

REVISED TEXT FOR TXDOT MANUAL
ROADWAY DESIGN MANUAL

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RECOMMENDED TEXT FOR THE *ROADWAY DESIGN MANUAL*

Highway safety is an ongoing concern for the Texas Department of Transportation (TxDOT). As part of its proactive commitment to improving highway safety, TxDOT is moving toward including quantitative safety analyses earlier in the project development process. To assist in achieving this goal, TxDOT research project 0-4703 developed the *Roadway Safety Design Workbook* for engineers responsible for highway geometric design. This *Workbook* describes quantitative safety relationships for specific design components known to be correlated with crash frequency.

It is recommended that TxDOT incorporate the *Workbook* by reference in a future edition of the *Roadway Design Manual*. This manner of incorporation is recommended for two reasons. First, experience is needed in using the *Workbook* guidelines before they are more formally incorporated into a TxDOT manual. This experience will provide useful refinement of the *Workbook* content. Second, the *Workbook* guidelines are quite extensive and, if wholly incorporated, would result in a significant increase in the size of the *Roadway Design Manual*.

Text to be added to the *Roadway Design Manual* to facilitate the recommended type of incorporation is highlighted by underline on the following pages.

Section 4 Horizontal Alignment

Overview

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General Considerations for Horizontal Alignment

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Safety Design

“The challenge to the designer is to achieve the highest level of safety within the physical and financial constraints of a project” (Highway Safety Design and Operations Guide, American Association of State Highway and Transportation Officials, Washington, D.C., 1997, p. 9). Toward this end, safety-conscious design represents the explicit evaluation of safety when considering design alternatives. Tools developed under TxDOT research project 0-4703, “Incorporating Safety into the Highway Design Process” can be used for safety evaluation of many design elements. These tools are available at: tcd.tamu.edu/Documents/rsd.htm. The elements addressed by these tools that are of relevance to this section include curve radius, spiral transition curve, and superelevation rate.

Section 6 Cross Sectional Elements

Overview

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Safety Design

“The challenge to the designer is to achieve the highest level of safety within the physical and financial constraints of a project” (Highway Safety Design and Operations Guide, American Association of State Highway and Transportation Officials, Washington, D.C., 1997, p. 9). Toward this end, safety-conscious design represents the explicit evaluation of safety when considering design alternatives. Tools developed under TxDOT research project 0-4703, “Incorporating Safety into the Highway Design Process” can be used for safety evaluation of many design elements. These tools are available at: tcd.tamu.edu/Documents/rsd.htm. The elements addressed by these tools that are of relevance to this section include the following:

- ◆ slopes,
- ◆ median design,
- ◆ lane width,
- ◆ shoulder width, and
- ◆ horizontal clearance.

**Section 1
Overview**

Introduction

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Safety Design

“The challenge to the designer is to achieve the highest level of safety within the physical and financial constraints of a project” (*Highway Safety Design and Operations Guide*, American Association of State Highway and Transportation Officials, Washington, D.C., 1997, p. 9). Toward this end, safety-conscious design represents the explicit evaluation of safety when considering design alternatives. Tools developed under TxDOT research project 0-4703, “Incorporating Safety into the Highway Design Process” can be used for safety evaluation of many design elements. These tools are available at: tcd.tamu.edu/Documents/rsd.htm. The elements addressed by these tools that are of relevance to this chapter are identified in Table 3-1.

Table 3-1. Design Elements Addressed by Available Safety Evaluation Tools.

<u>Design Element</u>	<u>Urban and Suburban Arterials</u>	<u>Two-Lane Rural Highways</u>	<u>Multilane Rural Highways</u>	<u>Freeways</u>
<u>Curve Radius</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Spiral Transition Curve</u>		<u>Yes</u>		
<u>Superelevation rate</u>		<u>Yes</u>		
<u>Grade</u>		<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Lane Width</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Shoulder Width</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Median Design</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Horizontal Clearance</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
<u>Speed-Change Lanes</u>	<u>Yes, at intersections</u>	<u>Yes, at intersections</u>	<u>Yes, at intersections</u>	<u>Yes, at ramps</u>
<u>Side Slope</u>		<u>Yes</u>	<u>Yes</u>	
<u>Driveway Access</u>		<u>Yes</u>		
<u>On-Street Parking</u>	<u>Yes</u>			

Note: a blank cell indicates that the design element is not addressed.

Section 3 Safety Enhancements

Safety Design

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A summary of the accident evaluation should accompany the submission. This evaluation should document the presence, or absence, of any major deficiencies which may contribute to accident frequency and/or severity. This evaluation should be initially considered when scoping work in order that corrective measures may be taken where practicable.

Safety-conscious design represents the explicit evaluation of safety when considering design alternatives. Tools developed under TxDOT research project 0-4703, “Incorporating Safety into the Highway Design Process” can be used for safety evaluation of many design elements. These tools are available at: tcd.tamu.edu/Documents/rsd.htm. They can be used with available accident data to accurately assess a project’s potential for safety improvement.