



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: Apache Trail & Superstition Blvd Street Lighting  
Project Location: Apache Trail (Meridian to SR 88) & Superstition Blvd (Meridian to SR 88)

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 the installation of street lighting on Apache Trail and Superstition Boulevard from Meridian Drive to SR 88. Intersections and segments that already contain highway lighting are excluded from this funding request. On Apache Trail, for segments which have lighting installed on one side only, lighting for the opposite side is included to ensure proper illumination for the entire roadway width. It does not include any non-infrastructure funding request. Installation of street lighting will help address the pattern of nighttime crashes on these 2 streets. The work will be completed by a licensed contractor. There will be ground disturbing work.

During the most recent five year period ending December 31, 2017, these 2 streets experienced 4 fatal and 1 incapacitating nighttime crashes. With a Crash Reduction Factor (CRF) of 49% for nighttime fatal crashes and 46% for nighttime incapacitating crashes obtained from the CMF Clearinghouse, the City could see a 5-year reduction of 1.95 fatal crashes and 0.45 serious injury crashes.

The City of Apache Junction 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 SHSP. B/C Ratio = 13.2 (Element 44 in Application, Tab 2).

The City has estimated the total project cost of this project to be \$2,436,000. In accordance with Title 23, the Federal share for this safety improvement item is eligible to be funded at 100% Federal share per 23 U.S.C. 120(c) as described in Code of Federal Register 23 CFR Part 924. Therefore, the City does not propose to contribute any match for the above mentioned project. 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>	Apache Trail (Meridian to SR 88) & Supersition Blvd (Meridian to SR 88)
<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>\$ 2,436,000.00</b>
<b>Anticipated dollar amount of HSIP Funding:</b>		<b>\$0.00</b>	<b>\$ 2,436,000.00</b>
<b>Anticipated Dollar amount of Local Match (5.7%) (5.66%):</b>		<b>\$0.00</b>	
<b>Anticipated Dollar amount of Other:</b>		<b>\$0.00</b>	
<b>Funding Source:</b>	<input checked="" type="checkbox"/> 100% HSIP <input type="checkbox"/> 94.3% <input 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>	Lack of funds	
<b>2.</b>	<b>Which 23 USC 148 highway safety improvement project category does this project come under?</b>		
<b>2a.</b>	28. A physical infrastructure safety project not described in 1 - 27 above		
<b>3.</b>	<b>Describe your safety improvement project in detail: (50 words or less)</b>		
<b>3a.</b>	Installation of highway lighting on Apache Trail (Meridian to SR-88) and Superstition Blvd (from Meridian to SR-88, excluding Monterey Dr to Idaho Rd). Intersections and segments along these corridors that already have lighting installed are excluded from this project.		
<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>	Apache Trail (Meridian to SR 88) & Supersition Blvd (Meridian to SR 88)
<b>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>4a.</b>	on Apache Trail (from Main Dr to Phelps Dr) on Superstition Blvd (from Meridian to SR-88, excluding Monterey Dr to Idaho Rd) Intersections are excluded where highway lighting has been previously installed.		
<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 improve nighttime safety by addressing nighttime 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 checked="" 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**

<b>Agency:</b>	Apache Junction	<b>Title of Project:</b>	Apache Trail (Meridian to SR 88) & Supersition Blvd (Meridian to SR 88)
<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>	<b>HSIP Roadway Functional Classification:</b>		Urban Principal Arterial - Other
<b>18.</b>	<b>For projects on State System:</b>	<b>BMP:</b>	<b>EMP:</b>
<b>19.</b>	<b>Average Daily Traffic Volume and Year Collected:</b>		ADT: 18,597 Year: 2018
<b>20.</b>	<b>What is the source of ADT?:</b>	ADOT TDMS	
<b>21.</b>	<b>What is the posted speed limit?</b>	40	
<b>22.</b>	Detailed engineer's cost estimate attached: <input type="checkbox"/> YES <input checked="" 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>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<b>District:</b>	Central	<b>Date:</b>	5/7/2019
<b>31.</b>	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>			
<b>32.</b>	Completed B/C Ratio Tabulation Sheet Attached (required):		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
<b>33.</b>	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
<b>34.</b>	What are the inclusive dates of the crash data?	2013-2017	
<b>35.</b>	Have all crashes that will not be influenced by this countermeasure been deleted from the crash list? (pedestrian, pedalcycle etc. as applicable)		yes
<b>36.</b>	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
<b>37.</b>	If YES please explain:		
<b>38.</b>	Project vicinity map is provided:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
<b>39.</b>	Project work limits map is provided:		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
<b>SHSP - All Projects</b>			
<b>40.</b>	Which SHSP Emphasis Area (EA) does this project support?:	Roadway_Infrastructure_and_Operations	
<b>40a.</b>	Which EA Strategy does it support?:	(Lane/Roadway Departure) Reduce the frequency and severity of land- and roadway-departure crashes through roadway infrastructure improvements.	
<b>40b.</b>	Does this project support a second SHSP EA? If so, which EA.:		
<b>40c.</b>	Which EA Strategy supports the second EA?		
<b>40d.</b>	Does this project support a third SHSP EA? If so, which EA.:		

**FY 23 and FY24 HSIP Application**

<b>Agency:</b>	Apache Junction	<b>Title of Project:</b>	Apache Trail (Meridian to SR 88) & Supersition Blvd (Meridian to SR 88)
<b>County:</b>	Pinal	<b>COG/MPO:</b>	MAG
<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 type="checkbox"/> YES <input checked="" type="checkbox"/> NO
<b>41a.</b>	If so, which countermeasure?:		
<b>42.</b>	Does this project support one of the three Arizona Focus Areas?:		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
<b>42a.</b>	If so, which focus area?:		
<b>43.</b>	Which HSIP Improvement Category does this project support?:		Lighting
<b>43a.</b>	Which HSIP Improvement Sub-Category does this project support?:		
	Continuous roadway lighting		
<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>County:</b>	Pinal	<b>COG/MPO:</b>	MAG	
<b>District:</b>	Central	<b>Date:</b>	5/7/2019	
<b>51.</b>	What was the total dollar amount of the projects in question 47?			
<b>B/C Ratio</b>				
<b>52.</b>	The calculated B/C Ratio is:	13.20	<b>CMF ID Number:</b>	2844
			<b>2nd CMF ID No.:</b>	2845
			<b>3rd CMF ID NO.:</b>	

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

Agency:		Pinal County		Name of Project:		Apache Trail ( Meridian to SR 88) & Supersition ( Meridian to SR 88)			
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	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ 250,000.00	\$ -	\$ -	\$ 250,000.00
Non-Infrastructure (NI) Elements:		0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ADOT Admin Costs:		1	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	\$ -	\$ -	\$ 150,000.00
<b>Design Sub-Total</b>				<b>\$ 400,000.00</b>	<b>\$ 400,000.00</b>	<b>\$ 400,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 400,000.00</b>
Inflation Factor		5.00%		\$ 20,000.00	\$ 20,000.00	\$ 20,000.00	\$ -	\$ -	\$ 20,000.00
<b>Total Design Cost</b>				<b>\$ 420,000.00</b>	<b>\$ 420,000.00</b>	<b>\$ 420,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 420,000.00</b>
Construction:	Install highway lighting on Apache Tr, 200' spacing (EA) - includes all associated costs, including electrical connection, conduit, etc.	78	\$ 10,000.00	\$ 780,000.00	\$ 780,000.00	\$ 780,000.00	\$ -	\$ -	\$ 780,000.00
Construction:	Install highway lighting on Superstition Blvd, 200' spacing (EA) - includes all associated costs, including electrical connection, conduit, etc.	50	\$ 10,000.00	\$ 500,000.00	\$ 500,000.00	\$ 500,000.00	\$ -	\$ -	\$ 500,000.00
Construction:							\$ -	\$ -	\$ -
Traffic Control		10.00%		\$ 128,000.00	\$ 128,000.00	\$ 128,000.00	\$ -	\$ -	\$ 128,000.00
Mobilization		10.00%		\$ 128,000.00	\$ 128,000.00	\$ 128,000.00	\$ -	\$ -	\$ 128,000.00
Sub-Total		0		\$ 1,536,000.00	\$ 1,536,000.00	\$ 1,536,000.00	\$ -	\$ -	\$ 1,536,000.00
Sales Tax:	(if applicable)	10.00%		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Sub-Total</b>				<b>\$ 1,536,000.00</b>	<b>\$ 1,536,000.00</b>	<b>\$ 1,536,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,536,000.00</b>
Construction Admin :		14.00%		\$ 215,040.00	\$ 215,040.00	\$ 215,040.00	\$ -	\$ -	\$ 215,040.00
Contingencies :		5.00%		\$ 76,800.00	\$ 76,800.00	\$ 76,800.00	\$ -	\$ -	\$ 76,800.00
Post Design:		1.00%		\$ 15,360.00	\$ 15,360.00	\$ 15,360.00	\$ -	\$ -	\$ 15,360.00
Communications:		5.00%		\$ 76,800.00	\$ 76,800.00	\$ 76,800.00	\$ -	\$ -	\$ 76,800.00
<b>Post Sub-Total</b>				<b>\$ 384,000.00</b>	<b>\$ 384,000.00</b>	<b>\$ 384,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 384,000.00</b>
<b>Construction Sub-Total</b>				<b>\$ 1,920,000.00</b>	<b>\$ 1,920,000.00</b>	<b>\$ 1,920,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,920,000.00</b>
Inflation Factor		5.00%		\$ 96,000.00	\$ 96,000.00	\$ 96,000.00	\$ -	\$ -	\$ 96,000.00
<b>Construction Total</b>				<b>\$ 2,016,000.00</b>	<b>\$ 2,016,000.00</b>	<b>\$ 2,016,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,016,000.00</b>
<b>TOTAL REQUEST</b>				<b>\$ 2,436,000.00</b>	<b>\$ 2,436,000.00</b>	<b>\$ 2,436,000.00</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 2,436,000.00</b>

**Comments:**

Install highway lighting: Elvik, R. and Vaa, T., "Handbook of Road Safety Measures." Oxford, United Kingdom, Elsevier, (2004)

CMF ID# 571, CMF - 31%, CRF - 72%, reduces all types of fatal crashes in all areas

**Required for all HSIP Applications**

<b>Agency:</b>	Pinal County	<b>Title of Project:</b>	<b>Apache Trail (Meridian to SR 88) &amp; Supersition Blvd (Meridian to SR 88)</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>0.80</b>	<b>49%</b>	0.39	\$9,515,371	\$3,730,025
Incapacitating Injury	<b>0.20</b>	<b>46%</b>	0.09	\$550,499	\$50,646
Total Annual Benefits					\$3,780,671

**Costs**

Total Project Cost	\$2,436,000
Project Life (years)	15
Interest Rate (%)	8%
Capital Recovery Factor	0.1168
Annual Construction Cost	\$284,597
Annual Maintenance Cost	\$300.00
Total Annual Costs	\$284,897

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$3,780,671	\$284,897	13.2

**\*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**

CMF ID 2844 Install Lighting: 49% CRF Nighttime, Severity K CMF ID 2845 Install Lighting: 46% Nighttime, Severity A

**Required for all HSIP Applications**

<b>Agency:</b>	Pinal County	<b>Title of Project:</b>	<b>Apache Trail (Meridian to SR 88) &amp; Supersition Blvd (Meridian to SR 88)</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>49%</b>	0.10	\$9,515,371	\$932,506
Incapacitating Injury	<b>0.00</b>	<b>46%</b>	0.00	\$550,499	\$0
Total Annual Benefits					\$932,506

**Costs**

Total Project Cost	\$1,485,960
Project Life (years)	15
Interest Rate (%)	8%
Capital Recovery Factor	0.1168
Annual Construction Cost	\$173,604
Annual Maintenance Cost	\$300.00
Total Annual Costs	\$173,904

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$932,506	\$173,904	5.3

**\*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**

CMF ID 2844 Install Lighting: 49% CRF Nighttime, Severity K CMF ID 2845 Install Lighting: 46% Nighttime, Severity A

**Required for all HSIP Applications**

<b>Agency:</b>	Pinal County	<b>Title of Project:</b>	<b>Apache Trail (Meridian to SR 88) &amp; Supersition Blvd (Meridian to SR 88)</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>0.60</b>	<b>49%</b>	0.29	\$9,515,371	\$2,797,519
Incapacitating Injury	<b>0.20</b>	<b>46%</b>	0.09	\$550,499	\$50,646
Total Annual Benefits					\$2,848,165

**Costs**

Total Project Cost	\$950,040
Project Life (years)	15
Interest Rate (%)	8%
Capital Recovery Factor	0.1168
Annual Construction Cost	\$110,993
Annual Maintenance Cost	\$300.00
Total Annual Costs	\$111,293

**Benefit / Cost**

Annual Benefit	Annual cost	Benefit / Cost Ratio
\$2,848,165	\$111,293	25.5

**\*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**

CMF ID 2844 Install Lighting: 49% CRF Nighttime, Severity K CMF ID 2845 Install Lighting: 46% Nighttime, Severity A

Id	Date	Date	Time	Onroad	CrossingFeature	Offset	InjurySeverity	FirstHarmful	CollisionManner Desc	LightCondition	Weather	IntersectionTypeDesc	JunctionRelation Desc	TrafficWayType	UnitTravelDirectionDesc	UnitAction Desc	UnitRoadConditionDesc1	SurfaceCondition	EnvCondition	UnitDefect	UnitNumber	UnitEvent Sequence	UnitEvent Sequence	UnitEvent Sequence	UnitEvent Sequence	PersonSafety Device	PersonViolation	PersonPhysical	PersonPhysical
2831704	2/14/2014 22:58	2/14/2014	10:58:00 PM	11 APACHE TR L 0	Thunderbird Dr	100	Fatal	Overturn Rollover	Single Vehicle	Dark Lighted	Clear	Four Way Intersection	Intersection Related Non Interchange	Two way Divided Positive Median Barrier	4 - West	Slowing In Trafficway	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Overturn Rollover				None Used	Speed To Fast For Conditions		
2783347	9/5/2013 5:31	9/5/2013	5:31:00 AM	11 SUPERSTITION BLVD	Pinyon Dr	150	Fatal	Pedalcycle	Other	Dawn	Clear	Not At An Intersection	Not Junction Related	Two Way Not Divided	1 - North	Changing Lanes	No Contributing Circumstances	Dry	No Contributing Circumstances		1	Motor Vehicle In Transport				Unknown	Drove Into Opposing Traffic Lane		
2952733	5/1/2015 20:12	5/1/2015	8:12:00 PM	11 SUPERSTITION BLVD	Valley Dr	200	Fatal	Motor Vehicle In Transport	Head On	Dark Lighted	Clear	Not At An Intersection	Not Junction Related	Two way Not Divided With Continuous Left Turn Lane	3 - East	Going Straight Ahead	Unknown	Dry	Unknown	Unknown	1	Cross Centerline	Motor Vehicle In Transport			None Used	Speed To Fast For Conditions		
3270396	8/25/2017 19:28	8/25/2017	7:28:00 PM	11 SUPERSTITION BLVD	Valley Dr	-400	Fatal	Pedalcycle	Other	Dark Not Lighted	Clear	Not At An Intersection	Not Junction Related	Two way Not Divided With Continuous Left Turn Lane	4 - West	Crossing Road	Unknown	Dry	Unknown		1	Motor Vehicle In Transport			None Used	Knowingly Operated With Faulty Missing Equipment			
3151085	10/3/2016 21:22	10/3/2016	9:22:00 PM	11 SUPERSTITION BLVD	Ironwood Dr	-238	Suspected Serious Injury	Motor Vehicle In Transport	Angle (Front To Side)(Other Than Left Turn)	Dark Lighted	Clear	Not At An Intersection	Not Junction Related	Two way Not Divided With Continuous Left Turn Lane	2 - South	Going Straight Ahead	No Contributing Circumstances	Dry	No Contributing Circumstances	No Contributing Circumstances	1	Motor Vehicle In Transport				Air Bag Deployed/Shoulder-Lap Belt	Inattention Distraction	0 - No Apparent Influence	



# Apache Trail and Superstition Blvd Project Limit

