



June 2, 2017

Chris Klecka, PLC  
Five Star Development  
6720 N. Scottsdale Road, Suite 130  
Scottsdale, AZ 85253



**RE: Indian Bend Road Traffic Statement – ADT Comparison with Traffic Calming Design**

Dear Mr. Klecka:

CivTech has been retained to evaluate the effect of the planned traffic calming redesign of Indian Bend Road west of Scottsdale Road. At the request of the Town of Paradise Valley, the developer of the Palmeraie development and related Ritz Carlton development consulted with the Town, City of Scottsdale and CivTech for traffic calming options. The planned "swoop" concept was selected to move forward in design plans. The swoop design brings all westbound traffic on Indian Bend Road from Scottsdale Road to enter the Palmeraie/Ritz Carlton development unless making a turn to stay on Indian Bend Road. All traffic on Indian Bend Road eastbound will be required to stop at the "tee" intersection with the swoop and turn left to continue on Indian Bend Road.

The swoop redesign of Indian Bend Road will still allow 2-way traffic but will require westbound vehicles to turn right (yielding to pedestrians) and eastbound vehicles to turn left (stop controlled). Thus, westbound vehicles will not be required to stop unless pedestrians are present, while eastbound vehicles are required to stop and will be delayed by vehicles entering/exiting the Palmeraie development. As such, vehicles traveling eastbound through will be more affected by the redesign than westbound vehicles.

The Town of Paradise Valley indicated that some vehicles currently using Indian Bend Road are cut-through traffic that use Mockingbird Lane and Invergordon Road to bypass congested portions of Scottsdale Road. The redesign of Indian Bend Road has the potential to influence cut-through traffic to use Cheney Drive or Hummingbird Lane instead of Indian Bend Road. It is also possible that some cut-through traffic will discontinue using Town streets altogether due to traffic calming on Indian Bend Road and the residential nature of both Cheney Drive and Hummingbird Lane. Trips to/from Ritz Carlton and Palmeraie have access to the roundabout west of the planned swoop. These development related trips are not expected to use Cheney Drive or Hummingbird Lane as a cut-through route. Most eastbound traffic, which is the direction most delayed by the swoop design, traveling towards Loop 101 is expected to occur in the morning hours. Fortunately, the delay of eastbound vehicles at the stop sign is less in the morning than in the evening as Palmeraie's retail components will generate less conflicting traffic in the morning.

Traffic volume counts were observed over a 24-hour period on Thursday, May 11, 2017, on Indian Bend Road east of Mockingbird Lane and on Cheney Drive east of Mockingbird Lane. Traffic volumes were estimated on Hummingbird Lane due to ongoing construction. At the

observed locations, 3,190 daily vehicles were recorded on Indian Bend Road and 2,635 daily vehicles were recorded on Cheney Drive. It may be noted that the Cheney Drive traffic count volume may be larger than typical due to the construction on Hummingbird Lane. The typical daily volume on Hummingbird Lane is estimated to be 50 percent of the traffic observed on Cheney Drive which calculates to approximately 1,320 vehicles. Based on observations of the area roads the week of May 22, the estimated count is assumed to be very conservative. The Town did not request Mockingbird Lane to have traffic counted, though it is considered within this study using the 5,000 average daily traffic (ADT) indicated within the *Ritz Carlton Traffic Impact Analysis*. The observed and estimated existing traffic volumes are depicted in **Exhibit A**.

The traffic calming is expected to reduce Palmeraie trips to/from Lincoln Drive via Indian Bend Road and Mockingbird Lane by approximately 1,510 daily trips. These trips are expected to instead travel south to Lincoln Drive via Scottsdale Road (1,130 daily trips) or through internal connections to Quail Run Lane (380 daily trips).

This evaluation considers 320 of the trips on Indian Bend Road (approximately 10 percent) to be cut-through type trips. It is anticipated that up to half (160) of the cut-through trips, predominantly westbound, may divert through Cheney Drive or Hummingbird Lane. Cheney Drive, which is signalized at Scottsdale Road and is classified by the Town as a collector roadway, is expected to facilitate 100 daily cut-through trips (traffic increase of up to 4 percent). Hummingbird Lane, which is classified as a local roadway, is expected to facilitate a lesser amount – 60 daily cut-through trips (traffic increase of up to 4 percent). The future total ADT, with the addition of trips to/from Ritz Carlton and Palmeraie, are depicted on **Exhibit B** within the **Attachments** for projected conditions with and without the swoop.

Paradise Valley evaluates roadway segment levels-of-service based on roadway classification, number of lanes, ADT and volume thresholds within Table 4 within *Traffic Impact Analysis (TIA) Criteria and Traffic Impact Statement (TIS) Criteria*, dated May 2015. A portion of the table is copied below as **Table 1**.

**Table 1: Roadway Segment Volume Thresholds for LOS by Classification**

Roadway (Urban Area)	# of Travel Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Minor Arterial	2	11,280	13,160	15,040	16,920	18,800
	3	12,960	15,120	17,280	19,440	21,600
	4	21,540	25,130	28,720	32,310	35,900
	5	22,080	25,760	29,440	33,120	36,800
Major Collector	2	5,100	5,950	6,800	7,650	8,500
	3	8,520	9,940	11,360	12,780	14,200
	4	10,560	12,320	14,080	15,840	17,600
Minor Collector	2	3,360	3,920	4,480	5,040	5,600
Local Street	2	1,200	1,400	1,600	1,800	2,000

Source: *Traffic Impact Analysis (TIA) Criteria and Traffic Impact Statement (TIS) Criteria, Paradise Valley, Table 4*

The projected ADT and LOS for each roadway considered is summarized in **Table 2**.

**Table 2: Roadway Segment LOS Summary**

	Roadway	Location Reference	Classification	# of Travel Lanes	Projected ADT	Projected LOS
Without Traffic Calming/Swoop	Cheney Drive	East of Mockingbird Lane	Collector (Minor) <sup>(1)</sup>	2	2,640	A
	Hummingbird Lane	East of Mockingbird Lane	Local	2	1,320 <sup>(3)</sup>	B
	Indian Bend Road	East of Mockingbird Lane	Collector (Major) <sup>(1)</sup>	3 <sup>(2)</sup>	6,360	A
	Indian Bend Road	West of Scottsdale Road	Collector (Major) <sup>(1)</sup>	4 <sup>(2)</sup>	11,370	B
	Mockingbird Lane	North of Indian Bend Road	Minor Arterial	2	5,900	A
With Traffic Calming/Swoop	Cheney Drive	East of Mockingbird Lane	Collector (Minor) <sup>(1)</sup>	2	2,740	A
	Hummingbird Lane	East of Mockingbird Lane	Local	2	1,380 <sup>(3)</sup>	B
	Indian Bend Road	East of Mockingbird Lane	Collector (Major) <sup>(1)</sup>	3 <sup>(2)</sup>	4,690	A
	Indian Bend Road	West of Scottsdale Road	Collector (Major) <sup>(1)</sup>	4 <sup>(2)</sup>	11,730	B
	Mockingbird Lane	North of Indian Bend Road	Minor Arterial	2	5,740	A

- (1) "Minor" or "Major" designation is not indicated within the Town's classification map. This study presumes Cheney Drive is a Minor Collector and Indian Bend Road is a Major Collector.
- (2) The Ritz Carlton and Palmeraie developments will construct half-street improvements.
- (3) Count could not be conducted due to road construction, volume was estimated using Cheney Drive as a reference.

Cheney Road is anticipated to operate at LOS A with or without traffic calming on Indian Bend Road. The potential traffic volume increase is not enough to affect the projected ADT. The segment would need 720 added vehicles (instead of 100) for the segment to be evaluated at LOS B and 1,840 added vehicles for the segment to be evaluated at LOS D. This would require an unlikely scenario that more than half of all vehicles using Indian Bend Road would divert to Cheney Drive.

Hummingbird Lane is anticipated to operate at LOS B with or without traffic calming on Indian Bend Road. The potential traffic volume increase is not enough to affect the projected ADT. The segment would need 80 added vehicles (instead of 60) for the segment to be evaluated at LOS C and 280 added vehicles for the segment to be evaluated at LOS D.

It is expected that the Town of Paradise Valley will wish to monitor traffic volumes before and after reconstruction of Indian Bend Road. CivTech accordingly recommends conducting future traffic counts after construction on Hummingbird Lane finishes and before the Ritz Carlton Resort or other portions of the overall development opens. This will provide a baseline for traffic comparison without unusual traffic conditions due to construction work.

Should traffic volumes increase to more than desired and traffic calming on Hummingbird lane or Cheney Drive is desired, it is recommended that the Town considers options that enhance the roadway character such as landscaped chicanes or chockers.

## **CONCLUSIONS**

- At the request of the Town of Paradise Valley, the developer of the Palmeraie development and related Ritz Carlton development consulted with the Town, City of Scottsdale and CivTech for traffic calming options. The planned “swoop” concept was selected to move forward in design plans.
  - The swoop redesign of Indian Bend Road will still allow 2-way traffic but will require westbound vehicles to turn right (yielding to pedestrians) and eastbound vehicles to turn left (stop controlled). The eastbound movement towards Loop 101 is heaviest in the morning. Fortunately, Palmeraie’s retail components will generate less conflicting traffic in the morning than it will in the evening.
- The redesign of Indian Bend Road has the potential to influence cut-through traffic to use Cheney Drive or Hummingbird Lane instead of Indian Bend Road. It is also possible that some cut-through traffic will discontinue using Town streets altogether due to traffic calming on Indian Bend Road and the residential nature of both Cheney Drive and Hummingbird Lane.
- The traffic calming is expected to reduce Palmeraie trips to/from Lincoln Drive via Indian Bend Road and Mockingbird Lane by approximately 1,510 daily trips. These trips are expected to instead travel south to Lincoln Drive via Scottsdale Road (1,130 daily trips) or through internal connections to Quail Run Lane (380 daily trips).
- This evaluation considers 320 of the trips on Indian Bend Road (approximately 10 percent) to be cut-through type trips. It is anticipated that up to half (160) of the cut-through trips, predominantly westbound, may divert through Cheney Drive or Hummingbird Lane.
  - Cheney Drive, which is signalized at Scottsdale Road and is classified by the Town as a collector roadway, is expected to facilitate 100 daily cut-through trips (traffic increase of up to 4 percent).
  - Hummingbird Lane, which is classified as a local roadway, is expected to facilitate a lesser amount – 60 daily cut-through trips (traffic increase of up to 4 percent).
- Cheney Road is anticipated to operate at LOS A with or without traffic calming on Indian Bend Road. The potential traffic volume increase is not enough to affect the projected ADT.
  - The segment would need 720 added vehicles (instead of 100) for the segment to be evaluated at LOS B and 1,840 added vehicles for the segment to be evaluated at LOS D. This would require an unlikely scenario that more than half of all vehicles using Indian Bend Road would divert to Cheney Drive.
- Hummingbird Lane is anticipated to operate at LOS B with or without traffic calming on Indian Bend Road. The potential traffic volume increase is not enough to affect the projected ADT.
  - The segment would need 80 added vehicles (instead of 60) for the segment to be evaluated at LOS C and 280 added vehicles for the segment to be evaluated at LOS D.

- It is expected that the Town of Paradise Valley will wish to monitor traffic volumes before and after reconstruction of Indian Bend Road. CivTech accordingly recommends conducting future traffic counts after construction on Hummingbird Lane finishes and before the Ritz Carlton Resort or other portions of the overall development opens. This will provide a baseline for traffic comparison without unusual traffic conditions due to construction work.
- Should traffic volumes increase to more than desired and traffic calming on Hummingbird lane or Cheney Drive is desired, it is recommended that the Town considers options that enhance the roadway character such as landscaped chicanes or landscaped chokers.

Should there be any questions please contact me at 480-659-4250.

Sincerely,

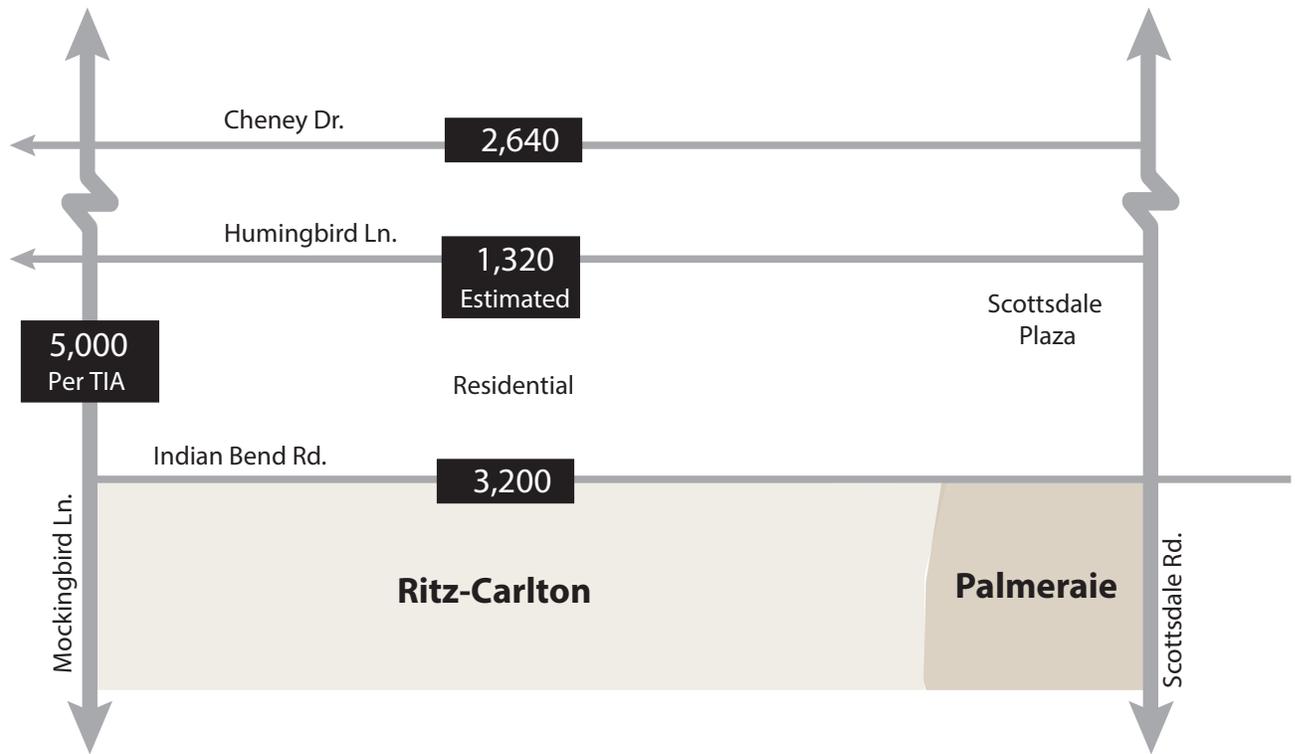
**CivTech**



Dawn Cartier, P.E., PTOE  
President

Attachments:

Exhibit A: Existing ADT  
Exhibit B: Projected ADT  
Traffic Counts

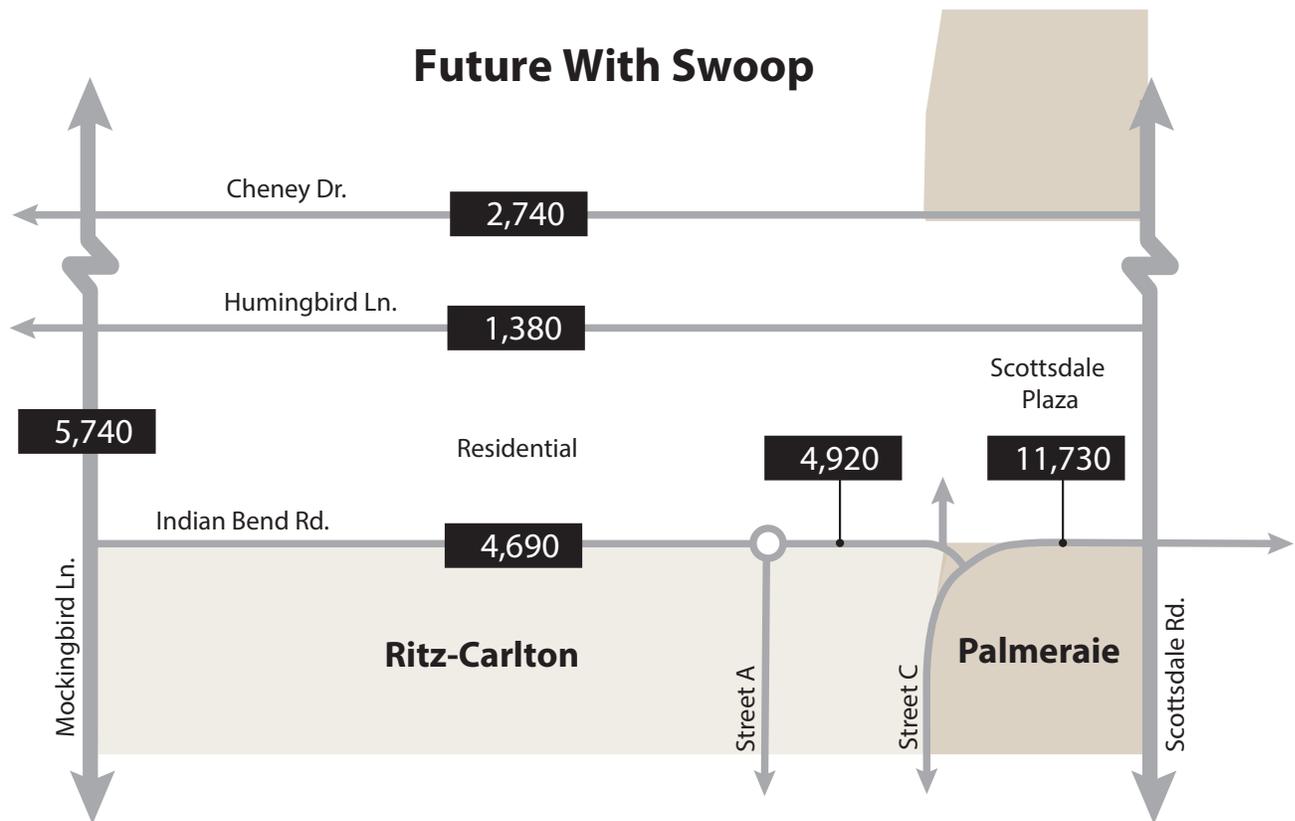
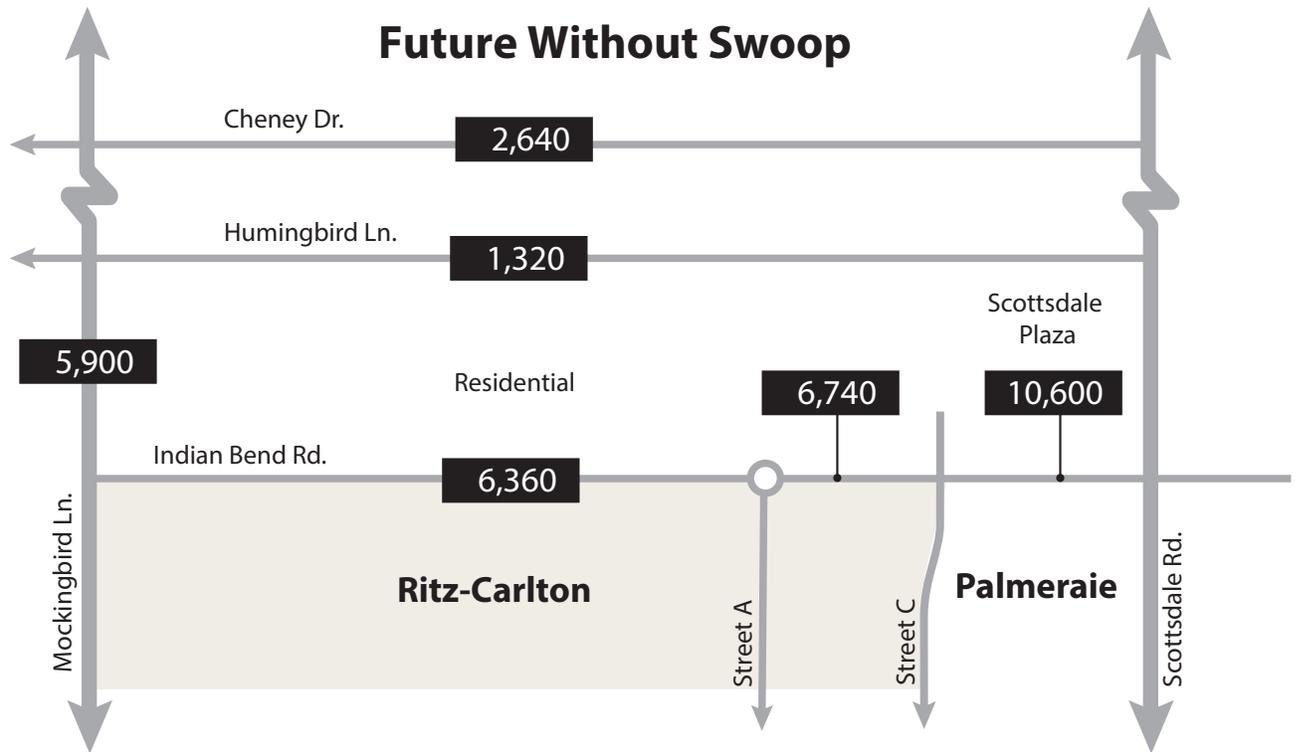


Source: CivTech, Inc. 2017

**Exhibit A:** Existing Average Daily Traffic

**Indian Bend Road Traffic Statement**





**Exhibit B:** Projected Average Daily Traffic

Source: CivTech, Inc. 2017

# Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745

Volumes for: Thursday, May 11, 2017

City: Scottsdale

Project #: 17-1215-001

Location: Cheney Dr. btwn. Scottsdale Rd. & Mockingbird Ln.

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB			
00:00			0	0	12:00			21	21			
00:15			0	1	12:15			18	25			
00:30			0	0	12:30			35	27			
00:45			0	0	12:45			17	91	28	101	192
01:00			0	0	13:00			36	16			
01:15			0	0	13:15			33	26			
01:30			2	0	13:30			19	32			
01:45			0	2	13:45			25	113	29	103	216
02:00			0	0	14:00			24	22			
02:15			0	0	14:15			23	22			
02:30			0	0	14:30			32	25			
02:45			0	0	14:45			23	102	36	105	207
03:00			0	0	15:00			16	26			
03:15			0	0	15:15			22	26			
03:30			1	1	15:30			24	29			
03:45			0	1	15:45			21	83	21	102	185
04:00			0	0	16:00			28	23			
04:15			1	0	16:15			25	20			
04:30			1	3	16:30			29	20			
04:45			4	6	16:45			24	106	20	83	189
05:00			1	1	17:00			28	26			
05:15			1	2	17:15			22	22			
05:30			2	6	17:30			20	31			
05:45			6	10	17:45			29	99	27	106	205
06:00			7	5	18:00			27	20			
06:15			11	8	18:15			21	17			
06:30			15	9	18:30			17	13			
06:45			19	52	18:45			6	71	16	66	137
07:00			12	25	19:00			15	16			
07:15			23	17	19:15			15	9			
07:30			17	24	19:30			12	13			
07:45			17	69	19:45			14	56	9	47	103
08:00			19	22	20:00			10	11			
08:15			30	38	20:15			18	8			
08:30			24	32	20:30			10	11			
08:45			22	95	20:45			6	44	6	36	80
09:00			21	26	21:00			13	10			
09:15			15	27	21:15			8	4			
09:30			25	33	21:30			4	5			
09:45			22	83	21:45			5	30	3	22	52
10:00			18	19	22:00			0	3			
10:15			19	20	22:15			4	1			
10:30			19	35	22:30			2	3			
10:45			19	75	22:45			0	6	1	8	14
11:00			16	18	23:00			0	1			
11:15			21	25	23:15			1	0			
11:30			15	20	23:30			2	0			
11:45			19	71	23:45			2	5	2	3	8

**Total Vol.** 464 583 **1047** 806 782 **1588**

**GPS Coordinates:** 33.545930, -111.933325

**Daily Totals**

NB	SB	EB	WB	Combined
		1270	1365	<b>2635</b>

**AM**

**PM**

Split %	44.3%	55.7%	<b>39.7%</b>	50.8%	49.2%	<b>60.3%</b>
<b>Peak Hour</b>	08:15	07:45	<b>07:45</b>	12:30	14:45	<b>12:30</b>
<b>Volume</b>	97	129	<b>219</b>	121	117	<b>218</b>
<b>P.H.F.</b>	0.81	0.85	<b>0.81</b>	0.84	0.81	<b>0.88</b>

**Prepared by: Field Data Services of Arizona/Veracity Traffic Group (520) 316-6745**

Volumes for: Thursday, May 11, 2017

City: Scottsdale

Project #: 17-1215-003

Location: Indian Bend Rd. btwn. Scottsdale Rd. & Mockingbird Ln.

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB				
00:00			3	1	12:00			19	30				
00:15			0	2	12:15			23	28				
00:30			1	0	12:30			15	41				
00:45			0	4	0	3	7	12:45	33	90	32	131	221
01:00			1	1	13:00			28	37				
01:15			0	0	13:15			29	25				
01:30			0	0	13:30			21	31				
01:45			1	2	1	2	4	13:45	20	98	23	116	214
02:00			1	1	14:00			27	21				
02:15			0	0	14:15			31	24				
02:30			1	0	14:30			31	39				
02:45			0	2	0	1	3	14:45	31	120	36	120	240
03:00			0	0	15:00			19	31				
03:15			0	0	15:15			32	31				
03:30			0	0	15:30			24	40				
03:45			0	0	0	0		15:45	35	110	37	139	249
04:00			0	0	16:00			25	30				
04:15			0	1	16:15			23	26				
04:30			1	0	16:30			33	32				
04:45			2	3	1	2	5	16:45	26	107	23	111	218
05:00			2	1	17:00			34	43				
05:15			1	2	17:15			52	40				
05:30			10	3	17:30			42	25				
05:45			9	22	9	15	37	17:45	37	165	29	137	302
06:00			8	8	18:00			26	43				
06:15			7	6	18:15			19	21				
06:30			8	15	18:30			22	29				
06:45			17	40	22	51	91	18:45	16	83	19	112	195
07:00			18	31	19:00			11	21				
07:15			29	22	19:15			10	25				
07:30			36	35	19:30			17	20				
07:45			37	120	22	110	230	19:45	5	43	18	84	127
08:00			30	34	20:00			9	18				
08:15			37	33	20:15			9	16				
08:30			31	32	20:30			4	10				
08:45			31	129	23	122	251	20:45	6	28	9	53	81
09:00			24	21	21:00			3	14				
09:15			26	23	21:15			6	13				
09:30			23	18	21:30			7	9				
09:45			30	103	31	93	196	21:45	8	24	10	46	70
10:00			17	23	22:00			7	9				
10:15			27	24	22:15			3	7				
10:30			31	30	22:30			5	2				
10:45			26	101	28	105	206	22:45	1	16	0	18	34
11:00			21	19	23:00			0	3				
11:15			23	20	23:15			1	4				
11:30			21	29	23:30			0	2				
11:45			32	97	32	100	197	23:45	0	1	2	11	12

**Total Vol.** 623 604 **1227** 885 1078 **1963**

**GPS Coordinates:** 33.538606, -111.932359

	<b>Daily Totals</b>					
	NB	SB	EB	WB	Combined	
			1508	1682	<b>3190</b>	
	<b>AM</b>		<b>PM</b>			
<b>Split %</b>	50.8%	49.2%	<b>38.5%</b>	45.1%	54.9%	<b>61.5%</b>
<b>Peak Hour</b>	07:30	11:45	<b>07:30</b>	17:00	15:00	<b>17:00</b>
<b>Volume</b>	140	131	<b>264</b>	165	139	<b>302</b>
<b>P.H.F.</b>	0.95	0.80	<b>0.93</b>	0.79	0.87	<b>0.82</b>