian interests. In 1997, the agency’s flexible design standards were adopted as legislative rules by state legislature.

Since adopting the standards, VTrans has worked to apply them to projects throughout the State. While bridge projects have represented the greatest number of affected projects, those with perhaps the greatest community impact have been the improvement of National Highway System routes through the State’s towns and villages. One example is the Town of Danville, population 300, which straddles U.S. 2 in northeastern Vermont. U.S. 2 is difficult to cross and also noisy due to the high volume of through traffic, including trucks. In 1987, the town asked the State to reconstruct the highway to address a dangerous pedestrian situation involving poor visibility at a knoll located between the village businesses, the town green, and the high school. The town’s request to reduce the width of the road, which had 12-foot travel lanes and eight-foot shoulders, was initially resisted by VTrans because of the road’s classification as a principal arterial. Later, disputes arose over other project attributes, and the project was placed on hold.



Visual representation of the design for U.S. 2 in Danville.

Credit: Vermont Agency of Transportation and Dutresne-Henry.

The two-year consensus-building process is allowing the project to move forward – addressing important safety concerns while enhancing the historic character of the community.

VTrans revived the project in 1998, after adopting its flexible design standards, and established a unique collaboration with the Vermont Arts Council upon the initiation of then-Secretary Brian Searles. The partners sponsored a design competition and hired the winning artist to assist with the design of the roadway and adjacent public spaces, facilitate community involvement on aesthetic treatments, and incorporate artistic elements that would both reflect and enhance the community's identity. The public was involved over a two-year process through a Local Review Committee, a series of public meetings and workshops, school events and classroom projects, one on one meetings, site walks, and focus groups. The resulting design – which was widely accepted within the community – incorporates sidewalks, textured crosswalks, narrower-than-typical shoulders (four feet), splitter islands approaching town to calm traffic, and a median at intersections in the center of town to provide refuge for pedestrians crossing the street.

VTrans staff note that the cost differences of the final Danville project design are relatively minor compared to how the roadway would have been designed prior to the adoption of flexible standards. The total project cost of \$4.5 million includes about \$600,000 to \$800,000 in costs that are not strictly road-related. Increased costs for medians and pedestrian treatments, though, are offset by the reduced pavement width. Furthermore, the agency notes that the two-year consensus-building process probably saved money compared to the time and cost of fighting opposition to the project, and also is allowing the project to move forward – addressing important safety concerns while enhancing the historic character of the community.

The Danville project, which is expected to begin construction in 2007, is just the first in a series of projects affecting Vermont's smaller communities. In Brandon, a town of population 1,900 in western Vermont, the State has worked with the community to design a realignment of U.S. 7 through the town center, as part of a larger project to upgrade a 12.5-mile segment of this corridor. The two-lane road carries over 10,000 vehicles daily, including numerous trucks. The realignment will reduce the curvature on a dangerously sharp curve with poor visibility, retaining a town green while providing more parking for downtown businesses. A local steering committee has met with VTrans on a bimonthly basis to guide the project, and residents who were initially suspicious of VTrans have become supportive as they realize that the agency is working to address the town's concerns.

Examples of Vermont's Flexible Design Standards

Examples of the "flexibility" provisions of VTrans' 1997 design standards include:

- The standards provide for variation in lane widths for urban and village arterials (both principal and minor) from 10 to 12 feet. The guidelines note that 10-foot lanes are appropriate in "highly restricted areas having little or no truck traffic," 11-foot lanes are extensively used, and 12-foot lanes are generally used on all higher speed, free-flowing arterials. Minimum lane widths for collectors vary from nine to 11 feet depending upon traffic volume and design speed.
- The standards state that shoulders are desirable but their width may be restricted because of available right-of-way, adjacent development, and other constraints. Shoulders of two to six feet in width, depending upon traffic volumes and design speed, are recommended on both urban and rural arterials to accommodate shared use by bicycle traffic. As an alternative, shared-use curb lanes ranging from 12 to 15 feet can be used in urban settings.
- "Special design guidelines" are provided to assist the designer in avoiding, minimizing, or mitigating negative impacts on the environment and other sensitive resources, as well as to enhance the design to fit the context of the project site. Guidelines are provided for historic/archeological resources, natural resources, recreational resources, scenic resources, village or city entrance considerations, and economic vitality considerations. For example, the guidelines state that speed management strategies may be applied at entrances to towns, villages, or cities through roadway design, signage, and other corridor treatments. Reductions in standards consistent with these guidelines may be pursued in accordance with VTrans design exception policy.
- Horizontal curves below the stated design speed (up to 10 mph for arterials or 15 mph below for collectors) may be used without design exception, where necessary to avoid and/or minimize disturbance of historic, archaeological, scenic, natural, or other resources.

Source: "Vermont State Standards for the Design of Transportation Construction, Reconstruction, and Rehabilitation on Freeways, Roads, and Streets." Vermont Agency of Transportation, October 1997, <http://www.aot.state.vt.us/progdev/standards/statabta.htm>.



The realignment of U.S. 7 in Brandon will fix safety problems while leaving area for the town green.

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Success Factors and Lessons Learned

Although adopted in 1997, due to the multiyear time scale of project development Vermont's flexible design standards are only beginning to be reflected in built projects. Success is already being demonstrated, though, by greatly increased acceptance of roadway project designs which are now moving forward to construction. VTrans staff note a number of factors that have led to the successful adoption and implementation of their flexible standards.

Codify standards into law or regulation. VTrans staff note that internal support for adopting and applying more flexible design standards was far from unanimous. In Danville, a five-person "minority report" rebutted the proposed design with concerns about shoulder widths and other issues. Adopting the standards as legislative rules, however, helped to institutionalize the standards, as engineers uncomfortable with the standards noted that they would "play by the rules" once they were passed. At the same time, the legislature passed a "hold harmless" provision to ensure that design engineers would not be held liable in any legal proceedings related to the flexible standards.

A public process is critical. The extensive public involvement process taken in Danville ensured that people felt that their ideas as well as their concerns were being heard. The involvement of an artist meant that aesthetic issues could be creatively addressed and that community members felt that the project would enhance the community not just from a transportation and safety perspective, but also strengthen its historic character and thereby support downtown businesses. An additional benefit of the public process was that people increasingly came to understand the function of the roadway, design issues, and other concerns of agency engineers. VTrans' Rogers notes that once people understand these issues, they start to accept some design tradeoffs that they would not otherwise have accepted. According to Rogers, as a result of the extensive community involvement in Danville "every member of the town feels like they own the project."

Recognize the unique needs of each community. A significant motivation behind the State's flexible standards is the recognition that "one size does not fit all." While some level of consistency in roadway design is important, consistency can be achieved without imposing a uniform standard on each community. Appropriate designs that address both safety concerns and community character can be developed through discussion between state highway engineers and community interests. In Brandon, preservation of space for the town green – the location of many community events – was important and a design compromise was reached that would allow this preservation to occur even while the state highway was realigned.

Resources

Vermont Flexible Design Standards

<http://www.aot.state.vt.us/progdev/standards/statabta.htm>

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<http://www.danvilleproject.com/files/vtrans.htm>

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