3.0 AASHTO CONTROLLING DESIGN CRITERIA

3.1 Introduction

The existing design features of US 60 between SR 79 at Florence Junction to SR 177 at Superior (MP 211.7 to MP 226.8) have been examined and evaluated relative to the American Association of State Highway and Transportation Officials (AASHTO) Controlling Criteria outlined in the 1990 edition of "A Policy on Geometric Design of Highways and Streets," commonly referred to as the AASHTO "Green Book." Another publication used as reference material for the evaluation was ADOT's "Roadway Design Guidelines" (1996 edition). A complete presentation of the data and evaluation is contained in the March 1999 report, AASHTO Controlling Design Criteria Report, US 60—Florence Junction to Superior, Contract No. 96-23, TRACS No. 60 PN 212 H4662 02L. A summary of the evaluation follows.

3.2 Lane Width and Shoulder Width

US 60 between Florence Junction and Superior is primarily a two-lane roadway with paved shoulders throughout its length. Lane widths are 12 feet wide, with shoulder widths predominantly eight-feet in width except where left turn lanes and climbing lanes have been installed. Where these features exist, shoulders are reduced to two feet wide.

Lane widths meet AASHTO criteria throughout the project length. However, nearly 20 percent of the route has shoulder widths less than the minimum 8 feet recommended by AASHTO due to the addition of left turn lanes and climbing lanes.

All lane and shoulder widths used in developing design concept alternatives for this report conform to current ADOT design recommendations (see Section 5).

3.3 Vertical Alignment and Stopping Sight Distance

A total of 58 vertical curves are located within the limits of the study route. All of these meet AASHTO recommended minimums for stopping sight distance when evaluated relative to the minimum design speeds for this study.

A listing of the vertical curve analysis is contained in Attachment 1 of the AASHTO report for this study.

The vertical alignments developed for each of the design concept alternatives presented in this report conform to current ADOT design recommendations (see Section 5).

3.4 Horizontal Alignment and Stopping Sight Distance

The existing horizontal alignment contains 28 horizontal curves of which 27 include spiral transitions. Based on an analysis of as-built plans, the following generally describes the horizontal alignment relative to the AASHTO recommended minimum design speeds for the study. Of the 28 horizontal curves:

- The existing superelevation rate of 0.050 ft/ft for the horizontal curve on Eastbound US 60 from MP 212.15 to MP 212.48 is less than the minimum superelevation rate of 0.065 ft/ft.

A listing of the horizontal curve analysis is included in Attachment 2 of the AASHTO Report completed for this study.

The horizontal alignment developed for each of the design concept alternatives presented in this report conforms to current ADOT design recommendations (see Section 5).

3.5 Design Speed

The study route was evaluated in terms of classification, use, and terrain in determining the appropriate AASHTO minimum design speeds to be used for evaluating the alignment:

Location	Functional Classification	Terrain	Posted Speed Limit	AASHTO Recommended Minimum Design Speed
MP 212.05 to MP 212.65	Rural Arterial	Rolling	65 mph	50 mph
MP 212.65 to MP 217.3	Rural Arterial	Rolling	65 mph	50 mph
MP 217.3 to MP 219.6	Rural Arterial	Mountainous	65 mph	40 mph
MP 219.6 to MP 226.2	Rural Arterial	Rolling	65 mph	50 mph
MP 226.15 to MP 226.8	Urban Arterial	Rolling	45 mph	30 mph

3.6 Grades

AASHTO recommends the following maximum grades for design speed and terrain:

Rural Non-Divided Highways

	Terrain		
Design Speed	Level	Rolling	Mountainous
40 mph			8%
50 mph		5%	

Urban and Fringe Urban Non-Divided Highways

	Terrain		
Design Speed	Level	Rolling	Mountainous
30 mph		9%	

An evaluation of the existing grades based on the foregoing criteria is:

- All existing grades are less than the AASHTO recommended maximum allowable grades for the AASHTO recommended minimum design speeds.

3.7 Cross Slopes

Normal section cross slopes are 1.5% throughout the study route except for the urban section which has a cross slope of 3.0 %. These cross slopes are within the AASHTO recommended ranges of 1.5-2.0 percent and 1.5-3.0 percent for rural and urban sections respectively.

3.8 Vertical Clearance

There are two interchanges within the study limits. During the course of this study, both have been either constructed or improved.

Florence Junction TI: The US 60/SR 79 Traffic Interchange is a new facility, recently opened to traffic June 2003. A 16'-6" minimum vertical clearance is provided over SR 79.

SR 177 TI: The overpass at MP 226.8 at the junction with SR 177 had a vertical clearance of 13'-10", which was less than the AASHTO recommended minimum of 16'. The roadway under the interchange bridge and the associated ramps on the western approaches have recently been reconstructed to provide adequate (16'-8") vertical clearance. These improvements were completed in the fall of 2003.

In addition to the TI structures, there is a grade separated crossing of the mainline over Stone Avenue in Superior. For the purposes of this study, the mainline goes over Stone Avenue and therefore has no vertical deficiencies. However, as the vertical clearance of the mainline bridge over Stone Avenue is only 14-ft, it does not meet the current requirements for ADOT local street overcrossings of 15'-6". As this structure does not create a traffic problem to the mainline traffic, and local traffic has alternative routes nearby, no immediate correction is recommended. The District is working with the Town and various agencies to address this issue as a separate District Minor Project, if the Superior improvements are not scheduled for some time.