

## **3.0 AASHTO CONTROLLING DESIGN CRITERIA**

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### 3.1 Introduction

The existing design features on the route through Wickenburg; on US 60 between MP 111.0 and MP 110.45, and on US 93 between MP 199.69 and MP 197.0; 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.” ADOT’s “Procedural Guide for Review of the AASHTO Controlling Design Criteria on Existing ADOT Highways”, a draft guide dated March 1996, was also used to evaluate the existing design features. ADOT’s “Roadway Design Guidelines” (1996 edition) was used for additional design reference. A complete presentation of the data and evaluation is available in the “Final AASHTO Controlling Design Criteria Report, US 93: Wickenburg to Santa Maria River, TRACS No. 093YV 161 H 4871 O1 L, Contract No. 99-12 (March 2003).

### 3.2 Lane Widths and Shoulder Width

US 60, from MP 111.0 to MP 110.33 in Wickenburg, is classified as an urban principal arterial, and is a four-lane roadway with curb and gutter. US 93, also in Wickenburg, is classified as an urban principal arterial, and consists of a two-lane roadway with curb and gutter from MP 199.69 to MP 199.56; and a five-lane roadway with curb and gutter from MP 199.56 to MP 198.75. From MP 198.75 to MP 197.0, US 93 is classified as a rural principal arterial and is a two-lane roadway with 8-foot paved shoulders.

Lane widths and shoulder widths conform to AASHTO criteria throughout.

### 3.3 Vertical Alignment and Stopping Sight Distance

The vertical alignment and stopping sight distance meet AASHTO recommended minimums throughout the route.

### 3.4 Horizontal Alignment and Stopping Sight Distance

The route under study contains four horizontal curves not meeting criteria related to the AASHTO recommended minimum design speeds for the study:

- US 60, MP 110.64 to 110.96; minimum superelevation rate = 0.030 ft/ft, existing rate is 0.015ft/ft.
- US 93, MP 198.33 to 197.89; minimum superelevation rate = 0.067ft/ft, existing rate is 0.038ft/ft.
- US 93, MP 197.79 to 197.31; minimum superelevation rate = 0.030ft/ft, existing rate is 0.015ft/ft.

- US 93, MP 197.26 to 196.72; minimum superelevation rate = 0.030ft/ft, existing rate is 0.015ft/ft.

### 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 existing alignment.

Location	Functional Classification	Terrain	Posted Speed Limit	AASHTO Recommended Minimum Design Speed
US 60 MP111.0-110.6	Urban principal arterial	Level	30	30
US 60 MP110.6-110.3	Urban principal arterial	Level	25	30
US 93 MP199.7-199.4	Urban principal arterial	Level	25	30
US 93 MP199.4-199.0	Urban principal arterial	Level	35	30
US 93 MP199.0-198.9	Urban principal arterial	Level	45	40
US 93 MP198.9-198.3	Rural principal arterial	Level	45	60
US 93 MP198.3-197.0	Rural principal arterial	Level	55	60

### 3.6 Grades

The existing profile grades on US 60 and US 93 within the project limits are within the AASHTO allowable limits for level terrain.

### 3.7 Cross Slopes

Cross slopes are within the AASHTO recommended range of 1.5 to 2.0 percent throughout the study route.

### 3.8 Vertical Clearance

There are no vertical clearance issues within the study route.

### 3.9 Bridge Structure

Two bridge crossings are located within the study route. The location and evaluation for each are as follows:

Structure Name	Struct. No.	MP	Year Built	Suff. Rate	Bridge Structure		Bridge Rail		
					Width, Curb To Curb (ft)	Capacity	Type	Geom. OK	Struct. OK
Sols Wash	2688	US 93 199.56	1999	96.93	76	HS 20	Conc.	Yes	Yes
Hassayampa River WB	00161	US 60 110.53	1936	F62.32	23.9	HS 13.33	Spcl. Steel & Conc. barrier	No	No
Hassayampa River EB	00737	US 60 110.53	1962	S47.28	30.1	HS 16.67	Spcl. Steel	No	No

The AASHTO Green Book recommends a bridge structure capacity of HS-20. The Hassayampa River bridges are deficient in this respect. Additionally, the WB Hassayampa bridge is listed as functionally obsolete due to the curb-to-curb width of 23.9 feet, less than the recommended 30 feet, and the EB bridge is listed as structurally deficient with inadequate bridge rail.