

Data-driven improvement ideas target of safety funds

Treatments that qualify for HSIP funds range from improving a dangerous intersection to installing guardrail, warning signs and chevrons on dangerous curves.

PUBLIC ROAD AGENCIES in Wisconsin have available to them more specific crash data than ever for evaluating the value of road improvements that can save lives and prevent injury. The federally supported Highway Safety Improvement Program (HSIP) that local governments in Wisconsin turn to for help funding those safety improvements now makes crash data analysis central to every application.

The HSIP subsidizes cost-effective projects that reduce the number and severity of crashes on public roads. Treatments that qualify for HSIP funds range from improving a dangerous intersection to installing guardrail, warning signs and chevrons on dangerous curves. The program pays 90 percent of the cost for selected projects. Local governments cover the remaining 10 percent.

The Wisconsin Department of Transportation administers the HSIP and plans to introduce a high-risk rural roads program that is another option for local road safety improvements. WisDOT will identify rural roadways with high crash rates and work with local governments to decide on effective safety treatments that qualify for the HSIP match.

Performance-based

MAP-21, the U.S. transportation act signed into law late last year, is the reason state-administered

improvement programs have a greater reliance on predicting the expected benefits of proposed safety treatments and then measuring the actual outcome.

WisDOT's Scott Janowiak, who coordinates the HSIP and the rural roads initiative, says the change builds on the Federal Highway Administration's long-standing rules requiring state DOTs to justify proposed projects with data. Local road agencies applying for HSIP funds need to show evidence of a location's crash history and how a recommended treatment will make it safer.

A primary source for information local governments can use to plan projects and validate their request for matching funds is the WisTrans-Portal website maintained by the Wisconsin Traffic Operations and Safety (TOPS) Laboratory at the University of Wisconsin-Madison. Recent updates to the database (see story page 7) provide users with map data on crashes.

Magnify the benefits

Stand-alone projects, like an isolated intersection improvement, remain important to the HSIP program. But Janowiak notes that he and traffic safety engineers in WisDOT regional offices also seek opportunities to approve projects that fit into a larger, system-wide effort to reduce fatal and serious injury crashes. "Projects that are

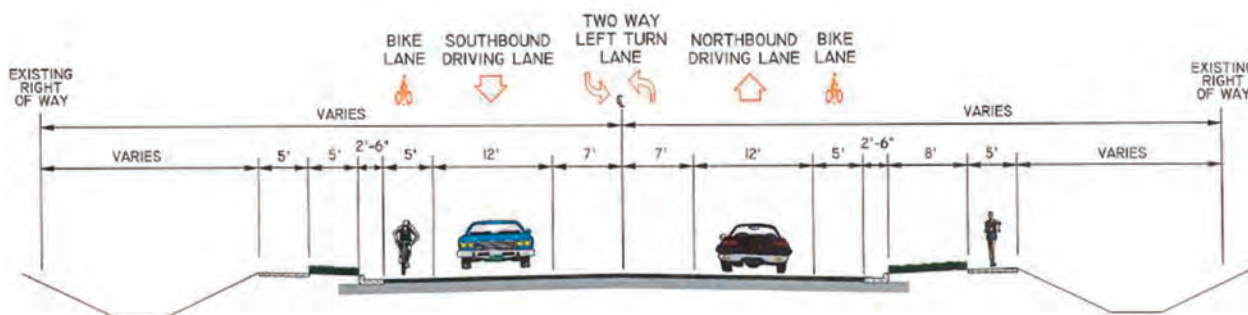
part of or a catalyst for improvements along a corridor or throughout a system help magnify the benefits of a single solution," Janowiak says.

David Jolicoeur, Safety Engineer with the Federal Highway Administration Wisconsin Division, says this broader look at crash history is important as transportation agencies focus on funding local projects they are certain are good investments in making a corridor safer.

Good example

A recently approved HSIP project submitted by the City of Chippewa Falls in the last funding cycle is a good example of separate projects that work well together. The proposal involves changes to an existing median on a four-lane divided highway, a principal arterial that serves as a gateway to downtown. Five years of crash data at the location recorded 33 intersection crashes. That number includes 17 right-angle crashes between vehicles making left turns from an intersecting collector street and vehicles moving in both directions on the highway. The safety improvement will modify the median opening where those crashes occurred to prohibit the dangerous left turns.

The stand-alone improvement earns its "system" credentials because several hundred feet down the corridor, the city is constructing a separate round-



Along with good crash data, successful HSIP applications benefit from detailed illustrations like this example showing proposed improvements.



IMAGE PROVIDED BY SEH, INC.

Aerial view of the Chippewa Falls project location **TOP** shows the existing four-lane divided highway with the problem intersection. Rendering **ABOVE** shows proposed changes for the HSIP safety project. City-funded roundabout project is at right.

about project. Janowiak says it increases the value of the HSIP project by offering road users a safer experience when navigating the corridor once the median improvement is made.

The HSIP project even benefited from a traffic impact analysis conducted by engineering consultants for the bigger project, according to Chippewa Falls Director of Public

Works Rick Rubenzer. He asked engineers from Short Elliott Hendrickson (SEH) Inc., to extend their review of the corridor to include an evaluation of crash data on the proposed HSIP project. WisDOT is working with Chippewa Falls to get the two projects on the same 2013 construction schedule, shortening the original HSIP time-frame by three years.

Does it meet the criteria?

In addition to the consultants from SEH, Rubenzer received valuable help from Traffic Safety Engineer Greg Helgeson in the WisDOT Northwest Region to evaluate the project's potential safety benefits and develop a sound proposal.

Helgeson regularly invites local road agencies to contact him early about projects they think might qualify for matching dollars.

"They come in for an initial screening with very preliminary information," he explains. "It's usually enough to tell us if the project is viable and saves them time doing an in-depth analysis if it's not."

Helgeson relies on a WisDOT formula to calculate the cost of the improvement against its crash-reduction benefit, asking: *Will this solution reduce crashes and improve safety enough to justify the cost?* He recalls that when Rubenzer asked for feedback

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Typical HSIP safety improvements

A list of stand-alone or spot projects that qualify for HSIP funds.

- Install or modify traffic signals
- Install roundabouts or channelize traffic
- Straighten or remove isolated curves or hills
- Improve sight distances
- Construct turn, bypass or other auxiliary lanes
- Modify access points
- Eliminate roadside obstacles
- Improve safety for pedestrians, bicyclists and people with disabilities
- Install guardrails, barriers and crash attenuators
- Install more traffic controls in problem areas, like ped-bicycle crossings and school zones

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on the idea for improving safety at the Bridge and Court Street intersection, he saw a project with potential and encouraged him to proceed.

The \$501,000 project requires widening or replacing pavement on one side of the road to accommodate the raised median, work on storm sewers, modifications to adjacent bridge decking and installation of signs and markings.

Meeting the match

HSIP awards require local governments to pick up 10 percent of costs on approved projects to match the 90 percent in federal dollars. Allocating financial resources to meet this obligation plays a significant role in a local road agency's evaluation of project feasibility.

Rubenzer reports that Chippewa Falls considered several options. After conferring with the city planner, they decided to use the municipal financing tool of a Tax Incremental Finance, or TIF district, to reimburse the general obligation bonds they use to fund costs for both the HSIP segment and the roundabout. The roundabout is part of a larger downtown improvement project.

High-risk rural roads

The other class of projects that will qualify for HSIP funds are rural roads with high crash rates. Although MAP-21 eliminated the funding set-aside for the national High-Risk Rural Roads (HRRR) program, it still requires states to improve safety on these roads. So WisDOT decided to centralize its approach to funding HSIP improvement efforts on rural roads.

Janowiak's office is working with the TOPS Lab to review traffic data and rates for fatal and serious injury run-off-the-road crashes on rural collectors and local roads in Wisconsin. The goal is to identify the highest risk rural roads, rank them and then



Drawings that indicate how a roadway or intersection project will improve traffic safety in one location or along a corridor reinforce the benefits outlined in a HSIP proposal.

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Taking the lead on this program allows WisDOT to avoid federal penalties—like less flexibility in allocating HSIP dollars—if fatal crash rates increase on rural roads.

Typical HRRR improvements along rural corridors include removing obstacles to improve clear zone, adding chevrons and other warning signs, installing rumble strips on the shoulder or centerline, and friction treatments.

Safer roads: everyone's priority

There are many opportunities to make roads safer in Wisconsin. Local road agencies with potential HSIP projects should initiate a preliminary review with WisDOT safety engineers in their region for guidance on submitting an application and advice on the next steps.

There are two application deadlines for the 2014-2017 funding cycle, August 15, 2013 and February 14, 2014. WisDOT will look for proposals supported

by data and with firm cost estimates and project timelines.

In conjunction with the Bureau of Transit, Local Roads, Rails, and Harbors, Janowiak and the regional engineers plan to conduct a series of roadshows around the state in coming months to talk about how the changes in MAP-21 affect local roads programs like the HSIP and the new process for evaluating rural roads.

Jolicoeur notes that local governments will be able to contribute to the 2013 update of Wisconsin's *Strategic Highway Safety Plan*, a major component of the HSIP. The Safety Plan depends on input from federal, state and local agencies to define areas of emphasis and treatments with the greatest potential to improve safety on the state's roads.

"Reducing fatal and serious injury crashes on public roads is a central priority of the federal agency as it is for WisDOT," concludes Janowiak. "And it's clear from HSIP proposals we receive that safety is a key concern for local governments when they prioritize road improvements in their jurisdictions." ■

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Resources

<http://www.dot.wisconsin.gov/localgov/highways/hsip.htm>

WisDOT webpage with links to HSIP coordinators in regions and the latest application forms.

<http://transportal.cee.wisc.edu>

Entry point for the traffic information services and data management system developed and maintained by the TOPS Lab.