



Public Works Department  
*City of Apache Junction*  
Home of the Superstition Mountains

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May 7, 2019

Ms. Mona Aglan-Swick, P.E.  
Transportation Systems Management & Operations, Traffic Safety Section  
Arizona Department of Transportation  
1615 W. Jackson ST., MD 065R  
Phoenix, AZ 85007-3217

**Re: Highway Safety Improvement Program (HSIP) Project Determination and Application**

Agency: City of Apache Junction  
Project Name: Ironwood (Baseline to Elliot)  
Project Location: Ironwood (Baseline to Elliot)

Dear Ms. Aglan-Swick:

The City of Apache Junction is submitting herewith a project application for Highway Safety Improvement Program (HSIP) funding. This road safety improvement project was identified through the Pinal County network crash data screening process and meets all requirements of Title 23. The proposed request is for installing 5' paved shoulders and edge line rumble strips on Ironwood Drive from Baseline Avenue to Elliot Road. The existing Safety Pullouts will stay untouched. It does not include any non-infrastructure funding request. These improvements will help address road departure crashes and will be installed by a licensed contractor. There will be ground disturbing activities; no utility relocations are anticipated.

During the most recent five year period ending December 31, 2017, this road experienced 1 fatal and 1 serious injury crash. With a combined Crash Reduction Factor (CRF) of 93% for fatal and serious injury crashes obtained from the CMF Clearinghouse for road departure crashes, the City could see a 5-year reduction of 0.95 fatal crashes and 0.95 serious injury crashes.

The City has determined that, in accordance with 23 USC 148(a)(4)(A), this project is consistent with the State's 2014 SHSP. It supports the Roadway Infrastructure and Operations Emphasis Area and supporting strategy for the state's SHSP. B/C Ratio = 9.1 (Element 44 in Application, Tab 2).

The City has estimated the total project cost of this project to be \$2,008,618. Of that amount, the City requests ADOT determine if \$1,900,447 is HSIP eligible, with \$108,171 being local match. In accordance with Title 23, the Federal share for some of these safety improvement items are eligible to be funded at 100%; some at 94.3% Federal share per 23 U.S.C. 120(c) as described in Code of Federal Register 23 CFR Part 924. Therefore, the City proposes to contribute \$108,171 in matching funds. Furthermore, the City is not requesting reimbursement for staff time for installation.

The City is aware that, if funded, additional HSIP funds above the attached estimated cost are not available to pay for excess costs and that other funds whether STP, local or other will have to be provided or secured by the City to cover the additional costs or the project will have to be withdrawn and resubmitted in the next call-for-projects.

The City agrees to conduct and provide to ADOT TSS on a yearly basis a written before-and-after study utilizing the same crash data included in the countermeasure influence area in order to determine the effectiveness of the countermeasure on fatal and serious injury crashes.

The City further understands that Federal funds can only be used once to install or upgrade either a spot or systemic countermeasure and that once installed, the City will maintain the countermeasure at or above the standard to which it was installed.

If you have any questions, please contact me at 480-474-8515 or email [eschmid@ajcity.net](mailto:eschmid@ajcity.net).

Sincerely,



Emile Schmid, P.E.  
City Engineer

Attachments: Application (Excel format) to include cost estimate, vicinity map and/or list of locations  
B/C Ratio and Crash Data

**FY 23 and FY24 HSIP Application**

<b>Agency:</b>	Apache Junction	<b>Title of Project:</b>	Ironwood (Baseline to Elliot)
<b>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>Contact:</b>		<b>Phone:</b>	<b>E-Mail:</b>
Emile Schmid, PE		480-474-8515	eschmid@ajcity.net
<b>Type of Safety Improvement:</b>	<b>Spot:</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Systemic:</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
<b>Mark all that apply to your project:</b> <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Procurement <input type="checkbox"/> Non-Infrastructure			
<b>Anticipated Total Cost Estimate:</b>		<b>\$0.00</b>	<b>\$ 2,008,618.50</b>
<b>Anticipated dollar amount of HSIP Funding:</b>		<b>\$0.00</b>	<b>\$ 1,900,447.41</b>
<b>Anticipated Dollar amount of Local Match (5.7%) (5.66%):</b>		<b>\$0.00</b>	<b>\$ 108,171.09</b>
<b>Anticipated Dollar amount of Other:</b>		<b>\$0.00</b>	
<b>Funding Source:</b> <input type="checkbox"/> 100% HSIP <input type="checkbox"/> 94.3% <input checked="" type="checkbox"/> 94.34% HSIP	<b>Cost Estimate Tab:</b> 7. 94.3% Cost Estimate		
<b>Administration of Project:</b>	<b>Agency:</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<b>ADOT:</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Name and Title of COG/MPO Representative:</b>		Margaret Herrera, Transportation Safety Program Manager	
<b>Basic Project Information</b>			
<b>Anticipated Design Year (Construction year cannot be the same):</b>		<input checked="" type="checkbox"/> FY23	
<b>If additional ROW is needed, what FY is purchase anticipated?:</b>		<input type="checkbox"/> FY23 <input type="checkbox"/> FY24	
<b>Anticipated Construction Year:</b>		<input checked="" type="checkbox"/> FY24	
<b>1.</b>	<b>Have lower cost countermeasures been considered or implemented?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
<b>1a.</b>	<b>If "Yes", describe: If "No", explain why not:</b>	not identified as priority locations	
<b>2.</b>	<b>Which 23 USC 148 highway safety improvement project category does this project come under?</b>		
<b>2a.</b>	2. Pavement and shoulder widening (including addition of a passing lane to remedy an unsafe condition)		
<b>3.</b>	<b>Describe your safety improvement project in detail: (50 words or less)</b>		
<b>3a.</b>	Widen shoulders to 5' and install rumble strips on Ironwood from Baseline to Elliot. The existing Safety Pullouts will remain untouched.		
<b>4.</b>	<b>Describe the location of this safety project:</b>		

**FY 23 and FY24 HSIP Application**

<b>Agency:</b>	Apache Junction	<b>Title of Project:</b>	Ironwood (Baseline to Elliot)
<b>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>4a.</b>	Ironwood from Baseline to Elliot		
<b>5.</b>	<b>What crash data screening method was used to identify this project?</b>		
<b>5a.</b>	Network screening of most recent five years of crash data ending December 31, 2017 as part of the development of the Pinal County STSP.		
<b>6.</b>	<b>What is the safety justification for the proposed project?</b>		
<b>6a.</b>	to reduce road departure crashes		
<b>7.</b>	<b>Will there be ground disturbing activities?</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<b>8.</b>	<b>Is project within applicants permanent ROW?</b>	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
<b>8a.</b>	<b>If NO please explain:</b>		
<b>9.</b>	<b>Will any temporary right-of-way acquisitions be required?</b>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<b>10.</b>	<b>Will there be any utility relocation needed?</b>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
<b>10a.</b>	<b>If YES please explain:</b>		
<b>11.</b>	<b>Does Section 4(f) apply to any portion of this project?</b>	<input type="checkbox"/> YES	<input type="checkbox"/> NO
<b>11a.</b>	<b>If YES please explain:</b>		
<b>12.</b>	<b>Are there any other issues that may impact or delay development or construction of this project?</b>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

**FY 23 and FY24 HSIP Application**

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<b>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>12a.</b>	If YES please explain:		
<b>13.</b>	Is this project in compliance with revised ADA Standards? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>13a.</b>	If NO please explain:		
<b>14.</b>	Does the project support Arizona's Strategic Highway Safety Plan? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>15.</b>	Are there any Studies, RSA's or Other evaluations that support this project? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
<b>16.</b>	If the project is a traffic control device requiring a warrant, is a copy attached?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
<b>17.</b>	HSIP Roadway Functional Classification:		Rural Major Collector
<b>18.</b>	For projects on State System:	<b>BMP:</b>	<b>EMP:</b>
<b>19.</b>	Average Daily Traffic Volume and Year Collected:		ADT: 8,843 Year: 2018
<b>20.</b>	What is the source of ADT?:	ADOT TDMS	
<b>21.</b>	What is the posted speed limit?	50	
<b>22.</b>	Detailed engineer's cost estimate attached: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>"Systemic" Safety Project</b>			
<b>23.</b>	Completed B/C Ratio Tabulation Sheet Attached (Required): <input type="checkbox"/> YES <input type="checkbox"/> NO		
<b>24.</b>	Most current 5 Years Crash Data from ADOT ALISS database sorted by year & severity (required):		
<b>25.</b>	What are the inclusive dates of the crash data?		
<b>26.</b>	Have all crashes that will not be influenced by this countermeasure been deleted from the crash list? (pedestrian, pedalcycle, etc. as applicable)		
<b>27.</b>	If purchasing equipment or materials, who will install?		<input type="checkbox"/> Town/City <input type="checkbox"/> County <input type="checkbox"/> Tribe <input type="checkbox"/> Contractor
<b>28.</b>	Does the project require proprietary Items (23CFR 635.411)? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>29.</b>	Is a list of locations for systemic projects provided on the attached form? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>30.</b>	How are (will) the proposed locations be prioritized for replacement? (explain below)		
<b>30a.</b>			

FY 23 and FY24 HSIP Application

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<b>District:</b>	Central	<b>Date:</b>	5/7/2019
31.	Are the supporting structures in good condition, meet local standards and have an anticipated service life longer than the countermeasure being installed?		<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>"Spot" Improvement Projects Only</b>			
32.	Completed B/C Ratio Tabulation Sheet Attached (required):		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
33.	Is the most current 5 Years Crash Data from ADOT ALISS database sorted by year & severity attached and in correct format? (required):		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
34.	What are the inclusive dates of the crash data?	2013-2017	
35.	Have all crashes that will not be influenced by this countermeasure been deleted from the crash list? (pedestrian, pedalcycle etc. as applicable)		yes
36.	Have any infrastructure changes occurred within the work limits of this project during the years the crash data covers?		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
37.	If YES please explain:		
38.	Project vicinity map is provided:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
39.	Project work limits map is provided:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
<b>SHSP - All Projects</b>			
40.	Which SHSP Emphasis Area (EA) does this project support?:	Roadway_Infrastructure_and_Operations	
40a.	Which EA Strategy does it support?:	(Lane/Roadway Departure) For vehicles that run off the road for any reason, minimize the potential for overturning or colliding with another object.	
40b.	Does this project support a second SHSP EA? If so, which EA.:		
40c.	Which EA Strategy supports the second EA?		
40d.	Does this project support a third SHSP EA? If so, which EA.:		

**FY 23 and FY24 HSIP Application**

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<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>40e.</b>	Which EA Strategy supports the third EA?		
<b>41.</b>	Does this project support one of the nine FHWA proven countermeasures?: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>41a.</b>	If so, which countermeasure?: Longitudinal Rumble Strips and Stripes on Two-Lane Roads		
<b>42.</b>	Does this project support one of the three Arizona Focus Areas?: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>42a.</b>	If so, which focus area?: Roadway Lane Departure		
<b>43.</b>	Which HSIP Improvement Category does this project support?: Roadway		
<b>43a.</b>	Which HSIP Improvement Sub-Category does this project support?: Rumble strips – edge or shoulder		
<b>44.</b>	Does your COG/MPO have a Strategic Transportation Safety Plan (STSP)?: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>44a.</b>	If "YES", does this project support an Emphasis Area in the COG/MPO STSP?: N/A		
<b>44b.</b>	List the EA: Currently being developed		
<b>44c.</b>	If your COG/MPO has a STSP and it was Federally Funded and you answered NO in 41a, explain why this project is being submitted over a STSP identified project. (For Local Agencies Only)		
<b>44d.</b>	Rational:		
<b>45.</b>	Are any temporary safety countermeasures needed prior to this permanent solution being installed? No		
<b>45a.</b>	If yes, please explain:		
<b>46.</b>	For State Agencies, has the Regional Traffic Engineer been made aware of this potential project and does he/she concur with it? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
<b>Strategic Transportation Safety Plans Funds (COG/MPO)</b>			
<b>47.</b>	What is the date of your last STSP or update completed?		
<b>48.</b>	How many projects that were identified in your last STSP or update were submitted for HSIP funding?		
<b>49.</b>	What was the total dollar amount of the projects in question 45?		
<b>50.</b>	How many projects that were submitted for HSIP funding were eligible and funded by ADOT?		

**FY 23 and FY24 HSIP Application**

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<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>51.</b>	<b>What was the total dollar amount of the projects in question 47?</b>		
<b>B/C Ratio</b>			
<b>52.</b>	<b>The calculated B/C Ratio is:</b>	<b>9.10</b>	<b>CMF ID Number: 7761</b>
			<b>2nd CMF ID No.: 121</b>
			<b>3rd CMF ID NO.:</b>

**HIGHWAY SAFETY IMPROVEMENT PROGRAM  
APPLICATION - COST ESTIMATE**

Agency:		Pinal County	Name of Project:		Ironwood (Baseline to Elliot)				
HSIP Project Cost Estimate Worksheet									
Project Cost Estimate:	Description:	Quantity:	Unit Cost:	Total Cost	HSIP Eligible:	HSIP:	State Match:	Other Amt:	TOTAL COST
						94.30%	5.70%	0.00%	
Planning or Study:		0	\$ -			\$ -	\$ -	\$ -	\$ -
Preliminary Engineering:		1	\$ 200,000.00	\$ 200,000.00	\$ 200,000.00	\$ 188,600.00	\$ 11,400.00	\$ -	\$ 200,000.00
Non-Infrastructure (NI) Elements:		0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ADOT Admin Costs:		1	\$ 60,000.00	\$ 60,000.00	\$ 60,000.00	\$ 56,580.00	\$ 3,420.00	\$ -	\$ 60,000.00
<b>Design Sub-Total</b>				<b>\$ 260,000.00</b>	<b>\$ 260,000.00</b>	<b>\$ 245,180.00</b>	<b>\$ 14,820.00</b>	<b>\$ -</b>	<b>\$ 260,000.00</b>
Inflation Factor		5.00%		\$ 13,000.00	\$ 13,000.00	\$ 12,259.00	\$ 741.00	\$ -	\$ 13,000.00
<b>Total Design Cost</b>				<b>\$ 273,000.00</b>	<b>\$ 273,000.00</b>	<b>\$ 257,439.00</b>	<b>\$ 15,561.00</b>	<b>\$ -</b>	<b>\$ 273,000.00</b>
Construction:	Widen shoulder to 5' along outside edge (mi)	1.85	\$ 550,000.00	\$ 1,017,500.00	\$ 1,017,500.00	\$ 959,502.50	\$ 57,997.50	\$ -	\$ 1,017,500.00
Construction:	Install continuous rumble strips on both sides of both directions (mi)	2	\$ 42,240.00	\$ 84,480.00	\$ 84,480.00	\$ 84,480.00	\$ -	\$ -	\$ 84,480.00
Construction:				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Traffic Control		10.00%		\$ 110,198.00	\$ 110,198.00	\$ 103,916.71	\$ 6,281.29	\$ -	\$ 110,198.00
Mobilization		10.00%		\$ 110,198.00	\$ 110,198.00	\$ 103,916.71	\$ 6,281.29	\$ -	\$ 110,198.00
Sub-Total		0		\$ 1,322,376.00	\$ 1,322,376.00	\$ 1,251,815.93	\$ 70,560.07	\$ -	\$ 1,322,376.00
Sales Tax:	(if applicable)	10.00%		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Sub-Total</b>				<b>\$ 1,322,376.00</b>	<b>\$ 1,322,376.00</b>	<b>\$ 1,251,815.93</b>	<b>\$ 70,560.07</b>	<b>\$ -</b>	<b>\$ 1,322,376.00</b>
Construction Admin :		14.00%		\$ 185,132.64	\$ 185,132.64	\$ 175,254.23	\$ 9,878.41	\$ -	\$ 185,132.64
Contingencies :		5.00%		\$ 66,118.80	\$ 66,118.80	\$ 62,590.80	\$ 3,528.00	\$ -	\$ 66,118.80
Post Design:		1.00%		\$ 13,223.76	\$ 13,223.76	\$ 12,518.16	\$ 705.60	\$ -	\$ 13,223.76
Communications:		5.00%		\$ 66,118.80	\$ 66,118.80	\$ 62,590.80	\$ 3,528.00	\$ -	\$ 66,118.80
<b>Post Sub-Total</b>				<b>\$ 330,594.00</b>	<b>\$ 330,594.00</b>	<b>\$ 312,953.98</b>	<b>\$ 17,640.02</b>	<b>\$ -</b>	<b>\$ 330,594.00</b>
<b>Construction Sub-Total</b>				<b>\$ 1,652,970.00</b>	<b>\$ 1,652,970.00</b>	<b>\$ 1,564,769.91</b>	<b>\$ 88,200.09</b>	<b>\$ -</b>	<b>\$ 1,652,970.00</b>
Inflation Factor		5.00%		\$ 82,648.50	\$ 82,648.50	\$ 78,238.50	\$ 4,410.00	\$ -	\$ 82,648.50
<b>Construction Total</b>				<b>\$ 1,735,618.50</b>	<b>\$ 1,735,618.50</b>	<b>\$ 1,643,008.41</b>	<b>\$ 92,610.09</b>	<b>\$ -</b>	<b>\$ 1,735,618.50</b>
<b>TOTAL REQUEST</b>				<b>\$ 2,008,618.50</b>	<b>\$ 2,008,618.50</b>	<b>\$ 1,900,447.41</b>	<b>\$ 108,171.09</b>	<b>\$ -</b>	<b>\$ 2,008,618.50</b>

**Comments:** Widen shoulder: Abdel-Aty, M.A., C. Lee, J. Park, J.Wang, M. Abuzwidah, and S. Al-Arifi. "Validation and Application of Highway Safety Manual (Part D) in Florida." Florida Department of Transportation. Tallahassee, Florida. (May 2014).

CMF ID # 7761, CMF = 0.31, CRF = 0.69, reduces all severity run-off road crashes in rural areas

Install continuous milled-in shoulder rumble strips:

CMF ID # 121, CMF=0.21, CRF=0.79, reduces crashes of all severity run-off crashes in rural areas

**Required for all HSIP Applications**

<b>Agency:</b>	<b>Apache Junction</b>	<b>Title of Project:</b>	<b>Ironwood (Baseline to Elliot)</b>
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**Benefit / Cost Ratio Tabulation**

**Annual Benefit Tabulation**

Severity	Annual Average	Estimated CRF* Reduction	Total Reduction	Unit Cost	Annual Benefit
Fatal	<b>0.20</b>	<b>93%</b>	0.19	\$9,515,371	\$1,769,859
Incapacitating Injury	<b>0.20</b>	<b>93%</b>	0.19	\$550,499	\$102,393
<b>Total Annual Benefits</b>					<b>\$1,872,252</b>

**Costs**

Total Project Cost	\$2,008,619
Project Life (years)	20
Interest Rate (%)	8%
Capital Recovery Factor	0.1019
Annual Construction Cost	\$204,582
Annual Maintenance Cost	\$300.00
<b>Total Annual Costs</b>	<b>\$204,882</b>

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$1,872,252	\$204,882	9.1

**\*REQUIRED: Use 4 and 5 star CMFs from ADOT Lists Only at Tabs 11 - 12 preferred. The CMF's CRF is used in the above calculation**

Widen shoulder: CMF ID # 7761, CRF = 69%, reduces all severity run-off road crashes in rural areas  
 Install continuous milled-in shoulder rumble strips: CMF ID # 121, CRF=79%, reduces crashes of all severity run-off crashes in rural areas.  
 $CCRF = 1 - (1 - 0.69) * (1 - 0.79) = .9349$  or 93%

**Required for all HSIP Applications**

<b>Agency:</b>	Pinal County	<b>Title of Project:</b>	<b>Ironwood B/C for Rumble Strip (Baseline to Elliot)</b>
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**Benefit / Cost Ratio Tabulation**

**Annual Benefit Tabulation**

Severity	Annual Average	Estimated CRF* Reduction	Total Reduction	Unit Cost	Annual Benefit
Fatal	<b>0.20</b>	<b>79%</b>	0.16	\$9,515,371	\$1,503,429
Incapacitating Injury	<b>0.20</b>	<b>79%</b>	0.16	\$550,499	\$86,979
Total Annual Benefits					\$1,590,407

**Costs**

Total Project Cost	\$80,345
Project Life (years)	15
Interest Rate (%)	8%
Capital Recovery Factor	0.1168
Annual Construction Cost	\$9,387
Annual Maintenance Cost	\$150.00
Total Annual Costs	\$9,537

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$1,590,407	\$9,537	166.7

**\*REQUIRED: Use 4 and 5 star CMFs from ADOT Lists Only at Tabs 11 - 12 preferred. The CMF's CRF is used in the above calculation**

Install continuous milled-in shoulder rumble strips:  
 CMF ID # 121, CMF=0.21 , CRF=0.79, reduces crashes of all severity run-off crashes in rural areas

**Required for all HSIP Applications**

<b>Agency:</b>	Pinal County	<b>Title of Project:</b>	<b>Individual B/C ratio for Ironwood (Baseline to Elliot) - Shoulder</b>
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**Benefit / Cost Ratio Tabulation**

**Annual Benefit Tabulation**

Severity	Annual Average	Estimated CRF* Reduction	Total Reduction	Unit Cost	Annual Benefit
Fatal	0.20	69%	0.14	\$9,515,371	\$1,313,121
Incapacitating Injury	0.20	69%	0.14	\$550,499	\$75,969
Total Annual Benefits					\$1,389,090

**Costs**

Total Project Cost	\$1,928,274
Project Life (years)	20
Interest Rate (%)	8%
Capital Recovery Factor	0.1019
Annual Construction Cost	\$196,399
Annual Maintenance Cost	\$150.00
Total Annual Costs	\$196,549

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$1,389,090	\$196,549	7.0

**\*REQUIRED: Use 4 and 5 star CMFs from ADOT Lists Only at Tabs 11 - 12 preferred. The CMF's CRF is used in the above calculation**

Widen shoulder: Abdel-Aty, M.A., C. Lee, J. Park, J.Wang, M. Abuzwidah, and S. Al-Arifi. "Validation and Application of Highway Safety Manual (Part D) in Florida." Florida Department of Transportation. Tallahassee, Florida. (May 2014).

CMF ID # 7761, CMF = 0.31, CRF = 0.69, reduces all severity run-off road crashes in rural areas

Id	Date	Date	Time	Onroad	CrossingFeature	Offset	InjurySeverity	FirstHarmful	CollisionManner Desc	LightCondition	Weather	IntersectionType Desc	JunctionRelation Desc	TrafficWayType	UnitTravelDirectionDesc	UnitActionDesc	UnitRoadConditionDesc1	SurfaceCondition	EnvCondition	UnitDefect	UnitNumber	UnitEvent Sequence	UnitEvent Sequence	UnitEvent Sequence	UnitEvent Sequence	PersonSafety Device	PersonViolation	PersonPhysical	PersonPhysical
2784798	11/13/2013 16:43	11/13/2013	4:43:00 PM	11 IRONWOOD DR	Guadalupe Rd	0.25	Fatal	Other Fixed Object	Single Vehicle	Dusk	Clear	Not At An Intersection	Not Junction Related	two way Divided Unprotected Painted 4 Feet Median	1 - North	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Ran Off Road Right	Fire Explosion	Traffic Sign Support	Other Fixed Object	None Used	Speed To Fast For Conditions		
3308235	11/29/2017 11:35	11/29/2017	11:35:00 AM	11 IRONWOOD DR	Guadalupe Rd	0	Suspected Serious Injury	Motor Vehicle In Transport	Other	Daylight	Clear	Not At An Intersection	Not Junction Related	two way Divided Positive Median Barrier	2 - South	Going Straight Ahead	Lane Shift Closure	Dry			1	Overturn Rollover	Motor Vehicle In Transport			Not Reported	Speed To Fast For Conditions	0 - No Apparent Influence	



Ironwood Rd Project Limit

