



Making Local Rural Roads Safer

by Ron Marshall, SD LTAP Technical Assistance Provider

In recent editions of *The Connection* we have addressed the challenge of improving the safety of South Dakota's local, rural roads and discussed our South Dakota Local Transportation Assistance Program's, (SD LTAP) initiative to promote Road Safety Audits as a tool to identify and address road safety improvement opportunities. With approximately 50 deaths per year, local, rural roads have accounted for 25 percent of total state highway deaths over the past several years. In addition South Dakota's local, rural roads have fatality rates which are the highest of surrounding states and nearly 50 percent higher than the national average for similar roads.



Typical rural highway where the last pavement overlay left no shoulder area.

Rural areas face a number of unique highway safety challenges. Rural crashes are more likely to be at higher speeds than urban crashes; victims of fatal crashes in rural areas are more likely to be unbelted than their urban counterparts; and it often takes first responders longer to arrive at the scene of a rural crash, leaving victims waiting longer for medical attention. Outdated roadway design and roadside hazards such as steep slopes and culvert ends, sharp-edged pavement drop-offs, and utility poles or trees can also be major contributors to the severity of rural crashes.

Rural Road Crashes—What we do know

With the often relatively low traffic volumes on local, rural roads, crash locations are not concentrated like they may be in urban places or higher volume rural roads. Identifying specific locations to make cost-effective safety improvements to existing roads or predicting likely locations of future crashes is a difficult or impossible task.

However, looking at the statewide summary crash data over several years shows us that the types of crashes are relatively consistent and predictable. Both nationally and in South Dakota, roadway departure crashes are leading causes of injuries and deaths. Specifically for local, rural roads in South Dakota, run off the road rollovers and striking a fixed object crashes are not only the two leading types of crashes, but they account for 70 percent of deaths and injuries on these roads. Statistics have held fairly consistent from year to year. Thus, highway safety experts often say that "crash locations are random or unpredictable," but "crash types are predictable."

What Can be Done?

Even with the budget restraints faced by most local governments, there are many low cost safety countermeasures available to address the most common and predictable crash types: run off the road rollovers and fixed objects. We can start by thinking about safety in a new or different way. Recognizing that most local road managers are faced with the ever increasing challenges of keeping up with maintenance needs and severe resource constraints, it can be productive to step back and think about safety of the roads we maintain from the perspective of those who use our roads. Take time to talk to someone who drives your roads and listen to what they have to say. The perspective of one or more of your customers familiar with your roads (a school bus driver, a mail delivery person, a law enforcement officer, a motorgrader operator, a truck driver, etc.) can be enlightening.

Since we cannot predict with precision where crashes are likely to occur, addressing the goal of reducing the predictable crash types (i.e., rollover and fixed object crashes) requires thinking about how your design, construction, and maintenance practices can keep vehicles on the road. If they leave the roadway, how can these practices contribute to making roadsides safer? The following are some questions to consider in assessing the safety of your roads. This is not intended to be an exhaustive list, but to encourage reflection on maintenance, design, and construction practices.

Some Questions to Consider

Road Surface Condition – Paved and Unpaved Roads

- Is the surface free of loose aggregate/gravel, which may cause safety problems?
- Is the gravel surface maintained with the proper shape (crown) and appropriate super-elevation on curves?
- Is the surface free of potholes, washboards, or other defects that could result in the loss of steering control?
- Are there sharp drop-offs at the edge of pavement?
- Are changes in surface type (e.g., where pavement ends or begins) free of poor transitions?
- Is the paved surface free of locations that have inadequate skid resistance that could result in safety problems, particularly on curves, steep grades, and approaches to intersections?
- Is the surface free of areas where drainage (ponding or sheet flow) of water may cause safety problems?

Signing and Delineation (the Manual of Uniform Traffic Control Devices – MUTCD)

- Are signs effective for existing conditions?
- Can signs be read at a safe distance (both daytime and night visibility)?
- Are there locations where additional signing is needed to improve safety?
- Are curve warning signs, markings, and advisory speed signs installed where needed?
- Are existing regulatory, warning, and directory signs conspicuous?
- Is there improper or unnecessary signing which may cause safety problems?
- Is the road free of signing that impairs safe sight distances?
- Is the road free of locations with improper or unsuitable delineation (post delineators, chevrons, object markers, etc.)? Are there locations where additional delineation is needed?

Pavement Markings

- Are pavement markings in good condition? (Clearly visible day and night?)
- Is the road free of locations with pavement marking safety deficiencies?

- Is the road free of pavement markings that are not effective for the conditions present?
- Is the road free of old pavement markings that affect the safety of the roadway?

Roadside Features

- Are clear zones free of hazards and non-traversable side slopes without safety barriers?
- Are the clear zones free of obstructions that are not properly shielded?
- Are shoulders wide enough to allow drivers to regain control?

Intersections and Approaches

- Are intersections free of sight restrictions that could result in safety problems?
- Are intersections free of abrupt changes in elevation or surface condition?
- Are advance warning signs installed when intersection traffic control cannot be seen a safe distance ahead of the intersection?

Railroad Crossings

- Are railroad crossing (cross bucks) signs used on each approach at railroad crossings?
- Are railroad advance warning signs used at railroad crossing approaches?
- Are railroad crossings free of vegetation and/or other obstructions that have the potential to restrict sight distance?
- Are roadway approach grades to railroad crossings flat enough to prevent vehicle snagging?

Bridges and Culverts

- Are narrow bridges and culverts appropriately signed?
- Are bridge rails and guardrails suitable for the purpose?
- Are bridges and culverts routinely inspected to ensure their safety?

Other Features

- Are travel paths and crossing points for pedestrians, cyclists, and school zones properly signed and/or marked?
- Are mail boxes safely located with adequate clearance and visibility from the traffic lane? Are mailbox supports a safety hazard?

Working to improve the safety of our roads is not an end in itself. Alcohol, seatbelts, speed, inexperienced and inattentive driving (including cell phones) are all contributing factors to local road vehicular crashes. Clearly local road managers, with severe budget and resource constraints, cannot solve the safety challenge alone. Cooperation with others including South Dakota Department of Transportation, South Dakota Department of Public Safety, SD LTAP, engineers, law enforcement, Emergency Medical Services, the judiciary, Driver's Education, media, and the public is needed if we are to be successful in making rural roads safer.

As part of the Road Safety Audit initiative that we at SD LTAP are working on, we are developing a "toolbox" of local road safety improvement strategies that we will be sharing in the near future. This toolbox will include specific countermeasures for roadside hazards and information on crash reduction factors from safety studies nationwide. In addition to looking for opportunities for road safety audits, we would like to hear from you about your road safety experiences. If you have a safety success story (or not so successful story) to share, drop us a note, give us a call, or send us an email so we can share it with others.

Reference: *The Connection, SD LTAP - Volume 21, Number 1 - Spring 2008*