

Nebraska Department of Transportation

Roadway Design Division – Policy Letter

Policy Number: **DES 22-01**

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Roadway Design Manual chapter affected by this policy letter:

Chapter Six: The Typical Roadway Cross-Section
Section 2 Shoulders

POLICY FOR INSTALLATION OF 2 FOOT SURFACE SHOULDERS ON LOWER VOLUME ROADS

Background

Reducing the occurrence of vehicles deviating from their assigned lane by either leaving the roadway or encroaching on or crossing into opposing traffic lanes is one of the critical emphasis areas for the Nebraska Strategic Highway Safety Plan. A crash history review was performed for 65 locations with 24-foot-wide roadways before and after 2-foot surface shoulders and edgeline rumble strips were added. The analysis showed a 18% reduction of roadway departure crashes and a 31% reduction in fatal and serious injury crashes. Installation of 2-foot surface shoulders with edgeline rumble stripes is a cost-effective measure recognized by Federal and state transportation agencies for alerting errant drivers of lane departure and providing additional surface pavement to correct back into their lane, potentially mitigating lane departure crashes.

Purpose

The purpose of this policy is to establish a systemic method to analyze the conditions on Nebraska's state highway system and to establish guidelines for the installation of 2-foot surface shoulders as a mitigation measure for roadway departure crashes. A systemic method involves widely implemented measures based on the roadway characteristics correlated with specific severe crash types.

Policy

The Nebraska Department of Transportation (NDOT) has determined through demonstration projects, national studies, and Nebraska crash history analysis that the installation of 2-foot surface shoulders with edgeline rumble stripes is an effective countermeasure for reducing roadway departure crashes on two-lane two-way roadways. The NDOT also recognizes that installing surface shoulders utilizes transportation funds that could be available for other transportation needs on the state highway system. Since there are competing interests, it is important that the NDOT install the countermeasure in those locations where the crash history has demonstrated a need for improvement. A systematic or systemic approach to the implementation of safety mitigation strategies is important regardless of the mitigation strategy to be used. Due to the random occurrence of roadway departure crashes, it is important to recognize that any roadway departure crash could be a fatality based upon the random presence of another vehicle, the roadside configuration, and the health of the individuals involved in the crash. Consequently, this policy for implementation is based upon the total number of roadway departure crashes.

After reviewing the crash data and research literature, the NDOT has determined the following to be guiding principles for the installation of 2-foot surface shoulders and edgeline rumble stripes on the state highway system.

- Roadway type – Rural two-lane undivided with two-way traffic
- Lane width – no less than 12 feet
- Average daily traffic (ADT) – At least 1,000 vehicles per day
- Minimum length of segment of three miles
- Historic highway segments may be added for continuity when the gap between highway segments with 2-foot surface shoulders with edgeline rumble strips is less than 5 miles in length.
- Other segments may be included to receive the 2-foot surfaced shoulder and edgeline rumble stripes when:
 - The segments exhibit 0.25 or greater roadway departure crashes per year per mile.
 - The segments are interstate alternate routes and roads connecting the interstate to the interstate alternate routes regardless of their annual daily traffic (ADT).

After 2-foot surface shoulders and edgeline rumble stripes are installed, they will be perpetuated on subsequent projects unless their function is replaced by a similarly effective mitigation measure for roadway departure crashes. Since the installation of the 2-foot surface shoulders with edgeline rumble stripes may substantially modify the roadway departure crash history of a roadway, use of the above warrants to assess continued use of the measure would be inaccurate.