City of Kingman
Stockton Hill Road Corridor Study Appendices

May 2014

ADOT

PARSONS BRINCKERHOFF

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APPENDIX A – PRIORITIZED CAPITAL IMPROVEMENTS

A. PRIORITIZED CAPITAL IMPROVEMENTS

The following is a list of capital improvements that are recommended as a result of the Stockton Hill Road Corridor Study. Items represent only recommended physical roadway improvements, and do not include other items such as recommended policy changes. Included improvements have been prioritized based on their effectiveness in improving safety and mobility conditions within the corridor, and recommended project phasing.

It is important to note that this list is intended only for reference, and that coordination of the listed items with the other recommendations described in Section 6.0 is essential in order for projects to be successful. In addition, access control recommendations for driveway closures, driveway combinations, and thru-access improvements were omitted from this reference list. Driveway and thru-access improvements to private property will require substantial coordination with individual property owners, and the exact sequencing of the improvements should result from a comprehensive corridor access control plan, as recommended in Section 6.0.

1. Traffic Signal Timing
   - Optimize traffic signal timing on Stockton Hill Road Intersections
   - Verify operational effectiveness of existing signal control hardware
   - Signal programming should proportion "green time" based on demand, in way that does not disrupt pedestrian signal crosswalk timing
2. Traffic Signal Interconnect System
   - Installation of traffic signal interconnect system to maintain signal coordination
   - Minimize disruptions in downstream and upstream traffic flow
3. Pedestrian Crossing at Kingman Regional Medical Center
   - Construction of midblock pedestrian crossing of Stockton Hill Road, between Sycamore Avenue and Beverly Avenue
4. Median Improvement – Access Control Location #1
   - Installation of left turn bay / channelization for southbound Stockton Hill Road traffic, between Detroit Avenue and I-40
   - Property east of improvement currently has no left turn access due to existing median
   - Improvement would not cause traffic conflicts with I-40 off ramps
5. Median Improvement – Access Control Location #11
   - Installation of raised median / left turn channelization for northbound and southbound Stockton Hill Road traffic at Hillcrest Drive intersection, before Kino Avenue and Gordon Drive
   - Would ease north and southbound left turn movements, and reduce vehicle conflicts
6. ITS System Installation
   - Develop and implement corridor ITS system

- System should be optimized to compliment limitations of signal optimization
- System should include GPS Clock Receivers, Interconnect system with central control, and adaptive signal control

7. Intersection Improvement – Stockton Hill Road & Airway Avenue
   - Implementation of preferred design configuration detailed in Section 4.2.2
   - Improvements would improve intersection performance and reduce queuing
8. Intersection Improvement – Beverly Avenue Intersection Improvements
   - Implementation of preferred concept detailed in Section 4.2.4
   - Improvements would improve intersection performance and reduce queuing
9. Non-motorized Improvement – Western Avenue and Glen Road
   - Construction of sidewalks and bicycle lanes along Western Avenue and Glen Road
   - Improvements would increase non-motorized mobility along Stockton Hill Road corridor
   - Construction recommended to be coordinated with adjacent roadway projects
10. Non-motorized Improvement – Airway Avenue, Sycamore Avenue, Beverly Avenue, and Burbank Street/ Fairgrounds Avenue
    - Construction of sidewalks along Airway Avenue, Sycamore Avenue, Beverly Avenue, and Burbank Street/ Fairgrounds Avenue
    - Improvements would increase non-motorized mobility along Stockton Hill Road corridor
    - Construction recommended to be coordinated with adjacent roadway projects
11. Non-motorized Improvement – Burbank Street/ Fairgrounds Avenue, Harrison Street/ Willow Road, Sycamore Avenue, and Airway Avenue
    - Construction of sidewalks along Burbank Street/ Fairgrounds Avenue, Harrison Street/ Willow Road, Sycamore Avenue, and Airway Avenue
    - Improvements would increase non-motorized mobility along Stockton Hill Road corridor
    - Construction recommended to be coordinated with adjacent roadway projects

APPENDIX B – TECHNICAL INFORMATION FOR MICRO-LEVEL INTERSECTION ANALYSIS

B. TECHNICAL INFORMATION FOR MICRO-LEVEL INTERSECTION ANALYSIS

This section includes the technical information used for the Micro-level Intersection Analysis detailed in Section 4.2.2. Table 1 presents existing AM, Midday and PM intersection LOS for the Stockton Hill Road intersections included in the Micro-analysis. It indicates the need for improvements at the Airway Avenue intersection, which operates at AM and Midday LOS of "E" and "F" respectively. However, the Midday performance of the Airway Avenue intersection could be improved to LOS D with delay of 43.0 seconds, if recommended geometry and signal timing improvements are implemented.

Table 1: Left-turn Warrant Analysis – Stockton Hill Road Intersections

Intersection		AM		Midday		PM	
		LOS	Delay	LOS	Delay	LOS	Delay
Stockton Hill Road	Detroit Avenue	B	17.1	B	17.1	B	18.2
Stockton Hill Road	Airway Avenue	E	57.7	F	114.3	D	49.9
Stockton Hill Road	Gordon Drive	B	15.6	B	11.6	B	13.3

B.1. Stockton Hill Road and Airway Avenue Intersection

Figure 1: Airway Avenue Improvement Option 1 (In Synchro Model)

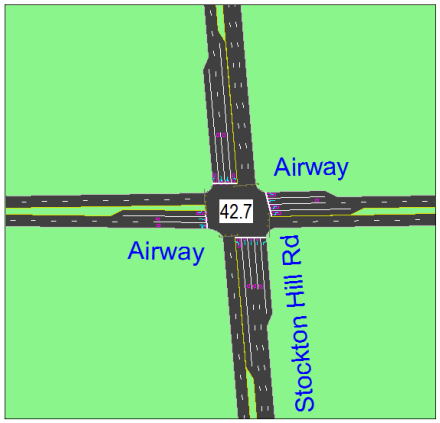


Table 2: Synchro Capacity Analysis - Airway Avenue Improvement Option 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	121	52	303	78	272	115	887	125	249	871	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.9		5.2	5.2	5.2	4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	0.95		0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.95	1.00
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3379		3433	1863	1583	1770	5085	1583	1770	3539	1583
Flt Permitted	0.70	1.00		0.63	1.00	1.00	0.12	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	1307	3379		2287	1863	1583	222	5085	1583	220	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	132	57	329	85	296	125	964	136	271	947	109
RTOR Reduction (vph)	0	37	0	0	0	128	0	0	76	0	0	61
Lane Group Flow (vph)	68	152	0	329	85	168	125	964	60	271	947	48
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2		2	4		4	8		8
Actuated Green, G (s)	43.2	40.0		69.7	62.5	62.5	39.6	33.6	33.6	49.6	39.6	39.6
Effective Green, g (s)	43.2	40.0		69.7	62.5	62.5	39.6	33.6	33.6	49.6	39.6	39.6
Actuated g/C Ratio	0.33	0.31		0.54	0.48	0.48	0.30	0.26	0.26	0.38	0.30	0.30
Clearance Time (s)	4.0	5.9		5.2	5.2	5.2	4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	446	1040		1436	896	761	139	1314	409	227	1078	482
v/s Ratio Prot	0.00	0.04		c0.04	0.05		0.04	0.19		c0.11	0.27	
v/s Ratio Perm	0.05			c0.08		0.11	0.23		0.04	c0.35		0.03
v/c Ratio	0.15	0.15		0.23	0.09	0.22	0.90	0.73	0.15	1.19	0.88	0.10
Uniform Delay, d1	30.6	32.6		16.3	18.4	19.6	38.9	44.1	37.2	32.6	42.9	32.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.83	0.91	1.34	1.19	0.86	0.85
Incremental Delay, d2	0.2	0.3		0.4	0.2	0.7	45.3	3.5	0.7	120.8	9.7	0.4
Delay (s)	30.7	32.9		16.7	18.6	20.3	77.3	43.4	50.4	159.7	46.6	28.0
Level of Service	C	C		B	B	C	E	D	D	F	D	C
Approach Delay (s)		32.3			18.4			47.6			68.2	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Figure 2: Airway Avenue Improvement Option 2 (In Synchro Model)

Table 3: Synchro Capacity Analysis - Airway Avenue Improvement Option 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	121	52	303	78	272	115	887	125	249	871	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.9		5.2	5.2		4.0	5.5	5.5	4.0	5.5	5.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.95	1.00
Frt	1.00	0.95		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3379		1770	3127		1773	5085	1583	1770	3539	1583
Flt Permitted	0.48	1.00		0.63	1.00		0.12	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	900	3379		1179	3127		222	5085	1583	220	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	132	57	329	85	296	125	964	136	271	947	58
RTOR Reduction (vph)	0	37	0	0	126	0	0	0	76	0	0	33
Lane Group Flow (vph)	68	152	0	329	255	0	125	964	60	271	947	25
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	43.2	40.0		69.7	62.5		39.5	33.5	33.6	49.6	39.6	39.6
Effective Green, g (s)	43.2	40.0		69.7	62.5		39.5	33.5	33.6	49.6	39.6	39.6
Actuated g/C Ratio	0.33	0.31		0.54	0.48		0.30	0.26	0.26	0.38	0.30	0.30
Clearance Time (s)	4.0	5.9		5.2	5.2		4.0	5.5	5.5	4.0	5.5	5.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	320	1040		740	1500		139	1314	409	227	1078	482
v/s Ratio Prot	0.01	0.04		c0.08	0.08		0.04	0.19		c0.11	0.27	
v/s Ratio Perm	0.07			c0.16			0.23		0.04	c0.35		0.02
v/c Ratio	0.21	0.15		0.44	0.17		0.90	0.73	0.15	1.19	0.88	0.05
Uniform Delay, d1	33.5	32.6		19.4	19.1		38.9	44.1	37.2	32.6	42.9	31.9
Progression Factor	1.00	1.00		1.00	1.00		0.83	0.91	1.34	1.20	0.83	0.82
Incremental Delay, d2	0.3	0.3		1.9	0.2		45.3	3.5	0.7	120.6	9.7	0.2
Delay (s)	33.9	32.9		21.3	19.3		77.3	43.4	50.4	159.9	46.4	26.4
Level of Service	C	C		C	B		E	D	D	F	D	C
Approach Delay (s)		33.2			20.3			47.5			69.6	
Approach LOS		C			C			D			E	

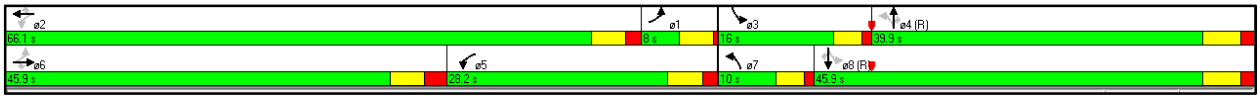
Intersection Summary			
HCM Average Control Delay	49.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Optimized signal timings suggested for Improved Airway Avenue Intersection

- 130 second cycle length for the coordination timing plan (Midday).
- Two more phases are need for eastbound and westbound left turns.
- The previous split phasing for eastbound and westbound approaches need to be changed to the lag left.

Figure 3: Existing Midday Timing – Stockton Hill Road and Airway Avenue

Figure 4: Existing Midday Timing – Stockton Hill Road and Airway Avenue



Preliminary Engineering Cost Estimates for Airway Avenue Improvement Options

Table 4: Preliminary Cost Estimate - Airway Avenue Improvement Option #1

Item	Unit	Unit Cost	Quantity	Total Cost
Relocate Signal Pole	EA	$20,000	2	$40,000
Remove Sidewalk & Pavement	SF	$3	10,480	$31,440
Remove Curb/Gutter	LF	$5	1,300	$6,500
Pavement	SF	$6	11,485	$68,910
Median Pavement	SF	$5	2,380	$11,900
Sidewalk	SF	$5	5,300	$26,500
Curb/Gutter	LF	$15	1,825	$27,375
Site Grading	SF	$5	18,900	$94,500
Signing/Striping	LF	$5	1,735	$8,675
Relocate Catch Basin	EA	$3,000	2	$6,000
Relocate Fire Hydrant	EA	$2,000	2	$4,000
Relocate Power Pole	EA	$10,000	1	$10,000
Subtotal				**$335,800**
Traffic Control		25%		$83,950
Contingency		10%		$33,580
Design/Construction Engineering		10%		$33,580
Construction Cost				**$486,910**
Right-of-way/Easement	SF	$2	5,870	$11,740
Total Project Cost				**$498,650**

Table 5: Preliminary Cost Estimate - Airway Avenue Improvement Option #2

Item	Unit	Unit Cost	Quantity	Total Cost
Relocate Signal Pole	EA	$20,000	2	$40,000
Remove Sidewalk & Pavement	SF	$3	8,255	$24,765
Remove Curb/Gutter	LF	$5	910	$4,550
Pavement	SF	$6	9,420	$56,520
Median Pavement	SF	$5	1,955	$9,775
Sidewalk	SF	$5	4,300	$21,500
Curb/Gutter	LF	$15	1,620	$24,300
Site Grading	SF	$5	15,390	$76,950
Signing/Striping	LF	$5	1,625	$8,125
Relocate Catch Basin	EA	$3,000	2	$6,000
Relocate Fire Hydrant	EA	$2,000	2	$4,000
Subtotal				**$276,485**
Traffic Control		25%		$69,121
Contingency		10%		$27,649
Design/Construction Engineering		10%		$27,649
Construction Cost				**$400,903**
Right-of-way/Easement	SF	$2	3,280	$6,560
Total Project Cost				**$407,463**

B.2. Stockton Hill Road and Detroit Avenue Intersection

Table 6: Synchro Capacity Analysis – Detroit Avenue Eastbound Left Turn

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	17	85	31	22	38	99	781	11	58	787	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.3	5.3		5.3	5.0		4.0	4.8		4.0	4.8	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.87		1.00	0.91		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1629		1770	1687		1770	3532		1770	3495	
Flt Permitted	0.40	1.00		0.69	1.00		0.24	1.00		0.27	1.00	
Satd. Flow (perm)	738	1629		1278	1687		445	3532		507	3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	247	18	92	34	24	41	108	849	12	63	855	77
RTOR Reduction (vph)	0	77	0	0	39	0	0	0	0	0	3	0
Lane Group Flow (vph)	247	33	0	34	26	0	108	861	0	63	929	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8			4			2			6		
Actuated Green, G (s)	30.8	19.3		13.1	6.9		75.7	68.9		74.5	68.3	
Effective Green, gi (s)	30.8	19.3		13.1	6.9		75.7	68.9		74.5	68.3	
Actuated gi/C Ratio	0.26	0.16		0.11	0.06		0.63	0.57		0.62	0.57	
Clearance Time (s)	5.3	5.3		5.3	5.0		4.0	4.8		4.0	4.8	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	0.2		1.0	0.2	
Lane Grp Cap (vph)	351	261		164	97		355	2027		380	1989	
v/s Ratio Prot	c0.11	0.02		0.01	0.02		c0.02	0.24		0.01	c0.27	
v/s Ratio Perm	c0.07			0.01			0.17			0.09		
v/c Ratio	0.70	0.13		0.21	0.27		0.30	0.42		0.17	0.47	
Uniform Delay, d1	38.7	43.1		48.5	54.1		9.9	14.4		9.6	15.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.22	0.35	
Incremental Delay, d2	5.2	0.1		0.2	0.6		0.2	0.7		0.1	0.7	
Delay (s)	43.8	43.2		48.8	54.7		10.1	15.0		2.1	6.1	
Level of Service	D	D		D	D		B	B		A	A	
Approach Delay (s)		43.6			52.7			14.5			5.8	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.4
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

Description: Detroit St

c Critical Lane Group

APPENDIX C – SUPPLEMENTAL TRAFFIC INFORMATION

C. SUPPLEMENTAL TRAFFIC INFORMATION

C.1. Left-turn Traffic Signal – Warrant Analysis

A left-turn signal phasing warrant study was performed on the Stockton Hill Road corridor using ADOT Standards. These standards take in account Traffic Volumes, Stopped-time Delays, and Crash Experience to determine if any approaches at an intersection would possibly warrant left-turn phasing. Once it is determined that an approach may warrant left-turn phasing, a series of requirements are evaluated (stated in Section 612 of ADOT Traffic Standards) to choose which type of phasing should be used. The three types of phasing ADOT provides are protected/permitted, protected, and split.

The intersections of Stockton Hill Road with Detroit Avenue, The Kingman Regional Medical Center, Sycamore Avenue, and Airway Avenue were included in the analysis. Table 7 summarizes which warrants were met for each approach of each intersection analyzed.

Table 7: Left-turn Warrant Analysis – Stockton Hill Road Intersections

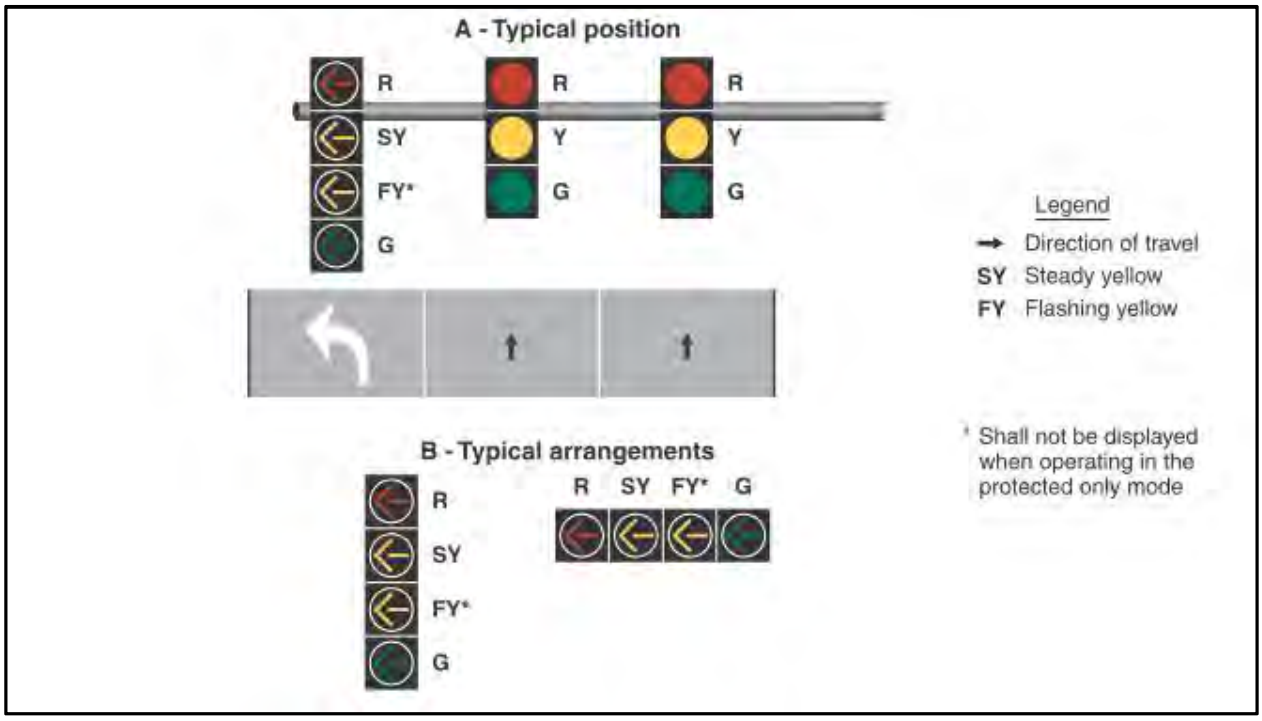
Stockton Hill Road Intersection	Warrants Met			
	Northbound	Southbound	Eastbound	Westbound
Airway Ave	Stopped-time Delay, Crash Experience	Traffic Volume, Stopped-time Delay, Crash Experience	Stopped-time Delay	Stopped-time Delay
Sycamore Ave		Traffic Volume, Crash Experience		Stopped-time Delay
KRMC		Traffic Volume, Crash Experience		
Detroit Ave				

C.2. Flashing Yellow Arrow Left Turn Signal

The new "Flashing Yellow Arrow" signal has been adopted by the FHWA and is being applied throughout the US due to its benefits in safety and versatility. The National Cooperative Highway Research Program (NHCRP) released Report 493, which details research performed to evaluate flashing yellow arrows. Their conclusions were that a flashing yellow turn arrow is easily understood by drivers, reduced left turning vehicle collisions, and allows left turn phasing to be varied by time of day.

The typical position and arrangements of signal faces for Flashing Yellow Arrow Left Turn are displayed in Figure 5.

Figure 5: Flashing Yellow Arrow Signal



Source: MUTCD 2009 Edition, Section 4-20, Figure 4D-12 on Page 473.

To implement the flashing yellow arrow left turn, four signal faces must be used for each left turn movement that will utilize this phasing. These four signal faces consist of steady left –turn Red Arrow, steady left –turn Yellow Arrow, flashing left-turn Yellow Arrow and left-turn Green Arrow. The flashing left-turn Yellow Arrow may not be the same signal as the steady left-turn Yellow Arrow.

According to the MUTCD 2009 Edition, the signal phasing for lead and lag protected left turns are as follows:

If permissive left turn follows protected left turn, the signal indication sequence should be: Green Arrow → Steady Yellow Arrow → Flashing Yellow Arrow → Steady Yellow Arrow → Red Arrow.

If permissive left turn changes to protected left turn, the signal indication sequence should be: Flashing Yellow Arrow→ Green Arrow → Steady Yellow Arrow → Red Arrow.

The flashing yellow arrow for a permissive left turn is allowed when the adjacent through phase is circular red and opposing left turn is green arrow.

Several cities in Arizona have installed the Flashing Yellow Arrow Left Turn signal. The major intersections where similar signals have been installed are listed in Table 8.

Table 8: Flashing Yellow Arrow Left Turn Signal – Arizona Intersections

Intersection	Approach	Jurisdiction	Installation Year
Raintree Drive/ Northsight Boulevard	Northbound and Southbound Left turns	City of Scottsdale	October 2008
68th Street/ McDowell Road	Northbound and Southbound Left turns	City of Scottsdale	October 2008
Loop 202 San Tan Freeway Eastbound/ Dobson Road	Southbound Left turn	City of Chandler	October 2010
Loop 202 San Tan Freeway Westbound/ San Tan Village Parkway	Northbound Left turn	Town of Gilbert	February 2012

According to the City of Scottsdale website[1], the flashing yellow arrow signals were beneficial for intersections where they were installed (Table 8). The flashing yellow arrow signals were credited with improved safety conditions at both intersections, as both locations have witnessed a significant reduction in left-turn collisions since installation.

C.3. Midblock Pedestrian Crossing – HAWK Signal

As discussed in Section 4.2.5, a midblock pedestrian crossing is recommended for installation, spanning Stockton Hill Road between Beverly Avenue and Airway Avenue, east of the KRMC. The area is an active pedestrian location, and several vehicular and pedestrian conflicts and collisions have occurred due to illegal crossings across travel lanes. To provide safe and efficient midblock pedestrian crossings, a High-intensity Activated Cross Walk (HAWK) signal is recommended for the crossing. The HAWK is normally in an "off" state until it is activated by the presence of a pedestrian approaching the crosswalk.

Once a pedestrian reaches the crosswalk and presses the pedestrian push button, the signal changes to a flashing yellow to warn vehicular traffic that a solid yellow is next in sequence. The HAWK signal then performs a typical clearance of yellow and then all-red for a calculated length based on the MUTCD. When clearance has concluded, the pedestrian is given a "WALK" signal, flashing "DON'T WALK", and then solid "DON'T WALK". Pedestrian countdown timers are also used.

[1] http://www.scottsdaleaz.gov/Topics/transportation

Once the pedestrian signal changes to flashing "DON'T WALK", the vehicular signal begins to flash alternating reds. This alternating red signal alerts vehicles that they may proceed at a stop condition, yielding to pedestrians. Once the pedestrian phase has been completed, the signal returns to an "OFF" state. A set minimum cycle length is standard, in order to ensure sufficient service given to vehicles between pedestrian crossings.

HAWK signal installations have become increasingly popular throughout Arizona. Table 9 lists the majority of HAWK signals currently in operation within the state. Although many installations have been beneficial to communities, a public education effort is essential, as some communities have indicated initial confusion from drivers and pedestrians unfamiliar with the system.

Table 9: Arizona HAWK Signal Installations

Crossings	Jurisdiction
Seventh Avenue and Glenrosa Avenue	Phoenix
19th Avenue near Thunderbird High School	Phoenix
59th Avenue and Clarendon Avenue, near Maryvale High School	Phoenix
West Thomas Road and 44th Avenue, near the Urban League Manor senior housing center	Phoenix
32nd Street and Liberty Lane near Desert Vista High School	Phoenix
Dunlap Avenue and Second Drive near Sunnyslope High School	Phoenix
Indian School Road and 30th Street, near Devonshire Senior Center	Phoenix
75th Avenue and Weldon Avenue, at Estrella Junior High School	Phoenix
Scottsdale Road between Butherus Drive and Greenway-Hayden Loop	Scottsdale
Pima Road and Dixileta Drive	Scottsdale
Pima Road and Jomax Road	Scottsdale
Chaparral Road just east of 78th Street	Scottsdale
Western Canal and Rural Road	Tempe
Western Canal and McClintock Drive	Tempe
Beardsley Road and 63rd Avenue	Glendale
91st Avenue and Tumblewood Drive, near Desert Harbor Elementary School	Peoria

Figure 6: Example Pedestrian Signage for HAWK Signal

Source: ADOT

Figure 7: Typical HAWK Signal Operation

	DRIVERS		PEDESTRIANS	
	Will See ...	Will Do ...	Will See ...	Will Do ...
1		Proceed with caution.		Push the button to activate the system.
2	FLASHING	Slow down. A pedestrian has activated the system.		Wait.
3		Prepare to stop.		Continue to wait.
4		STOP. A pedestrian is in the crosswalk.		Start crossing when all vehicles are stopped.
5	FLASHING	STOP. Proceed with caution if the crosswalk is clear.		Continue crossing; the signal will count down.
6		Proceed if the cross-walk is clear.		Push the button to activate the system.

Source: ADOT

C.4. Synchro Model Update – 3.5 ft/s Pedestrian Walking Speed

The previous Stockton Hill Road Synchro model outputs were updated with a pedestrian clear time based upon a 3.5 ft/s walking speed. This pedestrian walking speed is the new standard presented in the MUTCD 2009. The pedestrian clearance (Flash "Don't Walk") signal was calculated with this new value. Considering the walking speed is 0.5 ft/s slower than previous, pedestrian clear times and thus phase lengths increased. These new phase lengths should be accounted for in any future timing plan development within the corridor.

Table 10 presents the pedestrian clearance time defined in the original and the updated timing plans. The updated pedestrian clearance time was calculated using the curb to curb distance divided by walking speed of 3.5 ft/second. As shown in the table, the pedestrian clearance time for eastbound and westbound crosswalks were increased for all the intersections south of Airway Ave. The maximum increase was for intersections at I-40 ramps, where pedestrian clearance times were increased by 12 seconds.

Table 10: Pedestrian Clear Time

Intersection		EB Cross Walk		WB Cross Walk		NB Cross Walk		SB Cross Walk	
		Orig.	New	Orig.	New	Orig.	New	Orig.	New
Stockton Hill Road	Detroit Avenue	16	20	16	20	14	14	12	12
Stockton Hill Road	I-40 EB Ramp	22	34	--	--	14	14	14	14
Stockton Hill Road	I-40 WB Ramp	--	--	22	34	14	14	14	14
Stockton Hill Road	KRMC	22	28	17	24	19	22	12	14
Stockton Hill Road	Sycamore Avenue	21	25	21	21	14	15	12	12
Stockton Hill Road	Airway Avenue	16	23	16	26	16	23	16	18
Stockton Hill Road	Kino Avenue	18	18	18	18	10	10	10	10
Stockton Hill Road	Home Depot	--	--	22	22	16	16	16	16
Stockton Hill Road	Gordon Drive	23	23	23	23	16	16	16	16

With the original phase settings and the increased pedestrian phase length, the cycle lengths and offsets for existing coordinated timings were updated using Synchro and are shown in Table 11. Compared to the original AM timing plan, the cycle lengths for all the intersections would need to increase to 120 seconds. The timing plan for PM shows all the intersections south of Airway Ave would need to increase cycle length to 120 seconds, while the three intersections to the north could apply lower cycle lengths of 80 seconds.

The midday cycle lengths are nearly the same as the original timing plan for the period, with the exception of Airway Avenue, where the intersection would operate better if uncoordinated. For the Airway Avenue intersection, a 150 second cycle length is recommended based on Synchro analysis.

Table 11: Updated Intersection Coordinated Signal Timing Parameters

Intersection		Phases	AM		Midday		PM	
			Cycle	Offset	Cycle	Offset	Cycle	Offset
Stockton Hill Road	Detroit Avenue	8	120	40	120	16	120	112
Stockton Hill Road	I-40 EB Ramp	3	120	8	120	112	120	88
Stockton Hill Road	I-40 WB Ramp	3	120	8	120	112	120	88
Stockton Hill Road	KRMC	6	120	96	120	0	120	96
Stockton Hill Road	Sycamore Avenue	8	120	104	120	16	120	24
Stockton Hill Road	Airway Avenue	6	120	96	150	--	120	32
Stockton Hill Road	Kino Avenue	4	120	48	90	48	80	16
Stockton Hill Road	Home Depot	6	120	56	90	48	80	32
Stockton Hill Road	Gordon Drive	6	120	112	90	0	80	64

Table 12 through Table 17 show the updated segment LOS within the corridor, based on the signal timing optimized with 3.5 ft/s walk time.

Table 12: Corridor Segment LOS (3.5 ft/s walk time) – AM Period Northbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Detroit	III	35	15.6	13.8	29.4	0.12	14.1	D
I-40 EB Ramp	III	35	20.7	11.8	32.5	0.16	17.9	D
I-40 WB Ramp	III	35	16.4	7.8	24.2	0.12	18.0	C
KRMC	III	35	20.2	11.8	32.0	0.16	17.7	D
Sycamore	III	35	16.2	4.6	20.8	0.13	22.0	C
Airway	III	35	22.3	62.6	84.9	0.19	7.9	F
Kino	III	35	60.5	1.2	61.7	0.50	29.4	B
Home Depot	III	35	16.8	1.5	18.3	0.13	25.8	B
Gordon	III	35	44.6	4.0	48.6	0.37	27.5	B
Northern	III	35	103.8	4.1	107.9	1.01	33.7	A
Total	III		337.1	123.2	460.3	2.88	22.6	C

Table 13: Corridor Segment LOS (3.5 ft/s walk time) – AM Period Southbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Northern	III	35	19.6	7.7	27.3	0.15	20.2	C
Gordon	III	35	103.8	8.4	112.2	1.01	32.4	A
Home Depot	III	35	44.6	5.3	49.9	0.37	26.8	B
Kino	III	35	16.8	2.5	19.3	0.13	24.5	B
Airway	III	35	60.5	42.5	103.0	0.50	17.6	D
Sycamore	III	35	22.3	2.5	24.8	0.19	26.9	B
KRMC	III	35	16.2	1.4	17.6	0.13	26.0	B
I-40 WB Ramp	III	35	20.2	8.6	28.8	0.16	19.7	C
I-40 EB Ramp	III	35	16.4	1.5	17.9	0.12	24.4	B
Detroit	III	35	20.7	1.9	22.6	0.16	25.7	B
Total	III		341.1	82.3	423.4	2.92	24.8	B

Table 14: Corridor Segment LOS (3.5 ft/s walk time) – Midday Period Northbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Detroit	III	35	15.6	11.6	27.2	0.12	15.3	D
I-40 EB Ramp	III	35	20.7	35.7	56.4	0.16	10.3	E
I-40 WB Ramp	III	35	16.4	9.2	25.6	0.12	17.0	D
KRMC	III	35	20.1	9.4	29.5	0.16	19.2	C
Sycamore	III	35	16.2	6.7	22.9	0.13	19.9	C
Airway	III	35	22.3	146.7	169.0	0.19	4.0	F
Kino	III	35	60.5	4.5	65.0	0.50	27.9	B
Home Depot	III	35	16.8	7.2	24.0	0.13	19.7	C
Gordon	III	35	44.6	3.1	47.7	0.37	28.0	B
Northern	III	35	103.8	4.7	108.5	1.01	33.5	A
Total	III		337.0	238.8	575.8	2.88	18.0	C

Table 15: Corridor Segment LOS (3.5 ft/s walk time) – Midday Period Southbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Northern	III	35	19.6	6.2	25.8	0.15	21.4	C
Gordon	III	35	103.8	9.9	113.7	1.01	32.0	A
Home Depot	III	35	44.6	7.7	52.3	0.37	25.6	B
Kino	III	35	16.8	2.8	19.6	0.13	24.1	B
Airway	III	35	60.5	63.7	124.2	0.50	14.6	D
Sycamore	III	35	22.3	14.2	36.5	0.19	18.3	C
KRMC	III	35	16.2	9.4	25.6	0.13	17.8	D
I-40 WB Ramp	III	35	20.2	28.2	48.4	0.16	11.7	E
I-40 EB Ramp	III	35	16.4	6.4	22.8	0.12	19.1	C
Detroit	III	35	20.7	12.1	32.8	0.16	17.7	D
Total	III		341.1	160.6	501.7	2.92	21.0	C

Table 16: Corridor Segment LOS (3.5 ft/s walk time) – PM Period Northbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Detroit	III	35	15.6	14.1	29.7	0.12	14.0	E
I-40 EB Ramp	III	35	20.7	27.9	48.6	0.16	12.0	E
I-40 WB Ramp	III	35	16.4	8.3	24.7	0.12	17.7	D
KRMC	III	35	20.2	5.5	25.7	0.16	22.1	C
Sycamore	III	35	16.2	14.2	30.4	0.13	15.0	D
Airway	III	35	22.3	48.4	70.7	0.19	9.5	F
Kino	III	35	60.5	4.7	65.2	0.50	27.8	B
Home Depot	III	35	16.8	4.8	21.6	0.13	21.9	C
Gordon	III	35	44.6	7.0	51.6	0.37	25.9	B
Northern	III	35	103.8	7.0	110.8	1.01	32.8	A
Total	III		337.1	141.9	479.0	2.88	21.7	C

Table 17: Corridor Segment LOS (3.5 ft/s walk time) – PM Period Southbound

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Northern	III	35	19.6	7.3	26.9	0.15	20.5	C
Gordon	III	35	103.8	11.6	115.4	1.01	31.5	A
Home Depot	III	35	44.6	4.0	48.6	0.37	27.5	B
Kino	III	35	16.8	2.9	19.7	0.13	24.0	C
Airway	III	35	60.5	36.6	97.1	0.50	18.7	C
Sycamore	III	35	22.3	7.3	29.6	0.19	22.6	C
KRMC	III	35	16.2	10.9	27.1	0.13	16.9	D
I-40 WB Ramp	III	35	20.2	26.7	46.9	0.16	12.1	E
I-40 EB Ramp	III	35	16.4	3.2	19.6	0.12	22.3	C
Detroit	III	35	20.7	4.1	24.8	0.16	23.5	C
Total	III		341.1	114.6	455.7	2.92	23.1	C

APPENDIX D – LAND USE POLICY

D. LAND USE POLICY

Land-use policy is an essential component in a community achieving its desired vision for a corridor. As discussed in Section 4.1.5, the current land-use pattern within the Stockton Hill Road corridor is that of an automobile oriented commercial strip, with inconsistent lot depths, and narrow parcel frontages. These conditions encourage continued automobile use, while discouraging pedestrian activity and compounding access management issues.

The Kingman General Plan states that there is continued commercial growth anticipated for the corridor, and also that there are opportunities for increased residential growth in adjacent neighborhoods. In addition, stakeholders have expressed an interest in shaping a land-use scheme that includes a more compact development form including opportunities for mixed-use developments, which has been shown to create greater potential for pedestrian mobility, access management, and economic viability.

Land Use Typologies

This section contains descriptions of typical land use typologies for office, entertainment/retail, mixed use commercial, and mixed use residential uses, which are each applicable within the study area. Each typology includes ideal characteristics based on national best practices that can be used to serve as an example and guide a community vision specific to Kingman. It is important to note that the characteristics listed are heavily dependent on the local context in which they are applied. These descriptions may not all be applicable to Kingman, but are meant to serve as best practice examples of ideal development scenarios. Community stakeholders must first undergo a detailed visioning session before augmenting policies to accommodate the characteristics listed.

Office Typology

IDEAL LAND USE CHARACTERISTICS:

- Density: 2-4 story buildings and 50% site coverage
- Land Use Mix: Office and Institutional only
- Pedestrian: Wide internal walkways, logical connections and streetscape amenities
- Community Character: Attractive internal public spaces and public gathering areas

IDEAL SITE CRITERIA:

- Continuous ground-floor commercial / office uses that activate streetscape
- Office Use
- Building setbacks transition to building heights

- Buildings oriented to street and street corners, with 70% building façade transparency
- Surface parking located at interior of blocks
- Alleys provide service access for buildings
- Internal site on-street parking required except for timed loading zones
- Mixed-use parking garage with ground floor office uses
- Buildings provide space for pedestrian amenities
- Minimum 12 foot sidewalk from curb to building face
- Street width maximum width 52 feet; with on-street parking

Figure 8: Ideal Office Site Criteria

Alfred Park Place, Chandler, AZ *(under construction)*

Entertainment/ Retail Typology

IDEAL LAND USE CHARACTERISTICS:

- Density: 2-3 story buildings and 50% site coverage
- Land Use Mix: Entertainment and retail only
- Pedestrian: Wide internal walkways, logical connections and streetscape amenities
- Community Character: Attractive internal public spaces and public gathering areas
- Complementary Uses: Mixed-use commercial and mixed use residential

IDEAL SITE CRITERIA:

- 2-3 stories of retail / entertainment uses
- Differentiated building heights provide for a more interesting streetscape and allows light to reach the street
- Maximum height at building corners provides a visual reference for pedestrians and motorists
- Building setbacks transition to building heights
- Buildings oriented to street and street corners on at least 2 sides of the block, with 70% building façade transparency

- Surface parking located behind buildings and away from primary street frontages
- Defining primary streets to front buildings and entrances allows for surface parking on secondary streets
- On-street parking required except for timed loading zones
- Buildings provide space for pedestrian amenities
- Minimum 12 foot sidewalk from curb to building face
- Develop streetscape characters that define the district as a destination and place
- Street maximum width 52 feet; with on-street parking

Figure 9: Ideal Entertainment/ Retail Site Criteria

The Shops at Lake Havasu, Lake Havasu, AZ

Tempe Marketplace, Tempe, AZ

Mixed-Use Commercial Typology

IDEAL LAND USE CHARACTERISTICS:

- Density: 2-4 story buildings and 70 - 80% lot coverage
- Land Use Mix: Ground floor retail or office uses required, neighborhood services, office, or commercial on upper floors, with minimum ground floor height of 16'
- Pedestrian: Wide sidewalks, with convenient connections and community amenities
- Community Character: Flexible community gathering spaces, civic land uses, street amenities and neighborhood services
- Complementary Adjoining Uses: Mixed-use residential

IDEAL SITE CRITERIA:

- Continuous ground-floor retail or office that activates streetscape, with additional height at corners to help define intersections
- Lower stories at midblock sections that allows sunlight to reach the street and provide variation along the building frontage
- Lower stories at midblock sections that allows sunlight to reach the street and provide variation along the building frontage

- Mixed-use buildings with ground floor retail oriented to street corners
- Commercial units oriented towards streetscape allow for more "eyes on the street" for enhanced security
- Alleys provide service access for buildings and provide a transition area for building scale
- Surface parking to the rear or side of building
- Curb extensions with stripped crosswalks
- Landscaped area provides rest area
- Reduced setback and similar architectural facades complimentary to mixed-use commercial units
- Multi-family mixed use units with articulated facades complimentary to mixed-use commercial units
- Block circumference – 2,000 linear feet maximum
- 6 foot wide minimum sidewalk separated from curb with linear planting area suitable for trees and streetscape amenities
- Local street width: 38 feet maximum curb to curb

Figure 10: Ideal Mixed-Use Commercial Site Criteria

Heritage Marketplace, Gilbert, AZ (*planned)*

Mixed-Use Residential Typology

IDEAL LAND USE CHARACTERISTICS:

- Density: 12-20 units per acre, with 2-4 story buildings and 70 - 80% lot coverage
- Land Use Mix: Ground floor retail or office uses required, residential units on upper floors, with minimum ground floor height of 16'
- Pedestrian: Wide sidewalks, with convenient connections and community amenities
- Community Character: Flexible community gathering spaces, civic land uses, street amenities and neighborhood services
- Complementary Adjoining Uses: Mixed-use commercial

IDEAL SITE CRITERIA:

- Continuous ground-floor retail or office that activates streetscape

- Single-family attached townhouses with attached parking in rear
- Single-family attached townhouses with attached parking in rear
- Mixed-use building with ground floor retail oriented to street corners
- Residential units oriented towards streetscape allow more "eyes on the street" for enhanced security
- Alleys provide service access for buildings and provides a transition area for building scale and use
- Surface parking to the rear or side of building
- Curb extensions with stripped crosswalks
- Recreation area
- Reduced setback and similar architectural styles on either side of the block balance and unify streetscape
- Multi-family units with articulated facades complimentary to attached single family units
- Block circumference – 2,000 linear feet maximum
- 6 foot wide minimum sidewalk separated from curb with linear planting area suitable for trees and streetscape amenities

Figure 11: Ideal Mixed-Use Residential Site Criteria

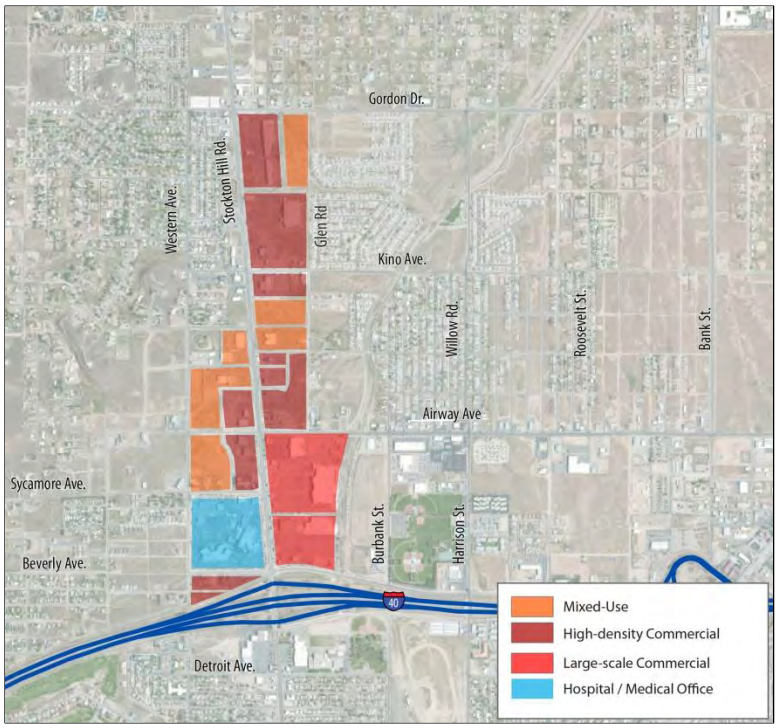
Grigio Metro, Tempe, AZ

Southgate Complex, Lake Havasu, AZ

Conceptual Target Areas

Figure 12 describes possible preliminary conceptual target areas for ideal land use typologies within the Stockton Hill Road corridor. For instance, developments following ideal office typology characteristics could be concentrated in the area west of Stockton Hill Road and south of Sycamore Avenue, near or adjacent to the Kingman Regional Medical Center. Mixed use residential could be implemented in the areas outlined in orange, and entertainment/ retail and mixed use commercial implemented in the dark red areas. Under this conceptual scenario, the light red areas would be preserved for large-scale big box commercial.

Figure 12: Preliminary Mixed-Use Target Areas



As stated previously concerning ideal land use typologies, these preliminary target areas represent one possible land-use vision for the Stockton Hill Road corridor. They are based on national best practices and may not all apply to Kingman. Community stakeholders must first conduct a formal visioning process and land-use analysis before targeting corridor locations for specific land-use types. In addition, many of the ideal site characteristics may not conform fully to currently adopted City of Kingman property development rules, parking regulations, or street and sidewalk development rules. However, a residential and commercial mixed-use land-use type would currently be allowed along the corridor within C-1, C-2, and C-3 zoning districts.

The development of a land-use scheme for the corridor that accommodates a more compact development form, including mixed-use land use types, would offer greater potential for pedestrian mobility, access management and economic viability. In order

to implement an updated land-use scheme for the corridor, stakeholders must undertake a formal visioning process and develop a targeted corridor land-use policy.

APPENDIX E – POTENTIAL FUNDING SOURCES

E. POTENTIAL FUNDING SOURCES

This section summarizes potential local, state, and federal funding sources for the multimodal improvements for the Stockton Hill Road corridor described throughout this study. As transportation project funding sources are somewhat limited and continually changing given the present economic and political environment, it is important to note that the development of all recommendations could require multiple funding sources and/or the identification of new funding sources.

E.1. Local Funding Sources

Improvement Districts

Improvement districts are formed by the partnering of property owners with the City to finance public works improvements. Districts are initiated to fund projects that benefit the community such as roadways, landscaping, parking, and other public facilities. Property owners are given a several-year window to repay their share of the improvement cost.

Revenue Bonds

Revenue bonds are issues by municipalities to fund public work projects such as roadways. They are not a direct funding source, but can expedite construction by distributing capital improvement costs over the life of a project.

General Fund

The General Fund is the primary fund of the City. It includes all revenues that are not assigned to a special purpose fund such as sales taxes and licensing fees.

Development Impact Fees

Development impact fees are one-time payments imposed by the local government to build or expand public facilities for a new commercial or residential development. Impact fees are proportionate to the cost required to accommodate the nature and size of a given development. Funds acquired from impact fees are meant to pay for the construction or expansion of offsite capital improvements. They may not, however, be used for rehabilitation efforts or operating costs.

E.2. State Funding Sources

Economic Strength Project Program

Through the Economic Strength Project Program, the Arizona Commerce Authority distributes grants for projects that support economic development. The program is continuously funded through HURF and is typically available new roadways, roadway

upgrades, and routine maintenance. At the time of the report, specific rules for grant awards were being finalized.

Greater Arizona Development Authority

The Arizona State Legislature created the Greater Arizona Development Authority (GADA) to aide local and tribal governments enhance their community and economic development opportunities through the development of public infrastructure. GADA offers financial and technical assistance programs to assist political subdivisions, special districts, and Indian tribes with their public facilities. GADA funds are used to lower financing costs and accelerate projects.

Highway Extension Expansion and Loan Program

The Highway Extension Expansion Loan Program (HELP) is managed by ADOT and provides loans and financial assistance for highway projects in Arizona. The objective of HELP is to accelerate the funding of general transportation and construction projects. HELP subsidizes interest rates and does not require an application fee. However, the program is currently not accepting applications due to state budget issues.

Highway User Revenue Fund

The Highway User Revenue Fund (HURF) is collected by the state from transportation revenues such as gasoline and vehicle license taxes. They represent the bulk of the State's transportation fund and can only be used on highway construction and improvements. ADOT distributes HURF funds to municipalities based on population.

Transportation, Community, and System Preservation Program

The Transportation, Community, and System Preservation (TCSP) Program provides grants to municipal projects that: (1) improve transportation efficiency, (2) reduce environmental impacts of transportation, (3) reduce the need for costly future public infrastructure, (4) ensure efficient access to jobs, services, and (5) examine community development patterns and identify strategies to encourage private sector development patterns that achieve these goals. The purpose of the program is to identify private sector-based initiatives to improve the relationships between transportation, community, and system preservation plans and practices.

Transportation Alternatives Program

The recently passed MAP-21 federal transportation bill (Summer 2012) consolidated the former Safe Routes to School (SRTS) and Transportation Enhancement programs into the new Transportation Alternatives Program. ADOT is currently preparing rules and program guidance, but eligible local projects will likely include those that encourage alternative transportation.

E.3. Federal Funding Sources

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) is managed by the FHWA and ADOT and funds safety improvement projects that reduce the number and/or severity of highway-related collisions.

National Highway System Program

The National Highway System (NHS) Program funds roadway improvements to rural and urban roads that are a part of the NHS, including the Interstate System, and designated connections to major intermodal terminals. The NHS Program may also fund transit improvements in NHS corridors.

Surface Transportation Program

The Surface Transportation Program (STP) is a flexible funding program funds general transportation, environmental, and transit projects. The STP is managed by FHWA and ADOT and applies to projects on federal-aid highways, urban arterials and collectors, rural arterials and collectors, bridge projects on public roads, transit capital projects, and intracity/intercity bus terminals and facilities.

APPENDIX F – ACCESS MANAGEMENT CASE STUDIES

F. ACCESS MANAGEMENT CASE STUDIES

Access management plans and regulations have been implemented throughout the United States in response to roadway safety and operational issues. The following case studies illustrate typical access management issues and solutions in busy corridors. The locations were selected due to their comprehensive documentation and relevance to the Stockton Hill Road corridor. Table 18 provides an overview of the case studies.

Table 18: Summary of Case Studies

Case Study		Results	
Location	Description of Improvements	Safety/ Operational Impact	Public Acceptance
Oakland Park Blvd. Ft. Lauderdale, FL (2.2 mi)	• Median extended to close 17 unsignalized openings • Limited turn movements on remaining openings	• 10% decline in crash rate • 30 % less delay • 30% fewer midblock median manuevers	• 64% reported positive impact on safety and traffic • 68% of businesses had little to no economic impact
Telegraph Road Detroit, MI (30 mi)	• Retrofitted roadway with directional crossovers • Redirected left turn traffic to directional crossover	• 20% increase in roadway capacity	-
US 27 Somerset, KY (5.4 mi)	• Widened roadway from four to six lanes • Eliminated continuous left-turn lane • Permitted U-turns signalized intersections	• 10% decline in crash rate	• 44% reported positive safety impact • 65% of businesses had little to no economic impact

Oakland Park Boulevard; Fort Lauderdale, Florida[1]

Description

Located in Fort Lauderdale, Florida, Oakland Park Boulevard is a congested east-west corridor that links inner Broward County to the coastal beaches. In the mid-1980's, it was part of a median closure and retrofitting plan which included 2.4-mile section of the roadway. At the time of the project, average daily traffic on Oakland Park Boulevard was approximately 35,000 vehicles per day.

Prior to the project, 33 unsignalized median openings provided full access along this six-lane section of the corridor. Strip mall development and an excess of median openings that were closely spaced and allowed for all turn movements contributed to the corridor's heavy traffic volumes. The access management project eliminated nearly

[1] Access Management Manual, Transportation Research Board (2003)

half of the median openings. Remaining openings were limited to left ingress and U-turns, with only one opening that allowed left egress. As a result of the median elimination and retrofit, the distance between median openings increased and the number of openings per mile decreased.

Results

After improvements, the total number of crashes reduced by 26 percent, with a 41 percent reduction in crashes with property damage. This reduction was attributed to the reduction of conflicts points after completion of the project. In addition, there were 29 percent fewer midblock median movements and 37 percent fewer left turns from Oakland Park Boulevard onto adjacent arterials. As a result, travel speed increased and turning delays decreased.

A survey was conducted to develop an understanding of the public acceptance of the corridor access management improvements. The 354 respondents consisted of frequent corridor users from various interest groups, including motorists, residents, merchants, and customers. A summary of the responses follows:

- 64 percent favored the improved corridors. All interest groups noticed an overall improvement in safety and traffic
- Of all interest groups, motorists were the most in favor of the project
- Property values were not affected by the median improvements. 70 percent of business reported no change in property value, and 13 percent reported some increase
- 68 percent of businesses reported little or no economic impact, but 27 percent reported some type of loss

Telegraph Road; Detroit, Michigan[1]

Description

In Michigan, directional crossovers are frequently used to control turning movements from medians. A program of directional crossover installations near signalized intersections was implemented by the Michigan Department of Transportation in the 1960s. Directional crossovers were installed at an average of 660 ft away from signalized intersections to prohibit left and U-turns and allow two-phase signal operations.

As part of the program, a 30-mile section of Telegraph Road in Detroit was retrofitted with directional crossovers along the six- to eight-lane roadway. Traffic volumes in this section range from 32,000 to 99,000 per day. The project prohibited left turns at signalized intersections, but allowed them at directional crossovers. As a result, signal phasing allowed for more green time and signal optimization.

[1] Access Management Manual, Transportation Research Board (2003)

Results

A study that evaluated the effectiveness of Telegraph Road improvements found that overall roadway efficiency and safety improved. Traffic signals operated on a cycle with roughly 55% green time and roadway capacity increased by 20%. The study found that signalized intersections with nearby directional crossovers, as opposed to traditional intersections that allow left turns, resulted in a decrease in conflict points and crashes.

US 27, Somerset, Kentucky[1]

Description

Located in Somerset, Kentucky, US 27 is a heavily traveled corridor which extends from Boat Dock Road to KY 80 Business. The project area, spanning 5.4 miles of the roadway, had average daily traffic volumes of 22,000 to 36,000 vehicles per day. Weekend traffic volumes were estimated to be even higher due to recreational traffic generated from Lake Cumberland area users.

Prior to the access management project, US 27 consisted of four lanes with 26 signalized intersections and a continuous two-way left-turn lane. An abundance of access points to adjacent businesses further congested the corridor. The project, completed in 1998, widened the roadway from four to six lanes and replaced the continuous turn lane with a non-traversable depressed median. Instead, left-turning traffic was redirected to the signalized intersections which permitted U-turns during left-turn phases.

Results

Five years after improvements were completed, crash data was collected to evaluate the safety benefit of the project. Total crashes decreased by 16 percent and the crash rate, by 10 percent. This reduction was attributed to the decrease in conflict points after eliminating the left-turn lane. In addition, there were only eight U-turn crashes, the majority of which were due to drivers' inattention of U-turns during left-turn phases.

Due to previous apprehension of the project, a survey was conducted to determine the public acceptance of the access management improvements. The following summarizes the 73 responses received from business and property owners along the corridor:

- 23 percent of business owners reported a positive effect on their business, while 42 percent reported no change
- 44 percent reported a positive safety impact and 18 percent reported a neutral impact.

[1] Quantification of the Benefits of Access Management for Kentucky, Kentucky Transportation Center (2006)

APPENDIX G – PRELIMINARY ENVIRONMENTAL REVIEW

G. PRELIMINARY ENVIRONMENTAL REVIEW

G.1. Title VI and Environmental Justice

Title VI of the Civil Rights Act of 1964 and related statutes ensure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, and disability.

Executive Order 12898 "Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations" directs that programs, policies, and activities identify and address as appropriate, disproportionately high and adverse human health and environmental effects on minority and low-income populations.

Population characteristics were analyzed to identify any high concentrations of racial or ethnic minority, low-income, elderly, or disabled populations. The following figures represent the City of Kingman, Mohave County, and the State of Arizona.

Elderly

Residents aged 60 years or older are defined as elderly. As shown in Table 19, the City of Kingman has an elderly population of 19.1 percent, which is higher than the State but slightly lower than Mohave County.

Table 19: Elderly Population

Jurisdiction	Percent Elderly in Jurisdiction
Kingman City	19.1%
Mohave County	23.3%
State of Arizona	13.8%

Source: 2010 US Census

Racial and Ethnic Minorities

Racial minority groups comprise of people who identify themselves as any race other than White. It includes Black or African American, Native American, Asian, Pacific Islander, Other, and Two or More Races. The US Census also asks about 'Hispanic or Latino' origin as a separate ethnicity-related question. Thus, US Census respondents not only choose the race or races with which they most closely identify, they are also categorized by membership in one of two ethnicities: 'Hispanic or Latino; and 'Not Hispanic or Latino'.

As shown in Table 20, the minority population in the City of Kingman is similar to that of Mohave County, 12 percent and 13.1 percent, respectively. Both these figures are relatively lower than the State minority population of 27 percent. The City of Kingman Hispanic population is 12.5 percent, which is also less than both Mohave County and the State of Arizona.

Table 20: Minority Population

Jurisdiction	Percent Minority in Jurisdiction	Percent Hispanic in Jurisdiction
Kingman City	12.0%	12.5%
Mohave County	13.1%	14.8%
State of Arizona	27.0%	29.6%

Sources: 2010 US Census

Disability

In the City of Kingman, the proportion of residents with a disability is close to 17 percent. As detailed in Table 21, the Mohave County and the rest of the state has a respective disabled population of 17.7 and 11.1 percent.

Table 21: Disabled Population

Jurisdiction	Percent Disabled in Jurisdiction
Kingman City	16.9%
Mohave County	17.7%
State of Arizona	11.1%

Sources: 2010 US Census

Poverty Status

The proportion of residents below poverty level in the City of Kingman is similar to that of Mohave County and the rest of the state. According to the 2006-2010 American Community Survey 5-year estimates, the City of Kingman has a 13.2 percent population of residents below poverty level. The results are detailed in Table 22.

Table 22: Population Below Poverty Level

Jurisdiction	Percent Below Poverty Level
Kingman City	13.2%
Mohave County	16.1%
State of Arizona	15.3%

Sources: 2006-2010 American Community Survey (5-year estimates)

Compliance with Title VI and Environmental Justice

The assessment of demographic characteristics showed that the percentage of Elderly and Disabled populations within the City of Kingman represent a smaller percentage than the share of those same populations within Mohave County, but a slightly larger share than the State of Arizona as a whole.

In order to comply with Title VI and Environmental Justice requirements, recommendations made by this study will ensure that impacts from recommendations do not have disproportionately high and adverse health and environmental impacts on these populations.

G.2. Special Status Species and Critical Habitats

As shown in Table 23, according to the Arizona Game and Fish Department's Heritage Data Management System, two special status species and one critical habitat were listed as potentially occurring within two miles of the study area.

- The Greater Western Bonneted Bat is listed as a "Species of Concern" by the US Fish and Wildlife Service, as well as a "Sensitive Species" by the US Forest Service and the Bureau of Land Management.
- The Sonoran Desert Tortoise is described as a "Candidate Species" by the US Fish and Wildlife Service, a "Species of Concern" by the US Forest Service, and a "Wildlife of Special Concern" by the State of Arizona.
- A "10J" habitat area for the California Condor has also been identified within close proximity to the study area.

Table 23: Special Status Species and Critical Habitats near Study Area

Name	Common Name	US Fish & Wildlife Service	US Forest Service	Bureau of Land Management	State Of Arizona
Eumops perotis californicus	Greater Western Bonneted Bat	SC	S	S	
Gopherus morafkai	Sonoran Desert Tortoise	C	S		WSC
Gymnogyps californianus	10J area for California Condor				

SC = Species of Concern; C = Candidate Species; S = Sensitive Species; WSC = Wildlife of Special Concern
Source: Arizona Game and Fish Department (Heritage Data Management System),

APPENDIX H – PLANNING AND ENVIRONMENTAL LINKAGES QUESTIONNAIRE AND CHECKLIST

Planning and Environmental Linkages Questionnaire and Checklist

The Planning and Environmental Linkage (PEL) process, a specific product of implementing SAFETEA-LU,[1] seeks to develop subarea and corridor studies that can be used more directly to inform the NEPA[2] process. Effective, conceptual-level transportation planning studies that follow the PEL process provide opportunities both to identify important issues of concern early and to build the agency, stakeholder, and public understanding necessary to successfully address them. Such early, integrated planning is not driven solely by regulatory requirements and the quest for more efficient and effective processes, although those are desirable results. Transportation and environmental professionals—as well as those in metropolitan planning organizations, state and federal resource agencies, and nongovernmental organizations—are finding that early collaboration helps achieve broader transportation and environmental stewardship goals through better decisions regarding programs, planning, and projects.

This document has been developed by the Arizona Department of Transportation (ADOT) to provide guidance, particularly to transportation planners and environmental planners, regarding how to most effectively link the transportation planning and NEPA processes. By considering the questions and issues raised in this questionnaire, transportation planners will become more aware of potential gaps in their subarea or corridor studies, better understand the needs of future users of the studies, and be reminded of the benefits of wider and/or deeper collaboration with agencies, the public, and other stakeholders. Environmental planners who fill out the checklist will assume a new role in the transportation planning process: becoming an advocate for early awareness of environmental issues before the NEPA process begins.

This questionnaire and checklist will be used to effectively influence the scope, content, and process employed for ADOT transportation planning studies that focus on specific transportation corridors or on transportation network subareas (versus statewide transportation studies). Completion of this questionnaire and checklist will support the PEL process and serve dual objectives:[3]

- provide guidance to transportation planners on the level of detail needed to ensure that information collected and decisions made during the transportation planning study can be used during the NEPA process for a proposed transportation project
- provide the future NEPA study team with documentation on the outcomes of the transportation planning process, including the history of decisions made and the level of detailed analysis undertaken

When conducting a transportation planning study that links to the future NEPA process, major issues include:[4]

- identifying the appropriate level of environmental analysis for the study
- identifying the appropriate level of agency, stakeholder, and public involvement

[1] Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59)

[2] National Environmental Policy Act of 1969

[3] Objectives are based on the Federal Highway Administration's online document: *Case Studies: Colorado: Colorado Department of Transportation: Tools and Techniques to Implement PEL*, <www.environment.fhwa.dot.gov/integ/case_colorado2.asp> (accessed October 24, 2011).

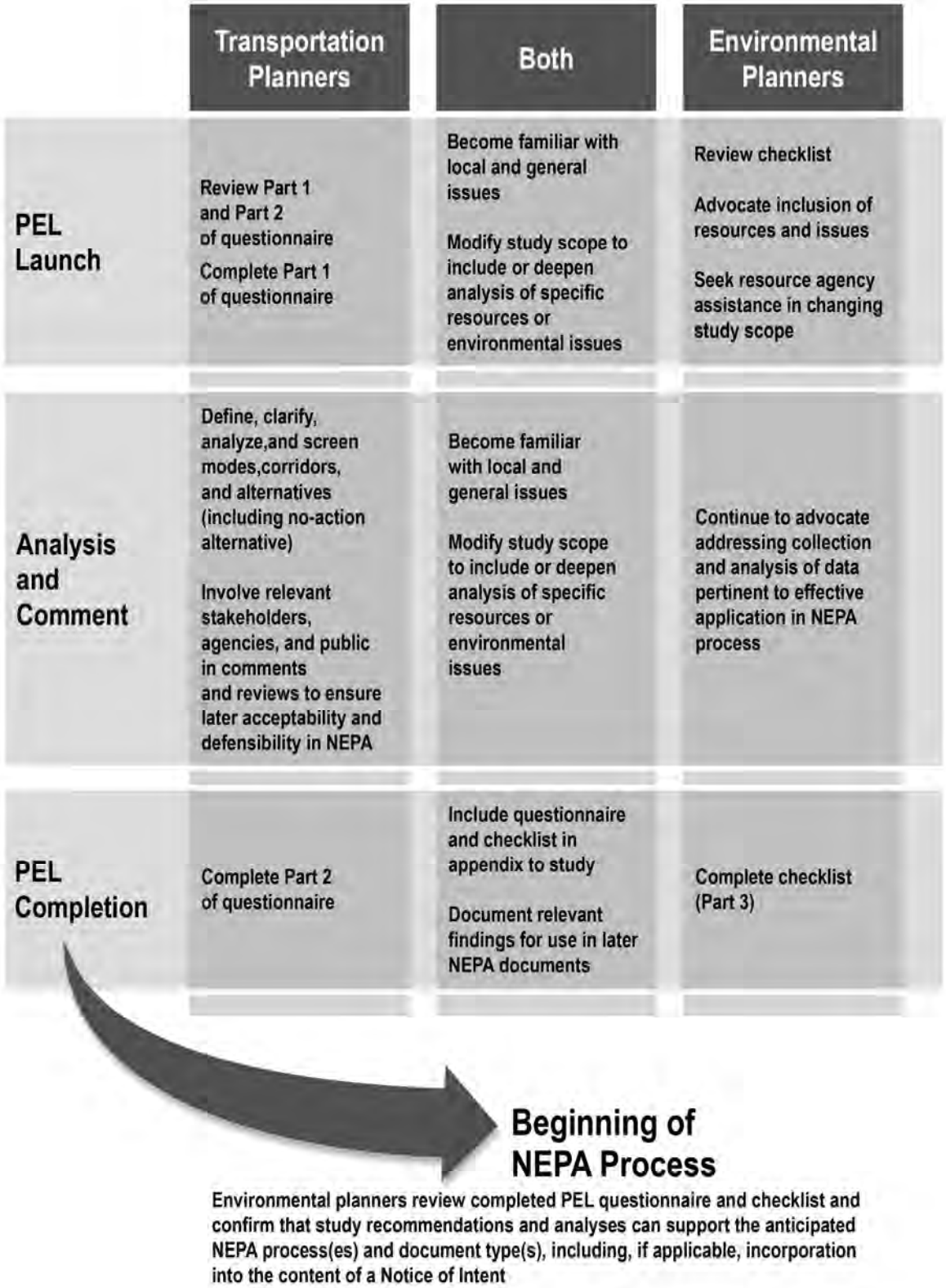
[4] Further guidance is available in the Federal Highway Administration's *Guidance on Using Corridor and Subarea Planning to Inform NEPA*, dated April 5, 2011, available online at <www.environment.fhwa.dot.gov/integ/corridor_nepa_guidance.pdf>.

- defining unique study concurrence points for seeking agreement from relevant resource agencies, stakeholders, and members of the public
- developing a process to ensure that the study will be recognized as valid within the NEPA process
- identifying when to involve resource agencies in the study, and to what extent they influence decision making

These issues should be considered throughout the transportation planning study process. Users of this *ADOT Planning and Environmental Linkages Questionnaire and Checklist* should review the entire document at the beginning of the study to familiarize themselves with whatever local and general issues may be operative. The questionnaire is provided in two parts: one to be completed by transportation planners at the beginning of the study and one to be completed at the end. The checklist (Part 3) should be used by environmental planners throughout the study and should be finalized at the end of the study.

Upon completion of the transportation planning study, this document should be included as an appendix to the study's final report to document how the study meets the requirements of 23 Code of Federal Regulations § 450.212 or § 450.318 (Subpart B: Statewide Transportation Planning and Programming or Subpart C: Metropolitan Transportation Planning and Programming, respectively).

The flowchart on the following page outlines the major inputs, decision points, and outcomes that occur during implementation of a transportation planning study using the PEL process.


Transportation Planners
Both
Environmental Planners
PEL Launch
Review Part 1 and Part 2 of questionnaire
Complete Part 1 of questionnaire
Become familiar with local and general issues
Modify study scope to include or deepen analysis of specific resources or environmental issues
Review checklist
Advocate inclusion of resources and issues
Seek resource agency assistance in changing study scope
Analysis and Comment
Define, clarify, analyze,and screen modes,corridors, and alternatives (including no-action alternative)
Involve relevant stakeholders, agencies, and public in comments and reviews to ensure later acceptability and defensibility in NEPA
Become familiar with local and general issues
Modify study scope to include or deepen analysis of specific resources or environmental issues
Continue to advocate addressing collection and analysis of data pertinent to effective application in NEPA process
PEL Completion
Complete Part 2 of questionnaire
Include questionnaire and checklist in appendix to study
Document relevant findings for use in later NEPA documents
Complete checklist (Part 3)
Beginning of NEPA Process
Environmental planners review completed PEL questionnaire and checklist and confirm that study recommendations and analyses can support the anticipated NEPA process(es) and document type(s), including, if applicable, incorporation into the content of a Notice of Intent

Questionnaire for Transportation Planners – Part 1

This part of the questionnaire should be completed by transportation planners at the beginning of the transportation planning study. Please note that planners should also review the second part of the questionnaire to understand what additional issues will need to be considered and documented as the study progresses.

Project identification
What is the name of the study? What cities and region does it cover? What major streets are covered? For corridor studies, what are the intended termini?
Kingman Stockton Hill Road Corridor Study The Stockton Hill Road Corridor study area is located in the north-central area of the City of Kingman in northern Mohave County, and also includes a small portion of an adjacent unincorporated area within Mohave County jurisdiction. The study area is centered on Stockton Hill Road, with a specific focus on the segment between Detroit Avenue and Northern Avenue. However, the network of nearby collector streets, in particular the alternative north-south routes of Western Avenue and Glen Road will also be analyzed.
Who is the study sponsor?
Arizona Department of Transportation
Briefly describe the study and its purpose.
The objective of this study is to analyze the multimodal transportation and development policy needs of the Stockton Hill Road corridor. Specific considerations will include an analysis of existing and future transportation conditions, and an assessment of the current development and land-use framework. Findings will be utilized to evaluate alternative solutions and offer recommendations.
Who are the primary study team members (include name, title, organization name, and contact information)?
Matt Carpenter: Project Manager, ADOT/Multimodal Planning Division, 602-712-7870/MCarpenter@azdot.gov Burley Hambrick: Local Agency PM, City of Kingman, 928-692-3117/bhambrick@cityofkingman.gov
Does the team include advisory groups such as a technical advisory committee, steering committee, or other? If so, include roster(s) as attachment(s).
Yes, there is a Technical Advisory Committee (TAC) in place. For roster, see Attachment A.
Have previous transportation planning studies been conducted for this region? If so, provide a brief chronology, including the years the studies were completed. Provide contact names and locations of the studies and study websites.
1999: I-40 Stockton Hill Road Traffic Interchange – Initial Design Concept Report – southern section of study area Prepared by Sverdrup Civil, Inc. Prepared for ADOT. 2000 City of Kingman Pedestrian and Bikeway Plan Prepared by City of Kingman 2003: City of Kingman General Plan 2020 Prepared by City of Kingman Planning and Zoning Department 2010: Mohave County General Plan (2010 Update) Prepared by Freilich, Leitner & Carlisle. Prepared for Mohave County Planning Department 2011: Kingman Area Transportation Study Update Prepared by Kimley-Horn and Associates, Inc. Prepared for ADOT, City of Kingman, and Mohave County
What current or near-future planning (or other) studies in the vicinity are underway or will be undertaken? What is the relationship of this study to those studies? Provide contact names and locations of the studies and study websites.
None were identified.

Study objectives

What are your desired outcomes for this study? (Mark all that apply.)

- ☐ Stakeholder identification
- ☐ Stakeholder roles/responsibilities definition
- ☐ Travel study area definition
- ☐ Performance measures development
- ☒ Development of purpose and need goals and other objectives
- ☐ Alternative evaluation and screening
- ☐ Alternative travel modes definition
- ☒ Scheduling of infrastructure improvements over short-, mid-, and long-range time frames
- ☐ Environmental impacts
- ☐ Mitigation identification
- ☐ Don't know
- ☒ Other : Develop access and land use policy recommendations

Have system improvements and additions that address your transportation need been identified in a fiscally constrained regional transportation plan?

Yes, programmed improvements have been identified and documented.

Will a purpose and need statement[5] be prepared as part of this effort? If so, what steps will need to be taken during the NEPA process to make this a project-level purpose and need statement?

Yes. This preliminary Purpose & Need statement will need to be updated during the NEPA study.

Establishment of organizational relationships

Is a partnering agreement in place? If so, who are signatories (for example, affected agencies, stakeholders, organizations)? Attach the partnering agreement(s).

No.

What are the key coordination points in the decision-making process?

The TAC Advisory Committee is in place with recurring meetings.

Planning assumptions and analytical methods

Is the time horizon of the study sufficiently long to consider long-term (20 years or more from completion of the study) effects of potential scenarios?

Yes, 5, 10, and 20 year planning horizons have been identified.

What method will be used for forecasting traffic volumes (for example, traffic modeling or growth projections)? What are the sources of data being used? Has USDOT validated their use?

Growth projections included in the updated 2011 Kingman Area Transportation Study Update are being utilized.

Will the study use FHWA's Guide on the Consistent Application of Traffic Analysis Tools and Methods[6]*? If not, why not? How will traffic volumes from the travel demand model be incorporated, if necessary, into finer-scale applications such as a corridor study?*

Yes. (Highway Capacity Manual)

Do the travel demand models base their projections on differentiations between vehicles?

The Travel Demand Model applicable to this study uses growth factor data, which take into account differentiations between vehicles.

[5] For an explanation of purpose and need in environmental documents, please see the Federal Highway Administration's (FHWA's) "NEPA and Transportation Decisionmaking: The Importance of Purpose and Need in Environmental Documents," <Purpose and Need>. This website provides links to five additional resources and guidance from FHWA that should be helpful in understanding the relationship between goals and objectives in transportation planning studies and purpose and need statements of NEPA documents.

[6] FHWA November 2011 publication: <Traffic Analysis Tools and Methods>

Data, information, and tools
Is there a centralized database or website that all State resource agencies may use to share resource data during the study?
No. A centralized database does not exist at this time. Resource agencies were contacted to provide the necessary resource data.

Questionnaire for Transportation Planners – Part 2

This part of the questionnaire should be completed by transportation planners at the end of the transportation planning study. This completed document should become an appendix to the study's final report to document how the study meets the requirements of 23 Code of Federal Regulations § 450.212 or § 450.318.

Purpose and need for this study
How did the study process define and clarify corridor-level or subarea-level goals (if applicable) that influenced modal infrastructure improvements and/or the range of reasonable alternatives?
The study had the broad goal of improving operations throughout the corridor. It did this by identifying deficiencies across modes; then providing a solution set to provide a range of options to address the needs. Both the evaluation of deficiencies and the solution set aided in further defining and clarifying the corridor goals.
What were the key steps and coordination points in the decision-making process? Who were the decision-makers and who else participated in those key steps?
The technical advisory committee meetings were the key coordination points in the decision-making process. The City of Kingman, Mohave County, and WACOG were the major decision-makers for the project.
How should this study information be presented in future NEPA document(s), if applicable? Are relevant findings documented in a format and at a level of detail that will facilitate reference to and/or inclusion in subsequent NEPA document(s)?[7]
The needs identified in this study develop the preliminary purpose & need and be can used to inform final project level purpose & need statements. The reasonable range of alternative solutions can inform future NEPA studies. This study is done at a level of detail that could be referenced in subsequent NEPA documents.
Were the study's findings and recommendations documented in such a way as to facilitate an FHWA or Federal Transit Administration decision regarding acceptability for application in the NEPA process? Does the study have logical points where decisions were made and where concurrence from resource or regulatory agencies, stakeholders, and the public was sought? If so, provide a list of those points.
Yes. The primary stakeholders are the City of Kingman, Mohave County, and WACOG. The decision points were at the TAC meetings.

Establishment of organizational relationships – tribes and agencies[8]			
Tribe or agency	Date(s) contacted	Describe level of participation	Describe the agency's primary concerns and the steps needed to coordinate with the agency during NEPA scoping.[9]
Tribal			
(name of tribe)			N/A
(name of tribe)			N/A
Federal			
Bureau of Indian Affairs			N/A
Bureau of Land Management			N/A

[7] For an explanation of the types of documents needed under the NEPA process and the nature of the content of those documents, please see "NEPA Documentation: Improving the Quality of Environmental Documents,"<Documentation>.

[8] Users may add rows to this table to accommodate additional tribes and agencies. Unused rows may be deleted.

[9] If the transportation planning study final report does not adequately document interactions (for example, meeting minutes, resolutions, letters) with the relevant agencies, append such information to the end of this questionnaire and checklist.

Establishment of organizational relationships – tribes and agencies[8]			
Tribe or agency	Date(s) contacted	Describe level of participation	Describe the agency's primary concerns and the steps needed to coordinate with the agency during NEPA scoping.[9]
Bureau of Reclamation			N/A
Federal Highway Administration	June 2013	Reviewed initial concepts for improvement alternatives for the Beverly Avenue and Stockton Hill Road intersection.	Primary concerns related to the impact of possible intersection improvements on Interstate 40. Study recommendations will not result in NEPA process, but further coordination with agency will take place during later studies of the intersection.
County			
Mohave County Public Works	Throughout study	Steven Latoski, Director of Public Works, served as member of project Technical Advisory Committee (TAC). Reviewed study analyses, reports, and commented on recommendations.	No direct concerns as study corridor was not in county jurisdiction. Primary comments throughout study addressed traffic operations, safety and regional consistency.
Local			
City of Kingman	Throughout study	Burley Hambrick, Public Works, served as local agency PM and head of project Technical Advisory Committee (TAC). Mr. Hambrick and several other City of Kingman representatives (See attached roster) reviewed study analyses, reports, and commented on recommendations.	City was lead agency on study. Primary concerns included traffic operations including left turn lanes, deceleration (right turn) lanes, raised medians as well as the Beverly roundabout (and subsequent traffic operations) and signal coordination with mid-block pedestrian crossing which would improve overall safety.
Transportation agencies			
ADOT – Kingman District	Throughout study	Michael Kondelis and Kara Lavertue served as members of project Technical Advisory Committee (TAC). Reviewed study analyses, reports, and commented on recommendations.	Beverly Avenue Intersection. Kingman District preference was for an elongated roundabout at the Stockton Hill/I-40 interchange due to traffic operations and safety.
WACOG	Throughout study	Sharon Mitchell served as members of project Technical Advisory Committee (TAC). Reviewed study analyses, reports, and commented on recommendations.	WACOG reviewed documents and had no major concerns during study.

Establishment of organizational relationships – stakeholders and members of the public[10]			
Public and stakeholders	Date(s) contacted	Describe level of participation	Describe the primary concerns expressed by members of the public and stakeholders.
Public			
Members of the public	Public meetings were held on June 6, 2013 and November 14, 2013.	Public meetings were held on June 6, 2013 and November 14, 2013, where members of the public could comment on corridor deficiencies, evaluation criteria, and recommendations. Comments were also received via email to ADOT communications or the project website.	Primary concerns included traffic congestion throughout corridor, thru-access connections between properties, and the functionality of the Beverly Avenue and Stockton Hill Road. A detailed public involvement report is appended to the study.
Stakeholders			
Other (for example, Audubon Society, Center for Biological Diversity, citizens groups, homeowners associations, Sierra Club, private mining or energy interests, railroad companies)	Stakeholders including major business owners, land owners and Chamber of Commerce were contacted throughout study.	Phone interviews, attendance at public meetings, and written correspondence.	Major business owners and land owners were interviewed to understand access and circulation needs. No major outstanding concerns except for the Del Taco property. ADOT/City of Kingman were contacted by Del Taco as they were concerned about limiting access to their property. A response explaining the recommendations and process of the study was provided. The Chamber of Commerce also participated through the public participation process and offered to liaise with businesses regarding access and circulation concerns.

Planning assumptions and analytical methods
Did the study provide regional development and growth assumptions and analyses? If so, what were the sources of the demographic and employment trends and forecasts?
The study provided information on existing and projected population and employment. Sources included the 2010 U.S. Census and demographic information from the Kingman Area Transportation Study (2011).
What were the future-year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs, and network expansion?
The model utilized for the Kingman Area Transportation Study (KATS 2011) was used to estimate future population, employment, and traffic conditions for the year 2013.
Were the planning assumptions and the corridor vision/purpose and need statement consistent with each other and with the long-range transportation plan? Are the assumptions still valid?
The assumptions of increased population, employment, and traffic volumes within the study area are consistent with the project purpose and need, and still valid at the conclusion of the study.
Data, information, and tools
Are the relevant data used in the study available in a compatible format that is readily usable? Are they available through a centralized web portal?
Demographic information is documented in the Kingman Areas Transportation Study (KATS 2011). All traffic model derived data is available, but not available through a centralized web portal.

[10] Users may add rows to this table to accommodate additional stakeholders.

Are the completeness and quality of the data consistent with the quality (not scale or detail) of inputs needed for a NEPA project-level analysis[11]?
N/A
Are the data used in the study regularly updated and augmented? If regularly updated, provide schedule and accessibility information.
N/A
Have the environmental data been mapped at scales that facilitate comparison of effects across different resources and at sufficient resolution to guide initial NEPA issue definition? If not, what data collection and/or manipulation would likely be needed for application to the NEPA scoping process?
The only environmental areas that were evaluated in this high level study were biology and environmental justice and the resolution is sufficient to guide initial NEPA definition. A more detailed and comprehensive evaluation will need to be performed during NEPA.

[11] For an explanation of the types of information needed to evaluate impacts in environmental documents, please see FHWA's "NEPA and Transportation Decisionmaking: Impacts,"<Analysis of Impacts>. This website provides links to six additional resources and guidance that should be helpful in understanding the types of impacts that need to be assessed, their context, and their intensity.

Examine the Checklist for Environmental Planners, at the back of this document, for more detail about potential impacts that could be mapped. Below is an abbreviated list of resources that could occur in the study area and may be knowable at this time and at the study's various analytical scales:

Resource or issue	Is the resource or issue present in the area?	Would any future transportation policies or projects involve the issue? Would there be impacts on the resource?
Sensitive biological resources	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Wildlife corridors	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Wetland areas	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Riparian areas	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
100-year floodplain	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Prime or unique farmland or farmland of statewide or local importance	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Visual resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Designated scenic road/byway	☐ Yes ☒ No ☐ Unknown ☐ Not applicable	☐ Yes ☒ No ☐ Unknown ☐ Not applicable
Archaeological resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Historical resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable

Resource or issue	Is the resource or issue present in the area?	Would any future transportation policies or projects involve the issue? Would there be impacts on the resource?
Section 4(f)[12] wildlife and/or waterfowl refuge, historic site, recreational site, park	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Section 6(f)[13] resource	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Existing development	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable
Planned development	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Title VI/ Environmental justice populations[14]	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable
Utilities	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable
Hazardous materials	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Sensitive noise receivers[15]	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Air quality	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable
Other (list) _____	☐ Yes ☐ No ☐ Unknown ☒ Not applicable	☐ Yes ☐ No ☐ Unknown ☒ Not applicable

[12] Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S. Code § 303, as amended); see <Section 4(f)>.

[13] Section 6(f) of the Land and Water Conservation Fund Act

[14] refers to Title VI of the 1964 Civil Rights Act and 1994 Executive Order 12898 on environmental justice

Did the study incorporate models of, for example, species/habitat locations (predictive range maps), future land use, population dynamics, stormwater runoff, or travel demand? What models were used? Did the study adequately document what models were used, who was responsible for their use, and how they were used (with respect to, for example, calibration, replicability, contingencies, and exogenous factors)?
No.
In scoping, conducting, and documenting the planning study, participants have come across documents and leads from agency staff and other sources that the environmental planners may be able to use in conducting their studies. List any applicable memoranda of understanding, cost-share arrangements, programmatic agreements, or technical studies that are underway but whose findings are not yet published, etc.
No.
Development of alternatives
Were resource agencies, stakeholders, and members of the public engaged in the process of identifying, evaluating, and screening out modes, corridors, a range of alternatives,[16] or a preferred alternative (if one was identified—the latter two refer to corridor plans)? If so, how? Did these groups review the recommendation of a preferred mode(s), corridor(s), range of alternatives (including the no-build alternative), or an alternative? Were the participation and inputs of these groups at a level acceptable for use in purpose and need statements or alternatives development sections in NEPA documents? If not, why not?
Yes, stakeholder TAC meetings and two public meetings were held to get input. The first public meeting sought input on corridor deficiencies and evaluation criteria. The second public meeting sought input on the recommendations made in the study. This study evaluated all of the modes that are applicable to this existing corridor and identified a variety of issues and a range of solutions. Preferred alternatives were not identified in this study.
Describe the process of outreach to resource agencies, the public, and other stakeholders. Describe the documentation of this process and of the responses to their comments. Is this documentation adequate in breadth and detail for use in NEPA documents?
As discussed in the responses to previous questions the City of Kingman, Mohave County, WACOG, and the public have been involved in this study. This high level study did not involve outreach to resource agencies. Since the project is in an urban environment, impacts under the jurisdiction of resource agencies are expected to be low. Additional outreach will need to be undertaken during project development and NEPA.
If the study was a corridor study, describe the range of alternatives considered (if any), screening process, and screening criteria. Include what types of alternatives were considered (including the no-build alternative) and how the screening criteria were selected. Was a preferred alternative selected as best addressing the identified transportation issue? Are alternatives' locations and design features specified?
This study evaluates a busy urban street corridor and many issues and deficiencies were identified. As a result several solutions were identified for each deficiency and are too voluminous to discuss here. Please refer to the final study report for this information. Preferred solutions or alternatives were not identified.
Also regarding whether the study was a corridor study, for alternatives that were screened out, summarize the reasons for their rejection. Are defensible, credible rationale articulated for their being screened out? Did the study team take into account legal standards[17] needed in the NEPA process for such decisions? Did the study team have adequate information for screening out the alternatives?
N/A
What issues, if any, remain unresolved with the public, stakeholders, and/or resource agencies?
This study did not identify major issue that could not be addressed in the study.

[15] under FHWA's Noise Abatement Criterion B: picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals

[16] For an explanation of the development of alternatives in environmental documents, please see FHWA's "NEPA and Transportation Decisionmaking: Development and Evaluation of Alternatives,"<Alternatives>.

[17] 23 Code of Federal Regulations (CFR) § 771.123(c), 23 CFR § 771.111(d), 40 CFR § 1502.14(a), 40 CFR § 1502.14(b) and (d), 23 CFR § 771.125(a)(1); see FHWA Technical Advisory T 6640.8A, October 30, 1987, <FHWA Technical Advisory T 6640.8A>.

Formally joining PEL with the NEPA process

Lead federal agencies proposing a project that will undergo the NEPA process will want to most effectively leverage the transportation planning study's efforts and results. How could a Notice of Intent (for an environmental impact statement[18]) refer to the study's findings with respect to preliminary purpose and need and/or the range of alternatives to be studied?

N/A. The recommendations in this study will not result in an EIS.

Could a Notice of Intent in the NEPA process clearly state that the lead federal agency or agencies will use analyses from prior, specific planning studies that are referenced in the transportation planning study final report? Does the report provide the name and source of the planning studies and explain where the studies are publicly available? If not, how could such relevant information come to the environmental planners' attention and be made available to them in a timely way?

N/A

List how the study's proposed transportation system would support adopted land use plans and growth objectives.

Adopted land use plans and growth objectives informed this study and were a primary basis for recommendations.

What modifications are needed in the goals and objectives as defined in the transportation study process to increase their efficient and timely application in the NEPA process?

No modifications to the goals and objectives are needed.

Jurisdictional delineations of waters of the United States frequently change. Housing and commercial developments can alter landscapes dramatically and can be constructed quickly. Noise and air quality regulations can change relatively rapidly. Resource agencies frequently alter habitat delineations to protect sensitive species. Will the study data's currency, relevance, and quality still be acceptable to agencies, stakeholders, and members of the public for use in the NEPA process? If not, what will be done to rectify this problem? Who will be responsible for any needed updating?

Because of the high-level nature of this study limited environmental factors were considered, namely biology and environmental justice. This analysis will need to be updated during the NEPA process. The remaining environmental factors will also need to be evaluated during NEPA.

Other issues

Are there any other issues a future NEPA study team should be aware of (mark all that apply)? In the space below the check boxes, explain the nature and location of any issue(s) checked.

- ☐ Public and/or stakeholders have expressed specific concerns
- ☐ Utility problems
- ☒ Access or right-of-way issues
- ☐ Encroachments into right-of-way
- ☐ Need to engage—and be perceived as engaging—specific landowners, citizens, citizen groups, or other stakeholders
- ☐ Contact information for stakeholders
- ☐ Special or unique resources in the area
- ☐ Federal regulations that are undergoing initial promulgation or revision
- ☐ Other _____

[18] While Notices of Intent are required by some federal agencies for environmental assessments, they are optional for FHWA. Please see "3.3.2 Using the Notice of Intent to Link Planning and NEPA," in *Guidance on Using Corridor and Subarea Planning to Inform NEPA* (Federal Highway Administration, April 5, 2011), <Notice of Intent>.

Checklist for Environmental Planners – Part 3

By completing this checklist, environmental planners will be able to systematically evaluate the transportation planning study with regard to environmental resources and issues. It provides a framework for future NEPA studies by identifying those resources and issues that have already been evaluated, and those that have not. The role of environmental planners during the study's various stages is laid out in the flowchart on page 3. This role includes timely advocacy for resources and issues that will later be integral to NEPA processes.

Checklist for environmental planners

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Natural environment				
Sensitive biological resources	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Re-evaluate during NEPA.
Wildlife corridors	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Invasive species	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	Include standard mitigation in environmental clearance.
Wetland areas	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Riparian areas	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
100-year floodplain	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Clean Water Act Sections 404/401 waters of the United States	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Prime or unique farmland	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Farmland of statewide or local importance	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.

Checklist for environmental planners

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Sole-source aquifers	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Wild and scenic rivers	☐ Yes ☒ No ☐ Unknown ☐ Not applicable	☐ Yes ☒ No ☐ Unknown ☐ Not applicable	☐ Yes ☒ No ☐ Unknown ☐ Not applicable	N/A
Visual resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Designated scenic road/byway	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Cultural resources				
Archaeological resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Historical resources	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Section 4(f) and Section 6(f) resources				
Section 4(f) wildlife and/or waterfowl refuge	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Section 4(f) historic site	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Section 4(f) recreational site	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Section 4(f) park	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Section 6(f) resource	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.

Checklist for environmental planners

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Human environment				
Existing development	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	Evaluate during NEPA.
Planned development	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Displacements	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Access restriction	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Neighborhood continuity	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Community cohesion	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Title VI/Environmental justice populations	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Physical environment				
Utilities	☒ Yes ☐ No ☐ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during project development.
Hazardous materials	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Sensitive noise receivers	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.
Air quality	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	☐ Yes ☐ No ☒ Unknown ☐ Not applicable	Evaluate during NEPA.

Checklist for environmental planners

Resource or issue	Is the resource or issue present in the area?	Are impacts to the resource or issue involvement possible?	Are the impacts mitigable?	Discuss the level of review and method of review for this resource or issue and provide the name and location of any study or other information cited in the planning document where it is described in detail. Describe how the planning data may need to be supplemented during NEPA.
Other (list)	☐ Yes ☐ No ☐ Unknown ☒ Not applicable	☐ Yes ☐ No ☐ Unknown ☒ Not applicable	☐ Yes ☐ No ☐ Unknown ☒ Not applicable	

Identification of potential environmental mitigation activities
Could the transportation planning process be integrated with other planning activities, such as land use or resource management plans? If so, could this integrated planning effort be used to develop a more strategic approach to environmental mitigation measures?
N/A
With respect to potential environmental mitigation opportunities at the PEL level, who should ADOT consult with among federal, State, and local agencies and tribes and how formally and frequently should such consultation be undertaken?
N/A
Off-site and compensatory mitigation areas are often creatively negotiated to advance multiagency objectives or multiple objectives within one agency. Who determined what specific geographic areas or types of areas were appropriate for environmental mitigation activities? How were these determinations made?
N/A
To address potential impacts on the human environment, what mitigation measures or activities were considered and how were they developed and documented?
N/A

Prepared by: _Thor Anderson_____ Date: __2-6-14__

Multimodal Planning Division, Arizona Department of Transportation

Attachment A: Kingman Stockton Hill Road PARA Study TAC Contact List

Name	**Organization**	Phone	**E-Mail**
Matt Carpenter	ADOT – MPD PM	(602) 712-7870	mcarpenter@azdot.gov
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Gary Jeppson	City of Kingman – Director Development Services	(928) 753-8560	gjeppson@cityofkingman.gov
Greg Henry	City of Kingman – City Engineer	(928) 753-8122	ghenry@cityofkingman.gov
Greg Smith	Mohave County – Sheriff Office	(928) 753-0753	greg.smith@mohavecounty.us
Jack Kramer	City of Kingman – City Manager	(928) 753-5561	jkramer@cityofkingman.gov
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