

APPENDIX G
PRELIMINARY AASHTO CONTROLLING DESIGN CRITERIA REPORT
(Prepared October 2007 for the Initial Design Concept Report)

Final AASHTO Controlling Design Criteria not evaluated per policy change November 2009
Provided for Information Only

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**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAIN LINE SUMMARY (UNDIVIDED)**

PROJECT NUMBER: 086 PM 156 H6806 01 C	ROUTE: SR 86
HIGHWAY LOCATION: Why - Tucson	BEGINNING MP: 156.88
HIGHWAY SECTION: Sandario Road to San Joaquin Road	ENDING MP: 163.42
FUNCTIONAL CLASSIFICATION: RURAL ARTERIAL	

I. LANE AND SHOULDER WIDTHS

	EXISTING (Feet)	AASHTO RECOMMENDED MINIMUM (Feet)
WIDTH OF TRAVELED WAY:	24	24
SHOULDER WIDTH:	Varies (4' to 8)**	8

II. DESIGN SPEED:

AASHTO Recommended Minimum Design Speed:	60	mph	Terrain Is: Level
Posted Speed:	65	mph (MP 156.88 -163.8)	Average project elevation = 2500'

III. GRADES

Terrain Is: Level	
Existing Maximum Grade:	AASHTO Maximum Allowable Grade Is:
0.60%	3.00%

IV. CROSS SLOPE

As-Built Cross Slope:	AASHTO Allowable Range Is:
2.00%	1.5% - 2.0%

V. TRAFFIC VOLUMES AND FACTORS

Milepost Limits	2005 AADT	2007 AADT	2030 AADT	Traffic Factors:	2005 DHV
156.9 to 160.3	6,900	10,700	30,000	K = 10%, D = 51%, T = 11%	350
160.3 to 163.4	6,900	7,500	20,500	K = 10%, D = 51%, T = 11%	350

VI. VERTICAL CLEARANCE

Structure	Milepost	Posted Clearance	Post Construction Clearance	AASHTO Minimum Allowable Clearance
N/A				

VII. STRUCTURES

Structure	Milepost	Existing Bridge Length (ft)	Existing Bridge Width (ft)	Recommended Bridge Width (ft)	Bridge Barrier		Existing Structural Capacity	Recommended Structural Capacity
					Geom. OK	Struc. OK		
(3) 8' x 6' RCB (#6939)	157.41	26.0	46.0	28.0	NA	NA	HS20	HS20.0
(5) 10' x 6' RCB (#6464)	160.70	53.0	44.0	28.0	Yes	Yes	HS20	HS20.0
(3) 10' x 5' RCB (#6465)	161.25	32.0	44.0	28.0	Yes	Yes	HS20	HS20.0
Black Hills Wash Bridge (#1606)	162.05	129.0	44.0	28.0	Yes	Yes	HS18.33 *	HS20.0
Snyder Hill Wash Bridge (#1607)	162.20	199.0	44.0	28.0	Yes	Yes	HS18.33 *	HS20.0

VIII. VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE:

See Attachment No. 1

IX. HORIZONTAL ALIGNMENT, SUPERELEVATION, AND STOPPING SIGHT DISTANCE:

See Attachment No. 2

X. REMARKS:

* Design Exception required.

** Design exception will not be requested for shoulder width because the width will be corrected during reconstruction effort.

**SUMMARY OF AASHTO CONTROLLING DESIGN CRITERIA
MAIN LINE SUMMARY (UNDIVIDED)**

PROJECT NUMBER: 086 PM 156 H6806 01 C	ROUTE: SR 86
HIGHWAY LOCATION: Why - Tucson Highway	BEGINNING MP: 163.42
HIGHWAY SECTION: San Joaquin Road to Kinney Road	ENDING MP: 166.58
FUNCTIONAL CLASSIFICATION: URBAN ARTERIAL	

I. LANE AND SHOULDER WIDTHS

	EXISTING (Feet)	AASHTO RECOMMENDED MINIMUM (Feet)
LANE WIDTH:	12	12
SHOULDER WIDTH:	Varies (4' to 8)**	8
TURN LANE WIDTH:	12	12

II. DESIGN SPEED:

AASHTO Recommended Minimum Design Speed:	60	mph	Terrain Is: Level
Posted Speed:	55	mph (MP 163.8 -166.5)	Average project elevation = 2500'
	65	mph (MP 158.70 -163.8)	

III. GRADES

Terrain Is: Level	
Existing Maximum Grade:	AASHTO Maximum Allowable Grade Is:
2.16%	5.00%

IV. CROSS SLOPE

As-Built Cross Slope:	AASHTO Allowable Range Is:
2.00%	1.5% - 3.0%

V. TRAFFIC VOLUMES AND FACTORS

Milepost Limits	2005 AADT	2007 AADT	2030 AADT	Traffic Factors:	2005 DHV
160.3 to 163.4	6,900	8,000	20,500	K = 10%, D = 51%, T = 11%	350
163.4 to 166.1	13,900	15,900	38,000	K = 10%, D = 51%, T = 9%	710
166.1 to 166.5	26,400	35,800	66,300	K = 10%, D = 51%, T = 9%	1,350
166.3 to 166.5	26,400	28,400	66,000	K = 10%, D = 51%, T = 7%	1,350

VI. VERTICAL CLEARANCE

Structure	Milepost	Posted Clearance	Post Construction Clearance	AASHTO Minimum Allowable Clearance
N/A				

VII. STRUCTURES

Structure	Milepost	Existing Bridge Length (ft)	Existing Bridge Width (ft)	Recommended Bridge Width (ft)	Bridge Barrier		Existing Structural Capacity	Recommended Structural Capacity
					Geom. OK	Struc. OK		
N/A								

VIII. VERTICAL ALIGNMENT AND STOPPING SIGHT DISTANCE:

See Attachment No. 1

IX. HORIZONTAL ALIGNMENT, SUPERELEVATION, AND STOPPING SIGHT DISTANCE:

See Attachment No. 2

X. REMARKS:

** Design exception will not be requested for shoulder width because width will be corrected during reconstruction effort.

ROADWAY ENGINEERING GROUP
ROADWAY PREDESIGN SECTION

DATE: 5/3/2007

TO: SUNIL ATHALYE
BRIDGE GROUP
BRIDGE MANAGEMENT SECTION, MD 635E

FEDERAL REFERENCE NO: 086-A TRACS NO: H8808 01C
HIGHWAY: WHY - TUCSON HIGHWAY
LOCATION: SANDARIO ROAD TO KINNEY ROAD
MP LIMITS: 158.9 TO 158.5
PROJECT DESCRIPTION: Pre-design Study to Widen SR 86

FROM: BILLAH KHAN, PROJECT MANAGER
ROADWAY PREDESIGN

SUBJECT: BRIDGE EVALUATION REQUEST

Please evaluate the following structures per AASHTO guidelines:

ROUTE NO.	MILEPOST	STR. NO. AND NAME	BRIDGE LENGTH	ROADWAY WIDTH	BRIDGE RAIL / BARRIER			AC OVERLAY			VERTICAL CLEARANCE (MINIMUM)		BRIDGE LOAD RATING	BRIDGE SUFFICIENCY RATING
					TYPE	GEOM. OK	STRUC. OK	THICKNESS (EXISTING)	REMOVE (MINIMUM)	REPLACE/NEW (MAXIMUM)	NB/EB	SB/WB		
SR 86	157.06	6938 RCB 5-10'x6'												
			Comments: The culvert is not at grade. Culvert barrel length = 86' Maximum fill height = 2' Structure length = 53'											
SR 86	157.41	6939 RCB 3-8'x6'	26'	48'				4"					HS20	81.80
			Comments: The culvert is at grade. Culvert barrel length = 86' Maximum fill height = 1'											
SR 86	157.51	6940 RCB 3-8'x4'												
			Comments: The culvert is not at grade. Culvert barrel length = 86' Maximum fill height = 2' Structure length = 26'											
SR 86	157.74	6941 RCB 4-8'x6'												
			Comments: The culvert is not at grade. Culvert barrel length = 86' Maximum fill height = 3' Structure length = 35'											
SR 86	158.05	6942 RCB 8-10'x4'												
			Comments: The culvert is not at grade. Culvert barrel length = 50' Maximum fill height = 4' Structure length = 87'											

ROADWAY ENGINEERING GROUP
ROADWAY PREDESIGN SECTION

DATE: 5/3/2007

FEDERAL REFERENCE NO: 086-A TRACS NO: H8808 01C

Please evaluate the following structures per AASHTO guidelines:

ROUTE NO.	MILEPOST	STR. NO. AND NAME	BRIDGE LENGTH	ROADWAY WIDTH	BRIDGE RAIL / BARRIER			AC OVERLAY			VERTICAL CLEARANCE (MINIMUM)		BRIDGE LOAD RATING	BRIDGE SUFFICIENCY RATING
					TYPE	GEOM. OK	STRUC. OK	THICKNESS (EXISTING)	REMOVE (MINIMUM)	REPLACE/NEW (MAXIMUM)	NB/EB	SB/WB		
SR 86	158.92	6943 RCB 10-10'x4'												
			Comments: The culvert is not at grade. Culvert barrel length = 50' Maximum fill height = 3' Structure length = 111'											
SR 86	159.38	6944 RCB 4-10'x5'												
			Comments: The culvert is not at grade. Culvert barrel length = 86' Maximum fill height = 2' Structure length = 45'											
SR 86	160.16	6945 RCB 7-10'x5'												
			Comments: The culvert is not at grade. Culvert barrel length = 68' Maximum fill height = 3' Structure length = 78'											
SR 86	160.70	6484 RCB 5-10'x6'	53'	44'	special steel	Yes	Yes	2"					HS20	84.80
			Comments: The culvert is at grade. Culvert barrel length = 52' Maximum fill height = 1'											
SR 86	161.25	6485 RCB 3-10'x5'	32'	44'	special steel	Yes	Yes	3"					HS20	84.80
			Comments: The culvert is at grade. Culvert barrel length = 52' Maximum fill height = 1'											
SR 86	161.75	6486 RCB 2-10'x6'												
			Comments: The culvert is not at grade. Culvert barrel length = 102' Maximum fill height = 2' Structure length = 21'											
SR 86	162.05	1806 Black Hills Wash Br	128'	44'	H-2-1 railing	Yes	Yes	N/A	N/A	N/A	N/A	N/A	HS18.33	83.36
			Comments: 1. The structure is currently carrying legal load w/o showing any significant distress. 2. Deck surface has extensive fine to medium random cracking. 3. SR 86 is non-NHS, thus railing is compliant. N. railing has sustained severe damage according to 4/05 inspection report.											

ROADWAY ENGINEERING GROUP
ROADWAY PREDESIGN SECTION

DATE: 5/3/2007

FEDERAL REFERENCE NO: 086-A TRACS NO: H8808 01C

Please evaluate the following structures per AASHTO guidelines:

ROUTE NO.	MILEPOST	STR. NO. AND NAME	BRIDGE LENGTH	ROADWAY WIDTH	BRIDGE RAIL / BARRIER			AC OVERLAY			VERTICAL CLEARANCE (MINIMUM)		BRIDGE LOAD RATING	BRIDGE SUFFICIENCY RATING
					TYPE	GEOM. OK	STRUC. OK	THICKNESS (EXISTING)	REMOVE (MINIMUM)	REPLACE/NEW (MAXIMUM)	NB/EB	SB/WB		
SR 86	162.20	1607 Snyder Hill Wash Br	199'	44'	H-2-1 railing	Yes	Yes	N/A	N/A	N/A	N/A	N/A	HS18.33	83.36
			Comments: 1. The structure is currently carrying legal load w/o showing any significant distress. 2. Deck surface has extensive fine to medium map cracking. Joint plates are rusty. Deck has drains. 3. SR 86 is non-NHS, thus railing is compliant.											
SR 86	165.44	6487 RCB 3-10'x4'												
			Comments: The culvert is not at grade. Culvert barrel length = 102' Maximum fill height = 2' Structure length = 32'											
SR 86	165.80	6488 RCB 4-10'x4'												
			Comments: The culvert is not at grade. Culvert barrel length = 87' Maximum fill height = 2' Structure length = 43'											
SR 86	166.28	4622 RCB 4-10'x3'												
			Comments: The culvert is not at grade. Culvert barrel length = 128' Maximum fill height = 2' Structure length = 43'											
		X												
			Comments:											

Evaluation Completed by: Homayoon Saldl, P.E.

Date: 5/3/2007