FINAL
PRE-SCOPING DOCUMENT

FOR

CASA GRANDE PEDESTRIAN HYBRID BEACON SYSTEM ENHANCEMENT PROJECT

FLORENCE BLVD/STATE ROUTE 287
Between Cacheris Court and Camino Mercado

PLANNNING NO. ADOT11-00000507
MPD TASK ASSIGNMENT NO. MPD 005-16

December 2015

Prepared For:

THE CITY OF CASA GRANDE

Prepared By:

Kimley»Horn

333 East Wetmore Road, Suite 280

Tucson, AZ 85705

GENERAL PROJECT INFORMATION	
Date: December 10, 2015	**ADOT Project Manager:** Charla Glendening
Project Name: Pedestrian Hybrid Beacon / System Enhancement	
City/Town Name: Casa Grande	**County:** Pinal
Primary Route/Street: Florence Boulevard/SR 287	
Beginning Limit: Cacheris Court easterly radius return	
End Limit: Camino Mercado westerly radius return	
Project Length: 1,100'	
Right-of-Way Ownership(s) (where proposed project construction would occur)**:** *(Check all that apply)* ☒ City/Town**;** ☐ County; ☐ ADOT ; ☐ Private ; ☐ Federal; ☐ Tribal; ☐ Other:	
Adjacent Land Ownership(s): *(Check all that apply)* ☐ City/Town; ☐ County; ☐ ADOT; ☒ Private; ☐ Federal; ☐ Tribal; ☐ Other: *http://gis.azland.gov/webapps/parcel/*	

LOCAL PUBLIC AGENCY (LPA) or TRIBAL GOVERNMENT INFORMATION *(If applicable)*	
LPA/Tribal Name: City of Casa Grande	
LPA/Tribal Contact: Duane Eitel, P.E.	
Email Address: deitel@casagrandeaz.gov	**Phone Number:** (480) 600-2091
Administration: ☒ ADOT Administered ☐ Self-Administered ☐ Certification Acceptance	

PROJECT NEED

A review of crash data demonstrates multiple motor vehicle-pedestrian crashes at the project location: 1,000 ft. west of Camino Mercado on Florence Boulevard, also known as SR287. As referenced in the City of Casa Grande's application for HSIP funding:

"During a five year period, July 1, 2009 to June 30, 2014, 39 total accidents occurred at SR287/Florence Boulevard approximately 1,000 ft. west of Camino Mercado. Of these thirty-nine (39) crashes, [there were] three (3) fatal (two of these involving pedestrians), one (1) incapacitating, four (4) non-incapacitating, four (4) possible injury, and twenty-four (24) property damage only accidents. The manner of collisions included, four (4) pedestrian, eleven (11) rear-end, six (6) left turn, one (1) right turn, one (1) Right-on-red, seven (7) sideswipe, six (6) angle, one (1) fail to yield, and one (1) fixed object."

A crash data summary is included in Attachment 6.

The City of Casa Grande calculated a Combined Crash Reduction Factor (CCRF) for this location which states that if the Pedestrian Beacon were installed, the CCRF would be 52% with a benefit to cost ratio of 22.52 (refer to Attachment 7).

ADOT's DRAFT Pedestrian Hybrid Beacon Evaluation Guidelines employs a point system to determine if a PHB should be considered at a location. Application of the Guidelines for this location results in a score of 47. A minimum score of 35 points merits Pedestrian Hybrid Beacon consideration. The following chart lists the Pedestrian Hybrid Beacon Evaluation Guidelines question number, topic area, the criteria for points based on the topic, and the points for this proposed location (see the chart on next page).

ADOT Draft Pedestrian Hybrid Beacon Evaluation Guidelines Topic Areas, Criteria, and Points

Question	Topic	Criteria	Points
1	Pedestrian crashes	5 points each	20
2	Average peak hour pedestrian volumes	11-20 (assumed)	2
3	Location of nearby signal	500-1000 (future Mercado)	0
4	Posted speed limit	40-45 mph	4
5	Roadway traffic volumes	15,000+ vehicles per day	6
6	No raised median	Yes or No, 5 if Yes	5
7	Shared use path crosses at this point	Yes or No, 5 if Yes	0
8	Within 500 feet of pedestrian activity generator	Yes or No, 5 if Yes	5
9	Is the location have roadway illumination	Yes or No, 5 if Yes	0
10	Is crossing greater than 36’	Yes or No, 5 if Yes	5
TOTAL			**47**

PROJECT PURPOSE			
What is the Primary Purpose of the Project?	Preservation ☐	Modernization ☒	Expansion ☐

The purpose of the project is to reduce the number of pedestrian-motor vehicle crashes at the proposed location, and enhance the ability of pedestrians to safely and comfortably cross Florence Blvd. The project will include a Pedestrian Hybrid Beacon (PHB), crosswalk striping, signage, and lighting.

This pre-scoping report identifies a preferred location for the PHB, as is illustrated in Attachment 2.

PROJECT TYPE		
Pavement Preservation ☐	Roadway Widening ☐	System Enhancement ☒
Bridge Scour/Rehab ☐	Bridge Replacement ☐	Sign Replacement ☐
Other ☐ :		

PROJECT RISKS	
Check any risks identified that may impact the project's scope, schedule, or budget:	
☒ Access / Traffic Control / Detour Issues	☒ Right-of-Way
☐ Constructability / Construction Window Issues	☒ Environmental
☒ Stakeholder Issues	☒ Utilities
☐ Structures & Geotech	☒ Other: Median Refuge, Traffic Operations, Future Development, ADA

Risk Description:

Access/Traffic Control /Detour Issues – If it is determined during final design that to jack and bore the conduit under the roadway is not viable, then trenching must be performed. Since Florence Boulevard is a major arterial, the project specifications must be very clear on acceptable trenching/construction time limits when in the roadway both on an hourly/daily basis (avoiding peak hours) as well as constraining the total timeframe of the construction task to a reasonable number of days. Additionally, implementing a construction detour is not feasible, as this would likely require detours of several miles in length, and/or utilization of unpaved roadways or would require traffic to utilize a different exit from the freeway. Temporary detours are possible but would likely be cost prohibitive due to temporary paving that would be required on private property.

Stakeholder Issues – The PHB crossing will serve all of the public in the area, but will primarily impact employees, visitors, and patrons of two hotels on the south side of Florence Boulevard, and a convenience store/service station on the north side of Florence Boulevard. These private property owners and stakeholders should be consulted during the PHB final design. Hotel owners/operators may wish to improve their properties to allow their patrons more convenient access to the PHB crossing.

Right of Way – The existing ROW is 100', 50' each side of the centerline of Florence Boulevard. Although existing right of way is anticipated to be sufficient for the final improvements, TCE's may become necessary for the following reasons during construction.

1. If the design team elects to jack and bore the conduit underneath Florence Boulevard (connecting the PHBs), the equipment and trenching to perform that work may require a TCE during construction and for returning the private property back to the original condition.
2. Depending on traffic information gathered and reviewed in final design in combination with the preference of City officials, the design team should weigh the cost of the TCE and signal installation work performed on the "shoulder" versus the cost of traffic control and working from the roadway.

Environmental – There are no significant environmental concerns on the project. Based on ADOT EPGs current guidance, a MAP-21 Group 1 CE with documentation is the appropriate clearance for the project. Environmental clearance efforts will include an Urban Project Biological Evaluation (UPBE), a Preliminary Initial Site Assessment (PISA) and a Class I Literature Review for cultural resources. Any areas that have not been surveyed for cultural resources in the past 10 years will also need a pedestrian survey completed as part of the clearance effort. EPG timeframe for processing clearances is about 8 months. The project team should allow adequate time to obtain the environmental clearance or make arrangements with EPG for an expedited clearance in advance.

PROJECT RISKS (CONTINUED)

Check any risks identified that may impact the project's scope, schedule, or budget:

☒ Access / Traffic Control / Detour Issues	☒ Right-of-Way
☐ Constructability / Construction Window Issues	☒ Environmental
☒ Stakeholder Issues	☒ Utilities
☐ Structures & Geotech	☒ Other: Traffic Operations, Future Development, ADA

Risk Description:

Utilities –A requested Blue-stake design ticket identified the following utilities within the project vicinity:

Agency/Utility	Description	Agency/Utility	Description
ADOT	Culvert/Storm Drain	Cox Communications	CATV, Fiber
Arizona Public Service (APS)	Electric Power	CenturyLink	Coaxial, Fiber
Arizona Water Company	Waterline	Electrical District No 2	Electrical, Street Lights
City of Casa Grande	Communications, Electric, Telephone, Fiber Optic, Sewer, Street Lighting, Traffic Signals, Water	Hohokam Irrigation & Drainage District	Electric
		San Carlos Irrigation Project	Electric
		Southwest Gas	Gas

Coordination is necessary with the power company(s) to determine the location of the power drop for the signal and lighting. Existing utility lines along the edges of the roadway could make it difficult to locate a corridor for the new power line. All utilities will need to have both horizontal and vertical designation at the crossing location in order to determine the location for conduit to be trenched or jack and bore under the roadway for the signal connectivity. This designation will be paid for by the City of Casa Grande. It is anticipated that with standard locating techniques to pothole potential utility conflicts, utility relocations can be avoided.

Other: Traffic Operations – A traffic signal is scheduled for installation in Fall/Winter 2015 at the intersection of Camino Mercado and Florence Boulevard. It is anticipated that, when warranted, a traffic signal may also be installed at Cacheris Court. The PHB will need to be coordinated with future adjacent traffic signals. The location of the PHB will necessitate preemption of one or both of the future signals when the PHB is activated. A traffic analysis is recommended to ensure that traffic clears at the crossing.

Other: Future Development – Several parcels adjacent to the PHB are not yet fully developed. It is recommended that the final design team review all future development plans within the vicinity of the PHB to maximize use and utility of the PHB to serve as many developments as possible.

Other: ADA Requirements – Based on limited field review performed by the pre-scoping team, ADA requirements within the project vicinity appear to be met as sidewalks and ramps are on both sides of the roadway. All new facilities must meet current ADA requirements. It is not anticipated that existing facilities would need to be removed to bring the project area into ADA compliance.

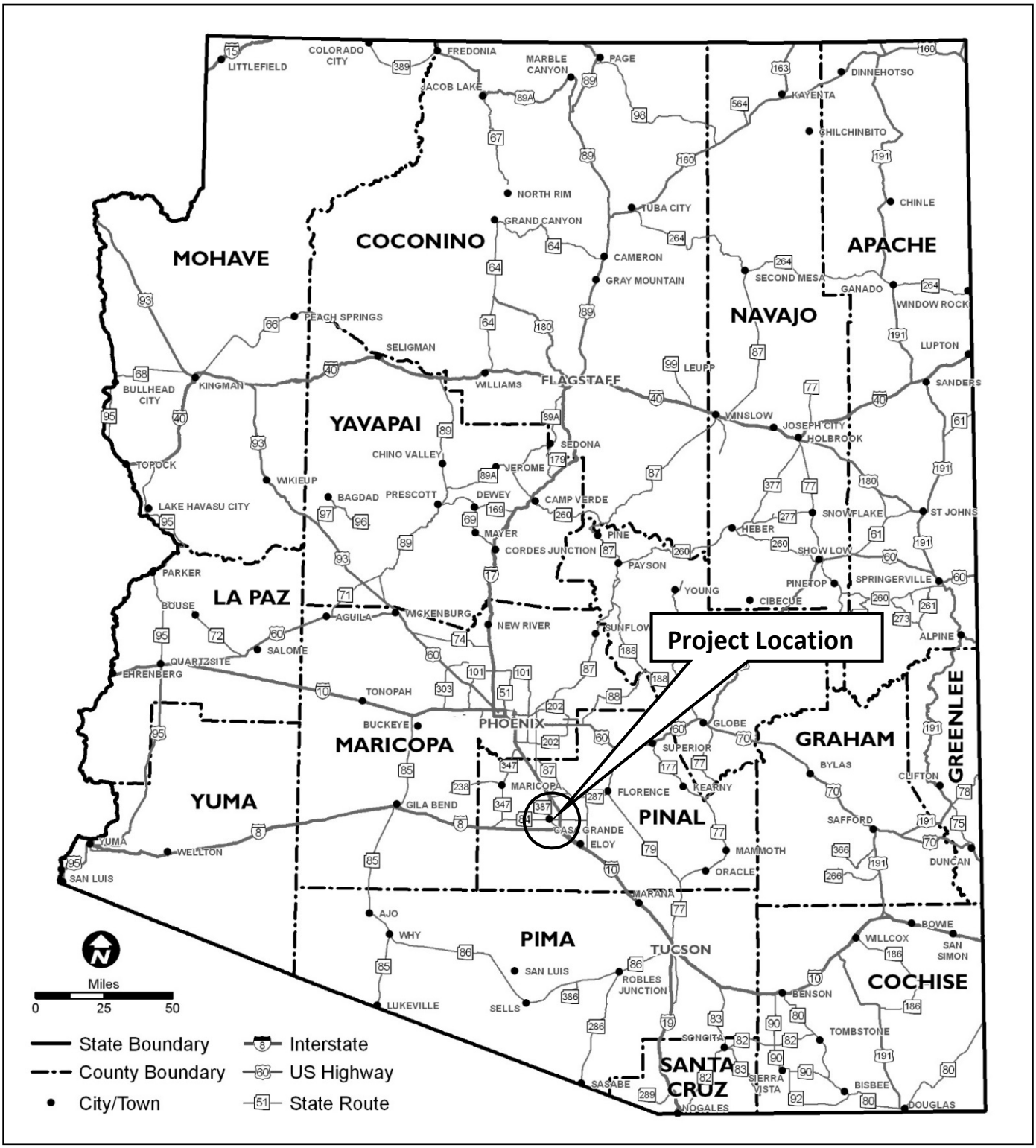
FUNDING SOURCE(S)				
Anticipated Project Design/Construction Funding Type: *(Check all that apply)*	☐ STP	☐ TAP	☒ HSIP	☐ State
	☒ Local	☐ Private	☐ Other:	

COST ESTIMATE				
ADOT Project Management Design Review (PMDR) $30,000	Design and Environmental Clearance $75,000	Right-of-Way $ -	Construction Cost $281,500	Total $ 386,500

PROJECT DELIVERY
Delivery: ☒ Design-Bid-Build ☐ Design-Build ☐ Other:
Design Program Year: FY 2017 – Sun Corridor MPO 2015-19 TIP
Construction Program Year: FY 2019 – Sun Corridor MPO 2015-19 TIP

ATTACHMENTS
1) **State Location Map**
2) **Project Vicinity Map**
3) **Project Scope of Work**
4) **Project Schedule**
5) **Itemized Cost Estimate**
6) **Crash Data Summary**
7) **Combined Crash Reduction Factor**

ATTACHMENT 1 – STATE LOCATION MAP



LEGEND:

PREFERRED LOCATION - 330' East of the Cacheris Ct Radius Return (✳)

N

ATTACHMENT 2 – PROJECT VICINITY MAP

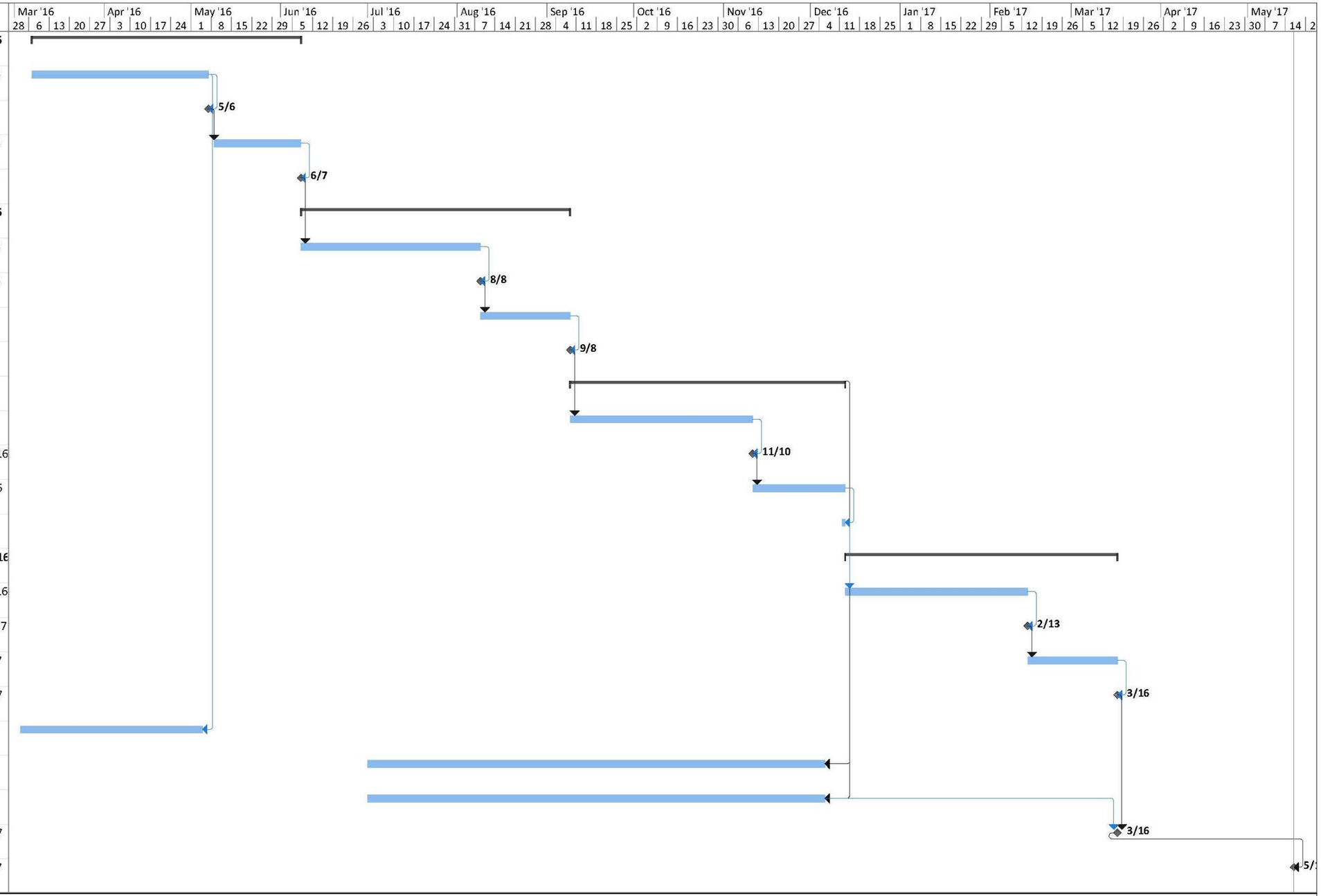
Date: December 10th, 2015
ADOT Project Manager: Charla Glendening
Project Name: Pedestrian Hybrid Beacon/System Enhancement
City/Town: Casa Grande

ATTACHMENT 3 – SCOPE OF WORK

SCOPE OF WORK
This project will install a new Pedestrian Hybrid Beacon on Florence Boulevard west of Cacheris Court, in Casa Grande, Arizona. The preferred location has been identified within this pre-scoping report (refer to Attachment 2). The following represents the scope of work: PRE-CONSTRUCTION • Perform a traffic operations analysis to determine left turn lane storage requirements at future Cacheris Court traffic signal. • Coordinate with stakeholders and area property owners for input on PHB location in coordination with potential improvements at the parcels adjacent to the project. • Account for localized drainage each side of the roadway and impacts to on-site drainage retention. • Determine utilities within the roadway, identify potential conflicts at traffic signal poles, and at conduit and jack and bore location. CONSTRUCTION • There are vacant parcels adjacent to the project limits which may be negotiated as a stockpile and staging area for the contractor. The contractor will be responsible for acquiring a location. • Remove sidewalk and asphalt necessary to install ADA accessible ramps at the PHB new crossing. • Install concrete ADA ramps on both sides of the roadway and miscellaneous sidewalk to connect to the existing sidewalk. Repair asphalt in front of the ramps. If approved by the City of Casa Grande, the construction of the ramps could be completed by horizontally cutting the curb face rather than removing any AC pavement. • Regrade areas near ramps for traffic signal poles, cabinet and pullboxes. Restore landscaping and decomposed granite to original condition. • Install power drop and conduit run to signal location. • Install conduit, pullboxes, and conductors, including jack and bore under Florence Blvd. • Remove, relocate, and add new signage. • Obliterate striping near the crossing as necessary and replace with updated/refreshed solid striping on Florence Boulevard. • Install crosswalk pavement markings. • Install Pedestrian Hybrid Beacon. • Install pedestrian push buttons. • Install lighting atop the Pedestrian Hybrid Beacon. Consider spacing and impacts to existing lighting along the corridor. • Construction survey and layout. • Construction traffic control.

ATTACHMENT 4 – PROJECT SCHEDULE

ID	Task Name	Duration	Start
1	**Preliminary Design**	**67 days**	**Mon 3/7/16**
2	Design 30%	45 days	Mon 3/7/16
3	Submittal 30%	0 days	Fri 5/6/16
4	Comment Review Period	22 days	Mon 5/9/16
5	Comment Review Meeting	0 days	Tue 6/7/16
6	**Intermediate Design**	**67 days**	**Wed 6/8/16**
7	Design 60%	44 days	Wed 6/8/16
8	Submittal 60%	0 days	Mon 8/8/16
9	Comment Review Period	23 days	Tue 8/9/16
10	Comment Review Meeting	1 day	Thu 9/8/16
11	**Final Design**	**67 days**	**Fri 9/9/16**
12	Design 95%	45 days	Fri 9/9/16
13	Submittal 95%	1 day	Thu 11/10/16
14	Comment Review Period	22 days	Fri 11/11/16
15	Comment Review Meeting	1 day	Mon 12/12/16
16	**C&S Review & Approval**	**68 days**	**Tue 12/13/16**
17	Design 100%	45 days	Tue 12/13/16
18	Submittal 100%	0 days	Mon 2/13/17
19	C & S Review Period	23 days	Tue 2/14/17
20	Finalise C&S requests	0 days	Thu 3/16/17
21	Environmental Clearance	45 days	Thu 3/3/16
22	Right-of-Way Clearance	112 days	Fri 7/1/16
23	Utility Clearance	112 days	Fri 7/1/16
24	Bid Ready Date	0 days	Thu 3/16/17
25	Bid Advertisement Date	0 days	Tue 5/16/17



Project: Schedule 2015-10-12
Date: Thu 12/10/15

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only		Manual Progress	
Summary		Inactive Task		Duration-only		Finish-only			

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ATTACHMENT 5 – ITEMIZED COST ESTIMATE

Kimley»Horn

Planning No : ADOT11-00000507
Task No.: MPD 005-16
Proj Manager : Charla Glendening

Project Location : Casa Grande
Project Description : Pedestrian Hybrid Beacon
Bid Advertisement Date : FY 2019

ITEM No.	ITEM DESCRIPTION	UNIT	Pre-Scoping DATE: 12/10/15		
			QUANTITY	UNIT PRICE	AMOUNT
2020054	REMOVE (SIGN PANELS)	EACH	4	$100.00	$400.00
6070054	SIGN POST (PERFORATED) (2 S)	L.FT.	120	$12.00	$1,440.00
6070060	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	12	$250.00	$3,000.00
6080005	WARNING, MARKER, OR REGULATORY SIGN PANEL	SQ.FT.	160	$25.00	$4,000.00
7010001	MAINTENANCE AND PROTECTION OF TRAFFIC	L.SUM	1	$40,000.00	$40,000.00
7010006	FURNISH AND INSTALL TEMPORARY TRAFFIC CONTROL DEVICES	L.SUM	1	$15,000.00	$15,000.00
7041501	PAVEMENT MARKINGS	L.SUM	1	$800.00	$800.00
7310130	POLE (TYPE Q)	EACH	2	$4,000.00	$8,000.00
7310195	POST (PEDESTRIAN PUSH BUTTON)	EACH	2	$600.00	$1,200.00
7310310	POLE FOUNDATION (TYPE Q)	EACH	2	$2,500.00	$5,000.00
7310390	PEDESTRIAN PUSH BUTTON POST FOUNDATION	EACH	2	$600.00	$1,200.00
7310570	MAST ARM (30 FT.) (TAPERED)	EACH	2	$2,150.00	$4,300.00
7320290	ELECTRICAL CONDUIT	L.SUM	1	$15,500.00	$15,500.00
7320420	PULL BOX (NO. 7)	EACH	1	$600.00	$600.00
7320421	PULL BOX (NO. 7) (WITH EXTENSION)	EACH	1	$700.00	$700.00
7320650	CONDUCTORS	L.SUM	1	$15,000.00	$15,000.00
7330138	TRAFFIC SIGNAL FACE (TYPE T)	EACH	6	$1,000.00	$6,000.00
7330211	PEDESTRIAN SIGNAL (LED COUNTDOWN)	EACH	2	$800.00	$1,600.00
7330310	TRAFFIC SIGNAL MOUNTING ASSEMBLY (TYPE II)	EACH	2	$150.00	$300.00
7330340	TRAFFIC SIGNAL MOUNTING ASSEMBLY (TYPE V)	EACH	2	$700.00	$1,400.00
7330360	TRAFFIC SIGNAL MOUNTING ASSEMBLY (TYPE VII)	EACH	2	$900.00	$1,800.00
7340040	CONTROL CABINET (TYPE IV)	EACH	1	$30,000.00	$30,000.00
7340105	CONTROL CABINET FOUNDATION	EACH	1	$800.00	$800.00
7340110	SERVICE PEDESTAL CABINET	EACH	1	$10,000.00	$10,000.00
7340120	METER PEDESTAL CABINET	EACH	1	$5,000.00	$5,000.00
7340125	SERVICE PEDESTAL CABINET FOUNDATION	EACH	1	$1,500.00	$1,500.00
7340306	METER PEDESTAL FOUNDATION	EACH	1	$1,500.00	$1,500.00
7350060	PEDESTRIAN PUSH BUTTON	EACH	2	$400.00	$800.00
7360104	LUMINAIRE (HORIZONTAL MOUNT) (LED)	EACH	2	$600.00	$1,200.00
7360160	POWER SUPPLY (BATTERY BACKUP)	EACH	1	$3,500.00	$3,500.00
9010001	MOBILIZATION	L.SUM	1	$15,000.00	$15,000.00
9080201	CONCRETE SIDEWALK (C-05.20)	SQ.FT.	100	$7.00	$700.00
9080296	CONCRETE SIDEWALK RAMP (MAG DET 235-4)	EACH	2	$2,500.00	$5,000.00
	TOTAL, PEDESTRIAN HYBRID BEACON				$202,240.00

ROADWAY TOTAL:			**$202,240.00**
Unidentified Item Allowance		15%	$30,336.00
SUBTOTAL			**$232,576.00**
Construction Engineering	COST	15%	$34,886.40
Construction Contingencies	COST	5%	$11,628.80
Consultant Services	COST	1%	$2,325.76
NON-BID SUBTOTAL:			**$48,840.96**
PROJECT SUBTOTAL:			**$281,416.96**
Indirect Cost Allocation (10.35%)	COST		
TOTAL COST			**$281,416.96**

ATTACHMENT 6 – CRASH DATA SUMMARY

	Severity						
Manner of Collision	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
Pedestrain	**2**				**2**		4
Rear-end			2	5	4		11
Left Turn		1	1		4		6
Right Turn				1			1
ROR	1						1
Sideswipe				1	6		7
Angle			1		5		6
Fail to Yeild					1		1
Fixed Object					1		1
Other					1		1
Total	**3**	**1**	**4**	**7**	**24**	**0**	**39**
	0.60	**0.20**	**0.80**	**1.40**	**4.80**	**0.00**	

	Severity						
Lighting	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
Daylight	2	0	3	8	16	0	29
Darkness	1	1	1	0	7	0	10
Total							

1 = Fatal
2 = Incapacitating Injury
3 = Non Incapacitating Injury
4 = Possible Injury
5 = No Injury
6 = Unknown

Source: City of Casa Grande, Arizona, HSIP Application, SR287 (Florence Blvd), Installation Pedestrian Hybrid Beacon, in Casa Grande

ATTACHMENT 7 – COMBINED CRASH REDUCTION FACTOR

RE: Local Highway Safety Improvement Program (HSIP) Project Request and Application
COG/MPO: Sun Corridor MPO
Agency: City of Casa Grande

A combined Crash Reduction Factor (CCRF) of 52.04 was established by using the following methodology:

CCRF = (CRF1 x No. of crashes for countermeasure 1/total crashes) + (CRF2 x No. of crashes for countermeasure 2/total crashes) + (CRF3 x No. of crashes for countermeasure 3/total crashes)

CRF1 = .69 Crash Modification Factors Clearinghouse: Fitzpatrick, K. and Park, E.S. Safety Effectiveness of the HAWK Pedestrian Crossing Treatment, FHWA-HRT-10-042, Federal Highway Administration, Washington, DC. (2010). Also published in: Fitzpatrick, K., E.S.Park, and S. Turner. "Effectiveness of the HAWK Pedestrian Crossing Treatment". ITE Journal, Vol. 82, No. 4, Washington, D.C., (2012).
CRF2 = .56 Crash Modification Factors Clearinghouse: Institute of Transportation Engineers, "Toolbox of Countermeasures and Their Potential Effectiveness to Make Intersections Safer." Briefing Sheet 8 ITE, FHWA, (2004).
CRF3 = .69 Crash Modification Factors Clearinghouse: Institute of Transportation Engineers, "Toolbox of Countermeasures and Their Potential Effectiveness to Make Intersections Safer." Briefing Sheet 8 ITE, FHWA, (2004).

CCRF = (.69 x 39/39) + (.56 x 4/39) + (.69 x 1/39)
CCFR = (.69 x .6900) + (.56 x .0574) + (.69 x .0177)
CCFR = 0.4761 + .0321 + .0122
CCFR = 52.04 or 52%

Utilizing the above data, a B/C ratio was determined to be 22.52. (See Accident Data Attachment)

The City of Casa Grande has determined that, in accordance with 23 USC 148(a)(4)(A), this project is consistent with the Sun Corridor MPO and State's 2014 SHSP. It supports "Nonmotorized Users" - Pedestrians element of the State 2014 SHSP.

HSIP funds in the amount of $530,271 are being requested for this project. With FHWA Arizona Division Office concurrence the Pedestrian Hybrid Beacon, lighting, signage and striping are eligible to be funded at 100% and the refuge island and railing are eligible to be funded 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 of Casa Grande proposes committing the 5.7% local match in the amount of $10,509. Table 4 summarizes the anticipated cost estimate projected for this project.

If you have any questions, please contact me at (520) 421-8625 Ext. 3300 or email deitel@casagrandeaz.gov .

Sincerely,

Duane Eitel
Traffic Engineer
3181 N. Lear Avenue
Casa Grande, AZ.85122