

July 21, 2010

TO: Members of the MAG Transportation Safety Committee

FROM: Julian Dresang, Chair, MAG Transportation Safety Committee

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF TENTATIVE AGENDA

Tuesday, July 27, 2010 10:00 a.m.
MAG Office Building, 2nd Floor, Cholla Room
302 North First Avenue, Phoenix

The MAG Transportation Safety Committee will be held at the time and place noted above. Committee members or their proxies may attend **in person, via videoconference or by telephone conference call**. Those attending video conference must notify the MAG site three business days prior to the meeting. Those attending by telephone conference call please contact MAG offices for conference call instructions.

Please park in the garage under the building, bring your ticket, parking will be validated. For those using transit, Valley Metro/RPTA will provide transit tickets for your trip. For those using bicycles, please lock your bicycle in the bike rack in the garage.

In 1996, the Regional Council approved a simple majority quorum for all MAG advisory committees. If the Transportation Safety Committee does not meet the quorum requirement, members who have arrived at the meeting will be instructed a legal meeting cannot occur and subsequently be dismissed. Your attendance at the meeting is strongly encouraged.

Pursuant to Title II of the Americans with Disabilities Act (ADA), MAG does not discriminate on the basis of disability in admissions to or participation in its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Jason Stephens at the MAG office. Requests should be made as early as possible to allow time to arrange the accommodation.

If you have any questions regarding the meeting, please contact Sarath Joshua at (602) 254-6300.

TENTATIVE AGENDA

COMMITTEE ACTION REQUESTED

- | | |
|---|---|
| <ol style="list-style-type: none">1. <u>Call To Order</u>2. <u>Approval of June 22, 2010 Meeting Minutes</u> | <ol style="list-style-type: none">2. Review and approve minutes of the meeting held on June 22, 2010. |
|---|---|

3. Call to Audience

An opportunity will be provided to members of the public to address the Transportation Safety Committee on items not scheduled on the agenda that fall under the jurisdiction of MAG, or on items on the agenda for discussion but not for action. Members of the public will be requested not to exceed a three minute time period for their comments. A total of 15 minutes will be provided for the Call to the Audience agenda item, unless members request an exception to this limit. Please note that those wishing to comment on action agenda items will be given an opportunity at the time the item is heard.

4. Program Managers Report

The following items will be addressed:

- Annual School Crossing Guard Training Workshops
- ADOT Safe Routes to School Program Update
- Outlook for future funds for road safety improvements in the region
- Transportation Safety On-Call Consultants

5. MAG Network Screening Methodology for Intersections - Top 100 Intersections

The MAG Network Screening Methodology for Intersections (NSM-I), developed and adopted by the committee in January 2010, has produced a list of intersections ranked by crash risk. This methodology considers two factors in addition to crash frequency and crash severity. They are the manner of collision and the intersection crash rate. Attachment One provides a complete description of the NSM-I process and the resulting list of top 100 intersections.

6. Arizona's Top 5 Percent Intersections for Crash Risk

The SAFETEA-LU Act requires that each state

3. For information.

4. For information and discussion.

5. For information and discussion.

6. For information and discussion.

produce, by August of each year, an annual report with the top five percent locations with the most severe road crash history. The 2009 report for Arizona includes a list of 20 intersections as the top 5 percent list of intersections in the state. Thirteen (13) out of the twenty (20) intersections are all located within the MAG region. The 2009 report is based on crash data for 2006, 2007 and 2008. Since crash data for 2009 are not available as yet, the state is preparing to submit the 2009 report for 2010 and have asked affected member agencies to provide updates on any safety improvements carried out since the 2009 report. Attachment Two shows the Top 5 Percent list of intersections from the 2009 report for Arizona.

7. Programming Projects for FY 2011, 2012, 2013, 2014 and 2015

At the meeting held on May 25, 2010, the committee established a Working Group to develop and recommend a strategy for programming transportation safety projects for inclusion in the MAG 5-year Transportation Improvement Program (TIP) for FY 2011, 2012, 2013, 2014 and 2015. The Working Group, made up of committee members and MAG staff, has recommended a programming process for FY2011-2015 as shown in Attachment Three.

8. Data Needs for the Investigation of Crashes in Unincorporated Areas of Maricopa County

The Maricopa County DOT is responsible for all roads located within the unincorporated areas of Maricopa County. Often this requires crash analyses at intersections that have one or more legs located within the boundaries of a city or town. Some crashes at these locations are erroneously coded as all located within the local agency. For proper analysis of road safety at such intersections Maricopa County needs the assistance of affected local agencies in obtaining crash data for such locations.

7. For information and discussion and possible action to recommend the HSIP project programming process for FY 2011-2014.

8. For information and discussion.

The ADOT Data Access policy does not allow Maricopa County to obtain crash data for locations outside its jurisdiction.

9. Reports by Committee Members on Transportation Safety Activities

Members will be requested to report agency activities or current issues that are related to transportation safety.

10. Request for Future Agenda Items

Members will be provided the opportunity to suggest future agenda topics.

11. Next Meeting

The next meeting will be held on Tuesday September 28, 2010 at 10:00 a.m.

12. Adjournment

9. For information and discussion.

10. For information and discussion.

11. For information.

DRAFT MINUTES OF MARICOPA ASSOCIATION OF GOVERNMENTS
TRANSPORTATION SAFETY COMMITTEE

June 22, 2010
MAG Cholla Room, 2nd Floor
302 North First Avenue
Phoenix, Arizona

MEMBERS ATTENDING

Megan Sigl for Linda Gorman, AAA Arizona	+Chris Lemka, City of Glendale
* Tom Burch, AARP	* Hugh Bigalk, City of Goodyear
+ Kohinoor Kar, ADOT	Chris Plumb, Maricopa County
+ Heather Hodgman for Shane Kiesow, City of Apache Junction	+ Renate Ehm, City of Mesa
*Robert Gray, Arizona State University	*William Mead, Paradise Valley
Margaret Boone-Pixley, City of Avondale	+Mannar Tamirisa for Jamal Rahimi, City of Peoria
*Martin Johnson, City of Chandler	Madhuri Uddaraju for Kerry Wilcoxon, City of Phoenix
*Lt. Jenna Mitchell, DPS	+ Paul Porell, City of Scottsdale
*Jorge Gastelum, City of El Mirage	+ Tracy Eberlein, City of Surprise
*Karen King, FHWA	Julian Dresang, City of Tempe (Chair)
+Kurt Sharp, Town of Gilbert	* Gardner Tabon, RPTA

OTHERS PRESENT

Lauren Neu, Stand Associates	Shanti Krishnan, Jacobs
Ashish Agrawal, AMEC E & E	Kiran Guntupalli, MAG
Marta Gerber, Michael Baker Jr.	Leo Luo, MAG

+Teleconference

*Not present

1. Call to Order
Chairman Julian Dresang called the meeting to order at 10:05 a.m.
2. Approval of May 25, 2010 Meeting Minutes
Margaret Boone-Pixley moved to approve the minutes, Chris Plumb seconded and it was unanimously carried to approve the minutes of the meeting held on May 25, 2010.
3. Call to Audience
Chairman Julian Dresang made a call to the audience providing an opportunity to members of the public to address the Transportation Safety Committee. No public comments were received.
4. Program Manager's Report
Kiran Guntupalli provided brief reports on the following item:
 - Highway Safety Improvement Program funding update.

5. On-Call Request for Qualifications

Chairman Julian Dresang stated that in response to the MAG Request for Qualifications in the areas of Intelligent Transportation Systems and Transportation Safety, a total of 22 proposals were received requesting qualification in Transportation Safety. The selection panel consisting of committee members and MAG staff has evaluated all the proposals. The panel met on June 14, 2010 and recommended list of consultants qualified for Transportation Safety. Attachment one with ranked list of consultants as recommended by the Selection Panel was mailed out with the agenda. Julian Dresang opened the floor for any question or comments. Chris Plumb asked if MAG had same number of consultants in last On-Call Consultant list. Kiran Guntupalli responded stating that MAG had qualified five Consultants in 08-10 On Call Consultant process. He also stated that as MAG will be programming projects for MAG allocation of HSIP funds. So, additional safety studies are imminent and hence additional consulting help will be needed. **Paul Porell moved to recommend the list of on-call consultants qualified to provide consulting services in Transportation Safety Planning. Margaret Boone-Pixley seconded and it was unanimously carried to approve the motion.**

6. Reports by the Committee Members on Transportation Safety Activities

No reports were received from the Committee members.

7. Request for Future Agenda Items

Chris Plumb stated that although MCDOT wishes to obtain ALISS crash data from ADOT for all cities and towns in Maricopa County, they have not been able to do so. He requested an action item be put on MAG Transportation Safety Committee agenda to explain MCDOT's need for data on crashes that occur outside of unincorporated Maricopa County areas.

8. Next Meeting

The next meeting is scheduled to be held on July 27, 2010 at 10:00 a.m. in the Cholla Room at MAG.

9. Adjournment

Chairman Julian Dresang adjourned the meeting at 10:30 a.m.

Network Screening Methodology for Intersections

Introduction

Improving intersection safety is identified in the MAG Strategic Transportation Safety Plan as a regional priority. Recent crash statistics for the region show that 60 percent of traffic related injuries and 40 percent of fatalities are caused by crashes at intersections. In order to target specific locations for road safety improvements it is necessary to screen the region's road network and identify and rank high risk locations. A methodology that helps perform a network screening based on crash risk has been adopted by MAG for this purpose. A network screening approach that is based purely on crash frequency tends to be biased in favor of intersections with high volumes as they will have higher numbers of crashes. Similarly, a network screening that applies weights for different crash severities tend to bias the outcome in favor of location with a high crash high severity. At the 2009 TRB¹ annual meeting a paper on a network screening methodology, based on research work done by the Wisconsin DOT, was presented. This method, with a slight modification, has been adopted for use in the MAG region, and is referred to as the Network Screening Methodology (NSM-I) for Intersections. As recommended in the TRB paper the analysis period was kept to the three most recent years for which crash data are available.

Intersection Safety Network Screening Methodology

The first step in the application of NSM-I is the identification of the complete list of intersections, number of crashes by crash severity (KABCO scale), number of vehicles involved in each crash, collision manner, number of pedestrian involved and the number of bicyclists involved. Only the crashes that are identified in ALISS as "intersection related" will be analyzed in the NSM-I. Since ALISS data cannot be edited by any entity other than Arizona DOT, none of ALISS data will be corrected for errors prior to analysis. In other words, all crash data are assumed to be 100 percent accurate.

The NSM-I generates a composite intersection ranking based on four crash attributes: (a) Crash Frequency (CF), (b) Crash Severity (CS), (c) Crash Type (CT) and (d) Crash Rate (CR). The fourth factor CR was not included in the Wisconsin DOT methodology. The MAG Transportation Safety Committee determined it was necessary to include crash rates in the network screening analysis.

¹Qin X., Laracuante L., Noyce D.A., Chitturi M. *Systemwide Intersection Safety Prioritization Development and Assessment*. In TRB 2009 Annual Meeting, Washington, D.C.

Crash Frequency (CF)

The total number of crashes that occurred during the period of analysis, or crash frequency, at each intersection is first summarized. The Crash Frequency Score or **CF Score** for any intersection is the ratio of, the crash frequency at the intersection to the highest intersection crash frequency for the region, for the same period of analysis.

CF Score for Intersection i

= (Total number of crashes at Intersection i/ Highest number of crashes recorded for any intersection in the analysis area)

Crash Severity (CS)

Every crash is assigned a crash severity (KABCO scale) based on the highest resulting injury from the crash. The equivalent sum of all crash severities, or CS value, for an intersection can be generated by the application of the KABCO weight scale shown in Table 1. An intersection's CS value is calculated as the sum of the products of the total number of crashes of a particular severity multiplied by the weight associated with that crash severity. The **Crash Severity Score** for an intersection is the ratio between CS value for the intersection to the maximum CS value for the network being analyzed.

CRASH SEVERITY	WEIGHT
Fatal Crash(K)	1,450
Incapacitating (A)	100
Non-Incapacitating (B)	20
Possible Injury (C)	11
PDO (O)	1
Unknown	1

Table 1. Crash Severity Weights

¹Qin X., Laracuante L., Noyce D.A., Chitturi M. *Systemwide Intersection Safety Prioritization Development and Assessment*. In TRB 2009 Annual Meeting, Washington, D.C.

Crash Type (CT)

The ALISS database provides information on the Crash Type or Collision Manner for each recorded crash – such as rear-end, right angle, head-on etc. Campbell and Knapp² have described a procedure for calculating the average crash cost per vehicle/pedestrian/bicyclist for different types of collision manner. This method is utilized in the Wisconsin DOT methodology. Table 2 lists the estimated crash cost by crash severity provided by FHWA, same as that used by ADOT.

Table 2: Crash Cost by Injury Severity

Crash Severity	\$ Value
Fatal Crash(K)	\$5,800,000
Incapacitating (A)	\$400,000
Non-Incapacitating (B)	\$80,000
Possible Injury (C)	\$42,000
PDO (O)	\$4,000
Unknown	\$4,000

These crash costs were used to calculate the average cost per vehicle, pedestrian or bicyclist that is involved in any crash of any particular Crash Type or Collision Manner. This calculation requires a detailed examination of crashes, with the number of vehicles, pedestrians and bicyclists involved in each. All intersection related crashes in the database were queried for the number of crashes by injury severity, number of units involved in the crashes and by collision manner. Table 3 shows the results, as the cost per each vehicle/pedestrian/bicyclist involved in any crash of a particular collision manner.

²Campbell J.R., Knapp K., *Alternative Crash Severity Ranking Measures and the Implication on Crash Severity Ranking Procedures*. Proceedings of the Mid-Continent Transportation Research Symposium, Ames, Iowa, 2005

Table 3. Crash Costs by Crash Type per Vehicle / Pedestrian / Bicyclist.

Injury Severity	REAR END		ANGLE RIGHT ANGLE		SINGLE		SIDE SWIPE SAME DIRECTION		ANGLE OPPOSITE DIRECTION	
	Crashes	Units	Crashes	Units	Crashes	Units	Crashes	Units	Crashes	Units
O	23,133	48,912	17809	36534	4289	4289	7635	15535	12064	24845
C	6,488	14,405	5941	12632	532	532	702	1465	5035	10708
B	2,088	4,839	4249	9210	750	750	284	640	3971	8557
A	350	854	1183	2684	208	208	70	164	1189	2597
K	29	73	165	381	28	28	8	19	101	219
Unknown	0	0	0	0	0	0	0	0	0	0
	\$840,268,000	69,083	\$2,090,878,000	61,441	\$345,100,000	5,807	\$157,144,000	17,823	\$1,638,806,000	46,926
Cost Per Vehicle	\$12,163		\$34,031		\$59,428		\$8,817		\$34,923	

Injury Severity	REAR TO SIDE		SIDE SWIPE OPPOSITE DIRECTION		HEAD ON		OTHER & UNKNOWN		# of Pedestrians	# of Bicyclists
	Crashes	Units	Crashes	Units	Crashes	Units	Crashes	Units		
O	1731	3466	403	836	195	410	558	1206	108	312
C	75	152	50	108	79	180	100	222	411	700
B	18	36	44	106	90	200	116	271	660	1010
A			14	34	36	80	35	89	318	223
K			1	3	8	19	7	21	62	12
Unknown	0	0	0	0	0	0	0	0	24	63
	\$11,514,000	3,654	\$18,632,000	1,087	\$72,098,000	889	\$70,312,000	1,809	\$557,390,000	270,500,000
Cost Per Vehicle	\$3,151		\$17,141		\$81,100		\$38,868		\$352,110	\$116,595

Table 3: Crash Cost per Vehicle / Pedestrian / Bicyclist.

Table 4 Summary of Per Unit Crash Costs

Crash Type/Collision Manner	Cost per Vehicle / Pedestrian / Bicyclist
Rear End	\$ 12,163
Angle Right Angle	\$ 34,031
Single	\$ 59,428
Side Swipe Same Direction	\$ 8,817
Angle Opposite Direction	\$ 34,923
Rear To Side	\$ 3,151
Side Swipe Opposite Direction	\$ 17,141
Head On	\$ 81,100
Other & Unknown	\$ 38,868
Pedestrian Crashes	\$352,110
Bicyclist Crashes	\$116,595

The Crash Type (CT) Cost for an intersection is calculated by multiplying the number of units involved in a crash by the cost per vehicle/pedestrian/bicyclist for each type of collision manner, and summing the results.

$$CT \text{ Cost} = \sum_{i=1}^n (N_i * CM_i)$$

N_i - Number of units (vehicles, pedestrians or bicyclists) involved in a crash of a specific Collision Manner

CM_i - Cost per Vehicle/Pedestrian/Bicyclist by Collision Manner (see Table 4)

n - Number of crashes at the intersection

The Crash Type Cost for an intersection is ratio between Crash Type Cost at a particular intersection to maximum of Crash Type Cost at all intersections in the region.

Crash Rate (CR)

The Wisconsin DOT methodology was modified by MAG by the addition of the Crash Rate, the fourth factor, as suggested by the MAG Transportation Safety Committee in October 2009. This factor is defined as follows:

$$\begin{aligned} \text{CR value for intersection } i & \\ &= \text{Average annual crash rate at intersection } i \text{ for the analysis} \\ &\text{period} / \text{Maximum value of all average intersection crash rates for the} \\ &\text{region} \\ &= \text{CR} / \text{Max (CR)} \end{aligned}$$

The first application of this methodology was for identifying the 100 high crash risk intersections in the MAG region, using crash data for 2006, 2007 and 2008. There were over 17,000 specific intersection crash locations during this analysis period. The computation of CR values for this many intersections was deemed infeasible at this time due to lack of traffic volume data at these locations for each of the 3 analysis years. Therefore, the highest ranked 100 intersections were determined first based on interim intersection safety scores that were based ONLY on CF, CS and CT, with the weights 1/5, 3/5 and 1/5 respectively.

$$\text{ISS} = \left(\frac{1}{5} * \frac{\text{CF}}{\text{Max(CF)}} \right) + \left(\frac{3}{5} * \frac{\text{CS}}{\text{Max(CS)}} \right) + \left(\frac{1}{5} * \frac{\text{CT}}{\text{Max(CT)}} \right)$$

Next, the CR values were determined for these 100 intersections and applied in the final step to determine the Intersection Safety Score as described next.

Intersection Safety Score (ISS)

The final Intersection Safety Score (ISS) for an intersection is determined by combining all four scores, as shown in the formula below. Severity Index score CS is weighted higher in the final scoring process as the motive of the Network Screening process is to eliminate crashes with higher severity at intersections.

$$\text{ISS} = \left(\frac{1}{5} * \frac{\text{CF}}{\text{Max(CF)}} \right) + \left(\frac{2}{5} * \frac{\text{CS}}{\text{Max(CS)}} \right) + \left(\frac{1}{5} * \frac{\text{CT}}{\text{Max(CT)}} \right) + \left(\frac{1}{5} * \frac{\text{CR}}{\text{Max(CR)}} \right)$$

MAG NETWORK SCREENING METHODOLOGY - TOP 100 INTERSECTION CRASH LOCATIONS USING 2006,2007,2008

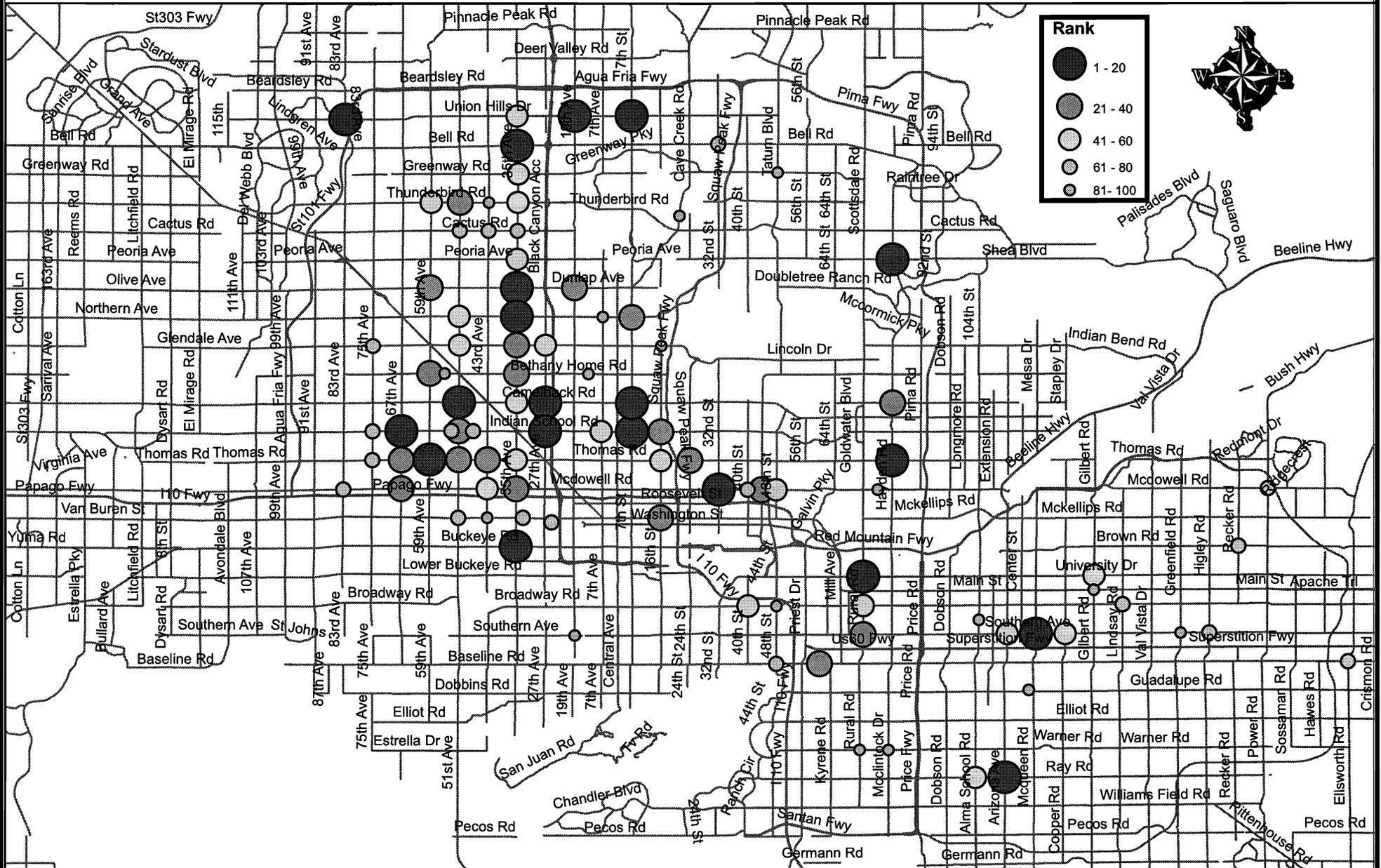
ALISS DATA

Agency	Intersection			3 Yr Total # of Crashes	3 Yr. Avg Crash Rate	CF,CS,CT Rank	CF,CS,CT,CR Rank
Phoenix	07 DUNLAP AVE,07 35TH AVE			144	1.53	1	1
Chandler	07 RAY RD,07 ARIZONA AVE			107	1.30	4	2
Phoenix	07 NORTHERN AVE,07 35TH AVE			126	0.89	5	3
Phoenix	07 CAMELBACK RD,07 27TH AVE			116	1.59	7	4
Glendale	07 CAMELBACK RD,07 51ST AVE			105	1.45	6	5
Phoenix	07 UNION HILLS DR,07 7TH ST			77	1.72	2	6
Phoenix	07 INDIAN SCHOOL RD,07 27TH AVE			115	1.76	9	7
Phoenix	07 MCDOWELL RD,07 32ND ST			150	1.38	23	8
Phoenix	07 INDIAN SCHOOL RD,07 67TH AVE			129	1.29	13	9
Peoria	07 UNION HILLS DR,07 83RD AVE			92	1.72	10	10
Scottsdale	07 THOMAS RD,07 HAYDEN RD			86	1.12	8	11
Tempe	07 UNIVERSITY DR,07 RURAL RD			136	1.08	38	12
Phoenix	07 THOMAS RD,07 59TH AVE			115	1.59	15	13
Scottsdale	07 SHEA BLVD,07 HAYDEN RD			64	1.28	3	14
Phoenix	07 INDIAN SCHOOL RD,07 7TH ST			113	1.47	16	15
Phoenix	07 CAMELBACK RD,07 7TH ST			107	1.33	17	16
Mesa	07 SOUTHERN AVE,07 MESA DR			104	1.40	18	17
Phoenix	07 BELL RD,07 35TH AVE			76	1.47	11	18
Phoenix	07 UNION HILLS DR,07 19TH AVE			64	1.11	12	19
Phoenix	07 BUCKEYE RD,07 35TH AVE			74	1.28	44	20
Phoenix	07 MCDOWELL RD,07 67TH AVE			94	1.39	21	21
Phoenix	07 INDIAN SCHOOL RD,07 16TH ST			95	1.26	20	22
Scottsdale	07 HAYDEN RD,07 CHAPARRAL RD			67	1.96	14	23
Phoenix	07 THOMAS RD,07 51ST AVE			103	1.17	22	24
Phoenix	07 NORTHERN AVE,07 7TH ST			93	1.15	19	25
Glendale	07 BETHANY HOME RD,07 59TH AVE			112	1.05	55	26
Phoenix	07 THUNDERBIRD RD,07 51ST AVE			80	1.01	29	27
Phoenix	07 THOMAS RD,07 67TH AVE			93	1.26	24	28
Phoenix	07 INDIAN SCHOOL RD,07 51ST AVE			113	1.53	39	29
Phoenix	07 MCDOWELL RD,07 35TH AVE			110	0.88	50	30
Tempe	07 HARDY DR,07 BASELINE RD			70	1.30	25	31
Tempe	07 SOUTHERN AVE,07 RURAL RD			100	1.16	28	32
Phoenix	07 MCDOWELL RD,07 44TH ST			118	0.75	57	33
Glendale	07 OLIVE AVE,07 59TH AVE			114	1.21	61	34
Phoenix	07 BETHANY HOME RD,07 35TH AVE			114	0.64	53	35
Phoenix	07 THOMAS RD,07 24TH ST			90	0.98	26	36
Phoenix	07 DUNLAP AVE,07 19TH AVE			107	1.15	51	37
Phoenix	07 GLENDALE AVE,07 35TH AVE			101	2.16	52	38
Phoenix	07 THOMAS RD,07 43RD AVE			109	1.32	48	39
Phoenix	07 VAN BUREN ST,07 16TH ST			74	0.92	31	40
Phoenix	07 THUNDERBIRD RD,07 35TH AVE			87	1.10	27	41
Phoenix	07 PEORIA AVE,07 35TH AVE			106	1.03	56	42
Mesa	07 UNIVERSITY DR,07 GILBERT RD			108	1.13	81	43
Phoenix	07 THOMAS RD,07 35TH AVE			81	2.36	32	44
Phoenix	07 GREENWAY RD,07 35TH AVE			74	0.56	34	45
Chandler	07 RAY RD,07 ALMA SCHOOL RD			113	1.36	85	46
Phoenix	07 THOMAS RD,07 16TH ST			111	1.28	69	47
Mesa	07 STAPLEY DR,07 SOUTHERN AVE			110	1.24	80	48
Glendale	07 THUNDERBIRD RD,07 59TH AVE			105	1.29	92	49
Glendale	07 NORTHERN AVE,07 51ST AVE			109	1.74	77	50
Phoenix	07 CAMELBACK RD,07 35TH AVE			99	1.44	67	51

Phoenix	07 MCDOWELL	RD,07 43RD	AVE	98	1.42	64	52
Phoenix	07 MCDOWELL	RD,07 48TH	ST	64	1.63	46	53
Phoenix	07 GLENDALE	AVE,07 27TH	AVE	89	0.50	79	54
Phoenix	07 UNION HILLS	DR,07 35TH	AVE	96	1.85	74	55
Phoenix	07 INDIAN SCHOOL	RD,07 7TH	AVE	107	1.44	89	56
Mesa	07 SOUTHERN	AVE,07 COUNTRY CLUB	DR	96	1.67	43	57
Phoenix	07 BROADWAY	RD,07 40TH	ST	71	1.08	37	58
Glendale	07 GLENDALE	AVE,07 51ST	AVE	77	0.89	47	59
Tempe	07 RURAL	RD,07 BROADWAY	RC	107	1.08	65	60
Phoenix	07 CACTUS	RD,07 51ST	AVE	69	1.68	41	61
Phoenix	07 CACTUS	RD,07 43RD	AVE	67	0.82	36	62
Phoenix	07 VAN BUREN	ST,07 51ST	AVE	65	0.88	30	63
Phoenix	07 BELL	RD,07 32ND	ST	69	1.25	42	64
Mesa	07 ELLSWORTH	RD,07 BASELINE	RD	62	1.28	49	65
Phoenix	07 INDIAN SCHOOL	RD,07 75TH	AVE	96	1.16	98	66
Phoenix	07 CACTUS	RD,07 35TH	AVE	66	1.44	40	67
Phoenix	07 THOMAS	RD,07 75TH	AVE	89	0.79	95	68
Mesa	07 LINDSAY	RD,07 BROADWAY	RC	61	1.46	66	69
Phoenix	07 INDIAN SCHOOL	RD,07 53RD	AVE	51	0.90	58	70
Mesa	07 SOUTHERN	AVE,07 HIGLEY	RD	65	0.92	60	71
Phoenix	07 VAN BUREN	ST,07 33RD	AVE	29	1.52	33	72
Phoenix	07 MCDOWELL	RD,07 40TH	ST	61	1.26	78	73
Phoenix	07 BASELINE	RD,07 48TH	ST	68	1.52	59	74
Phoenix	07 INDIAN SCHOOL	RD,07 47TH	AVE	58	0.76	76	75
Phoenix	07 ADAMS	ST,07 25TH	AVE	10	1.02	72	76
Mesa	07 RECKER	RD,07 BROWN	RD	30	1.40	35	77
Phoenix	07 MCDOWELL	RD,07 83RD	AVE	54	1.13	63	78
Mesa	07 POWER	RD,07 MCDOWELL	RD	53	1.50	93	79
Glendale	07 GLENDALE	AVE,07 75TH	AVE	43	1.63	83	80
Phoenix	07 THUNDERBIRD	RD,07 43RD	AVE	60	1.67	70	81
Phoenix	07 TATUM	BLVD,07 GREENWAY	RC	58	0.88	62	82
Tempe	07 WARNER	RD,07 RURAL	RC	54	1.16	71	83
Phoenix	07 NORTHERN	AVE,07 7TH	AVE	49	0.98	87	84
Phoenix	07 SOUTHERN	AVE,07 19TH	AVE	40	1.68	68	85
Mesa	07 SOUTHERN	AVE,07 GREENFIELD	RD	54	0.39	84	86
Phoenix	07 VAN BUREN	ST,07 43RD	AVE	52	1.04	88	87
Maricopa Co	07 REEMS	RD,07 GLENDALE	AVE	11	0.99	73	88
Phoenix	07 BETHANY HOME	RD,07 15TH	AVE	42	1.43	82	89
Phoenix	07 BROADWAY	RD,07 48TH	ST	55	0.78	91	90
Mesa	07 ALMA SCHOOL	RD,07 8TH	AVE	42	0.90	75	91
Phoenix	07 SWEETWATER	AVE,07 CAVE CREEK	RD	19	1.62	45	92
Tempe	07 WARNER	RD,07 MCCLINTOCK	DR	46	1.17	90	93
Scottsdale	07 MILLER	RD,07 MCDOWELL	RD	41	0.16	99	94
Mesa	07 MAIN	ST,07 GILBERT	RC	54	1.23	100	95
Phoenix	07 GLENDALE	AVE,07 16TH	ST	52	0.66	96	96
Glendale	07 BETHANY HOME	RD,07 55TH	AVE	21	0.52	54	97
Surprise	07 JOMAX	RD,07 163RD	AVE	4	1.37	97	98
Maricopa Co	07 ESTRELLA	DR,07 51ST	AVE	8	0.89	86	99
Gilbert	07 GUADALUPE	RD,07 EL DORADO	DR	4	0.74	94	100

MAG NETWORK SCREENING METHODOLOGY - TOP 100 INTERSECTION CRASH LOCATIONS

USING 2006, 2007, 2008 ALISS DATA



ARIZONA 2009 FIVE PERCENT REPORT

List of INTERSECTION RELATED LOCATIONS

Intersecting Roadway 1	Intersecting Roadway 2	Owner Agency
35th Avenue	Dunlap Avenue	Phoenix
Kolb Road	Speedway Boulevard	Tucson
22nd Street	Kolb Road	Tucson
Ajo Way (State Route 86)	Mission Road	ADOT
51st Avenue	Van Buren Street	Phoenix
7th Street	Union Hills Drive	Phoenix
Hayden Road	Thomas Road	Scottsdale
27th Avenue	Indian School Road	Phoenix
27th Avenue	Camelback Road	Phoenix
Bell Road	Cave Creek Road	Phoenix
16th Street	Van Buren Street	Phoenix
16th Street	Bell Road	Phoenix
Speedway Boulevard	Wilmot Road	Tucson
Mesa Drive	Southern Avenue	Mesa
Midvale Park Road	Valencia Road	Tucson
43rd Avenue	Cactus Road	Phoenix
Cardinal Avenue	Valencia Road	Pima County
22nd Street	Kino Parkway	Tucson
State Route 85	Hazen Road	ADOT
Arizona Avenue	Ray Road	Chandler

Note: Per Section 409 of Title 23 USC, the information contained in this report shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed.

For information or questions regarding this report, please contact Reed Henry, (rhenry@azdot.gov).

Note: The Complete Report is available at: <http://safety.fhwa.dot.gov/hsip/fivepercent/2009/09az.htm>

**DRAFT - MAG Process for Programming Road Safety Improvement Projects
for FY 2011 - 2014**

This process was developed by HSIP Working Group of the MAG Transportation Safety Committee. The Group was tasked with developing a process for programming safety improvement projects utilizing \$1 million in federal HSIP funds that is sub-allocated to MAG for FY2011- FY2014, plus other additional HSIP funds that might become available in the future for implementing road safety improvements. For FY 2011, ADOT has already announced the deadline for project submissions as May 1, 2011. Due to the short time available for project development, the Working Group recommends that systematic safety improvement projects be programmed in FY 2011 – in a similar process as followed for FY 2010.

For FY2011 and FY2012 the WG recommends two types of projects be considered. The \$1m in HSIP needs to be allocated between these two types of projects.

The dollar amounts shown are tentative numbers for the purpose of committee discussion. An allocation of \$600,000 for A and \$400,000 for B has been suggested.

A. Regionwide Systematic Safety Improvements (identified through a call for projects):

- Upgrading of existing Pedestrian WALK/DON'T WALK signals to Pedestrian Countdown Signals;
- Upgrading of existing 8-inch signal heads to 12-inch LED signal heads; and,
- Installation of additional 12-inch signal heads if an existing Mast Arm can accommodate (to comply with 2009 MUTCD) – could also include conversion of signal heads at the intersection to LEDs.

Implementation: \$600,000 - Issue MAG call for projects and allocate funds for projects.

B. Road Safety Assessments & Design Concept Reports - at priority intersections or arterial corridors identified through the MAG Network Screening Method

- Identification of low cost safety improvement projects to be funded locally OR programmed with HSIP in subsequent years
- Identification of major improvements that require Design Concept Reports (DCRs) to meet ADOT and FHWA requirements

Implementation: \$200,000 - Perform 10 RSAs at estimated cost of \$20,000 each through MAG on-call consultants

- Perform DCRs for 5 locations that require major road safety improvements. DCRs may also be funded by local agencies

Implementation: \$200,000 - Perform 5 DCRs at estimated cost of \$40,000 each through MAG on-call consultants

For FY 2013 and 2014 the WG recommends the programming of four types of projects

A: Regionwide Systematic Safety mprovements -- \$25,000

B: New RSAs at priority locations or corridors -- \$100,000

C: Implement low cost improvements possibly from from previous RSAs -- \$75,000

D: One or more safety improvement projects at a high risk location for which a DCR has been completed -- \$800,000