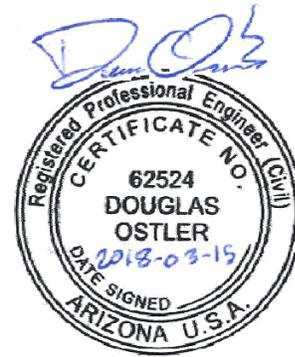




March 15, 2018

Amberlee Snider, PLC
Five Star Development
6720 N. Scottsdale Road, Suite 130
Scottsdale, AZ 85253



EXPIRES 2019-09-30

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

Dear Ms. Snider:

CivTech has been retained to evaluate the effect of the proposed traffic calming concept of Indian Bend Road, between Scottsdale Road and Mockingbird Lane. 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 to design a preferred traffic calming concept. A “swoop” concept was previously selected to move forward in concept design plans. Upon further discussions, the design has been modified.

This evaluation considers the proposed design and a ‘no traffic calming’ condition for a baseline comparison. The proposed concept is included within the **Attachments**.

No Traffic Calming: The baseline condition to be compared to was considered in a prior version of the Ritz Carlton Traffic Impact Study. This condition is not recommended, but is used to compare projected changes to future traffic volumes. The Palmeraie access to Indian Bend Road would be at a four-legged, 2-way stop intersection. The stop-controlled northbound approach consists of a shared left-turn/through lane and a right-turn lane. The north leg is a driveway for the Scottsdale Plaza Resort and its approach consists of a single lane. The eastbound approach consists of a left-turn lane and a shared through/right-turn lane. The westbound approach consists of a left-turn lane, a through lane and a right-turn lane. The existing roundabout to the west of the future Palmeraie access will remain.

Swoop-Roundabout Concept: The previous swoop design brings all traffic on Indian Bend Road from Scottsdale Road into the Palmeraie development and similarly all traffic leaving Palmeraie to Scottsdale Road. Vehicles on Indian Bend Road approaching from either side could turn to continue on Indian Bend Road. The concept has been refined into a swoop-roundabout concept, which adds a roundabout to the swoop. The roundabout provides full access to all approaches. The configuration no longer restricts access exiting the site and improves the operation of vehicles approaching from the west. The existing roundabout on Indian Bend Road will be replaced with a one-way stop controlled “T” intersection.

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 previous swoop design of Indian Bend Road had the potential to influence cut-through traffic to use Cheney Drive or Hummingbird Lane instead of Indian

Bend Road. The proposed roundabout in the revised design minimizes this potential by reducing delays to vehicles approaching from the west. In addition, the Town plans to modify the intersection of Mockingbird Lane and Indian Bend Road into a roundabout (as a separate project) which could be expected to reduce some delays at the intersection. The proposed swoop-roundabout design is not anticipated to create cut-through traffic on Cheney Road or Hummingbird Lane.

Projected Daily Traffic Volumes

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*. Since obtaining the traffic counts, the Town has requested projections for traffic volumes at additional locations. This study uses estimates within the *Ritz Carlton Traffic Impact Analysis* and the *Palmeraie Traffic Impact and Mitigation Analysis*.

Ritz Carlton and Palmeraie Volume Changes with Traffic Calming

The proposed 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 compared to no traffic calming. 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). The swoop and roundabout design allows easy access to/from Mockingbird Lane where a signalized intersection with Scottsdale Road allows favorable capacity for site access.

The future total ADT, with the addition of trips to/from Ritz Carlton, Palmeraie and other background growth, are depicted in **Exhibit A** for the projected conditions without traffic calming, **Exhibit B** depicts the anticipated daily volumes for the refined “swoop” design.

Projected Roadway Levels-of Service

Paradise Valley evaluates roadway segment levels-of-service (LOS) 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 2**.

Table 2: Roadway Segment Volume Thresholds for LOS by Classification

Roadway (Urban Area)	# of Travel Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Major Arterial	3	14,880	17,360	19,840	22,320	24,800
	4	24,540	28,630	32,720	36,810	40,900
	5	30,480	35,560	40,640	45,720	50,800
	6	36,480	42,560	48,640	54,720	60,800
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 3**. Except on Indian Bend Road, the LOS ratings at the locations evaluated were unchanged with the traffic calming.

Indian Bend Road, east of Mockingbird Lane, is anticipated to improve from LOS C to LOS A with traffic calming. West of Scottsdale Road, Indian Bend Road is anticipated to operate at LOS C with traffic calming which is anticipated to experience a decrease from LOS B without traffic calming. Cheney Road is anticipated to operate at LOS A with or without traffic calming on Indian Bend Road. Hummingbird Lane is anticipated to operate at LOS B with or without traffic calming on Indian Bend Road.

The Town of Paradise Valley may wish to monitor traffic volumes before and after any reconstruction of Indian Bend Road. If desired, the City may conduct future traffic counts at key locations before the Ritz Carlton Resort and/or the Palmeraie development opens.

Table 3: Roadway Segment LOS Summary

Roadway	Location Reference	Classification	# of Travel Lanes	Projected LOS and ADT			
				No Calming	Swoop-Roundabout		
Cheney Drive	East of Mockingbird Lane	Collector (Minor) ⁽¹⁾	2	A	2,640	A	2,680
Hummingbird Lane ⁽³⁾	East of Mockingbird Lane	Local	2	B	1,320	B	1,340
Indian Bend Road	East of Mockingbird Lane	Collector (Major) ⁽¹⁾	2	C	6,120	A	4,920
Indian Bend Road	West of Scottsdale Road	Collector (Major) ⁽¹⁾	4 ⁽²⁾	B	11,410	C	12,670
Mockingbird Lane ⁽⁴⁾	North of Indian Bend Road	Minor Arterial	2	A	7,610	A	7,530
Mockingbird Lane ⁽⁴⁾	South of Indian Bend Road	Minor Arterial	2	A	8,140	A	7,250
Lincoln Drive ⁽⁴⁾	West of Mockingbird Lane	Major Arterial	4	A	22,970	A	22,970
Lincoln Drive ⁽⁴⁾	East of Mockingbird Lane	Major Arterial	4	A	19,780	A	20,630
Scottsdale Road ⁽⁴⁾	South of Cheney Drive	Major Arterial	6	C	46,130	C	46,450
Scottsdale Road ⁽⁴⁾	South of Indian Bend Road	Major Arterial	6	D	50,320	D	52,880

- (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.
- (4) Base volume retrieved from associated studies.

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 to design a preferred traffic calming concept. A “swoop” concept was previously selected to move forward in Concept Design plans. Upon further discussions, the design has been modified.
- The proposed 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 compared to no traffic calming. 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). The swoop and roundabout design allows easy access to/from Mockingbird Lane where a signalized intersection with Scottsdale Road allows favorable capacity for site access.
- Except on Indian Bend Road, the LOS ratings at the locations evaluated were unchanged with the traffic calming.
 - Indian Bend Road, east of Mockingbird Lane, is anticipated to improve from LOS C to LOS A with traffic calming. West of Scottsdale Road, Indian Bend Road is anticipated to operate at LOS C with traffic calming which is anticipated to experience a decrease from LOS B without traffic calming.
 - Cheney Road is anticipated to operate at LOS A with or without traffic calming on Indian Bend Road.
 - Hummingbird Lane is anticipated to operate at LOS B with or without traffic calming on Indian Bend Road.
- The Town of Paradise Valley may wish to monitor traffic volumes before and after any reconstruction of Indian Bend Road. If desired, the City may conduct future traffic counts at key locations before the Ritz Carlton Resort and/or the Palmeraie development opens.
- The level of service anticipated at the intersection of Scottsdale Road and Lincoln Drive is anticipate to remain consistent at a LOS D with or without traffic calming on Indian Bend Road.
- The level of service at the intersection of Mockingbird Lane and Indian Bend Road currently operates overall at an A. The Town plans to modify the intersection of Mockingbird Lane and Indian Bend Road into a roundabout, as a separate project, which could be expected to reduce some delays at the intersection. Since this is a separate project, evaluation of delay at the intersection is not included within this analysis.

Thank you for allowing CivTech to provide engineering services for this project. Should there be any questions please contact me at 480-659-4250.

Sincerely,

CivTech



Doug Ostler, P.E.
Project Engineer

Attachments:

Exhibit A: 2023 Projected Conditions, No Traffic Calming
Exhibit B: 2023 Projected Conditions, With Traffic Calming
Design Concept
Traffic Counts

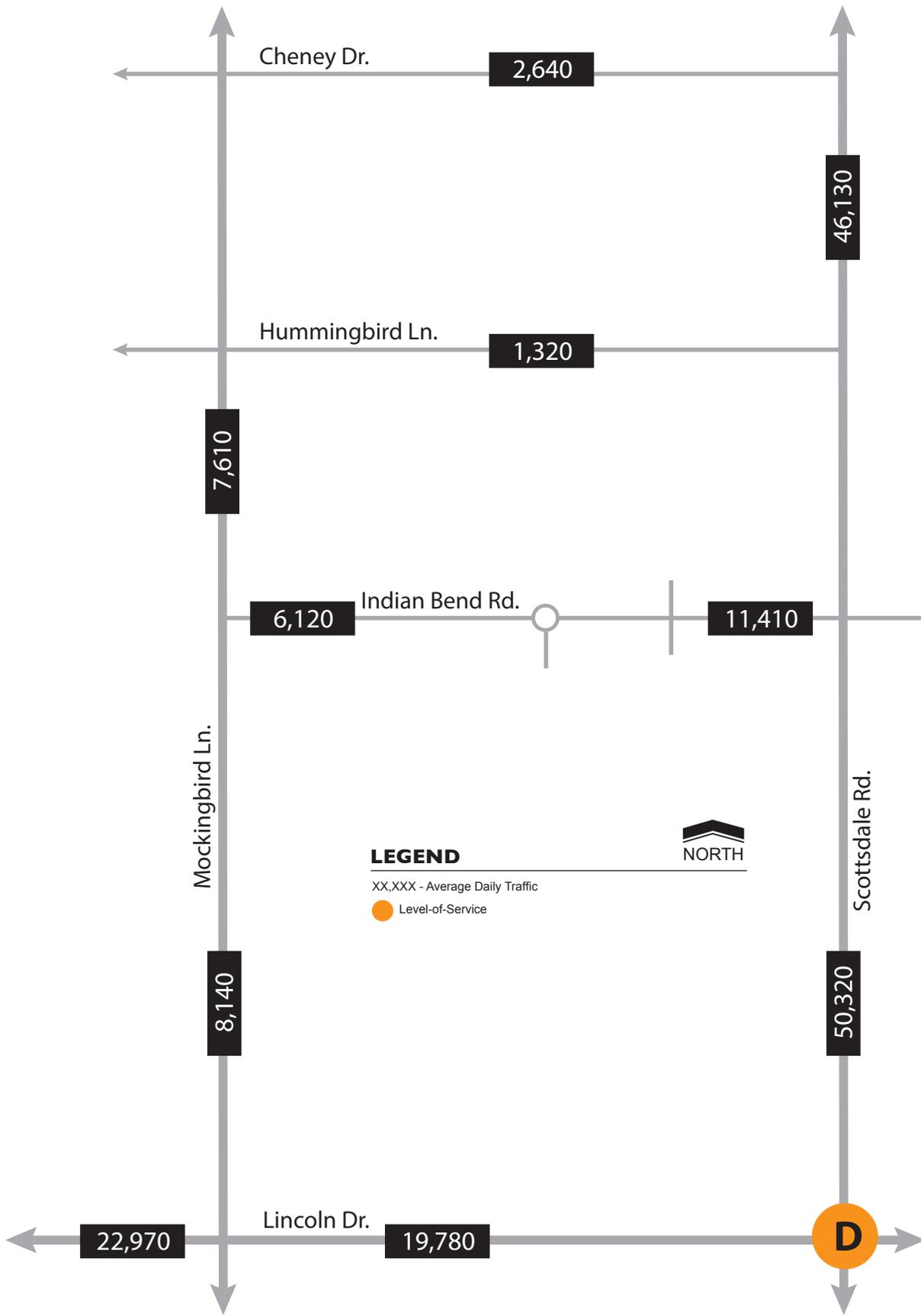


Exhibit A: 2023 Projected Conditions
No Traffic Calming

Source: CivTech, Inc. 2017

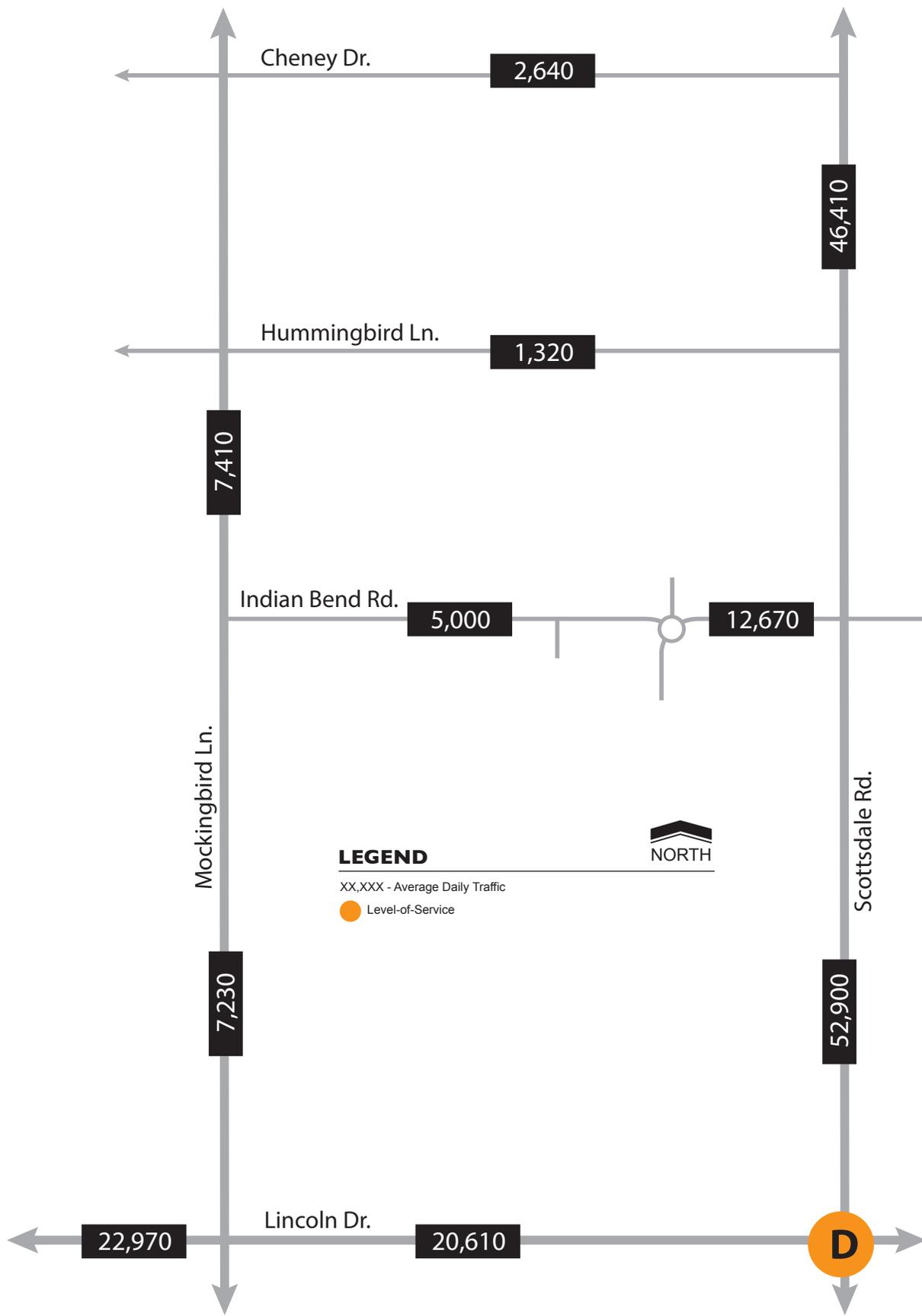
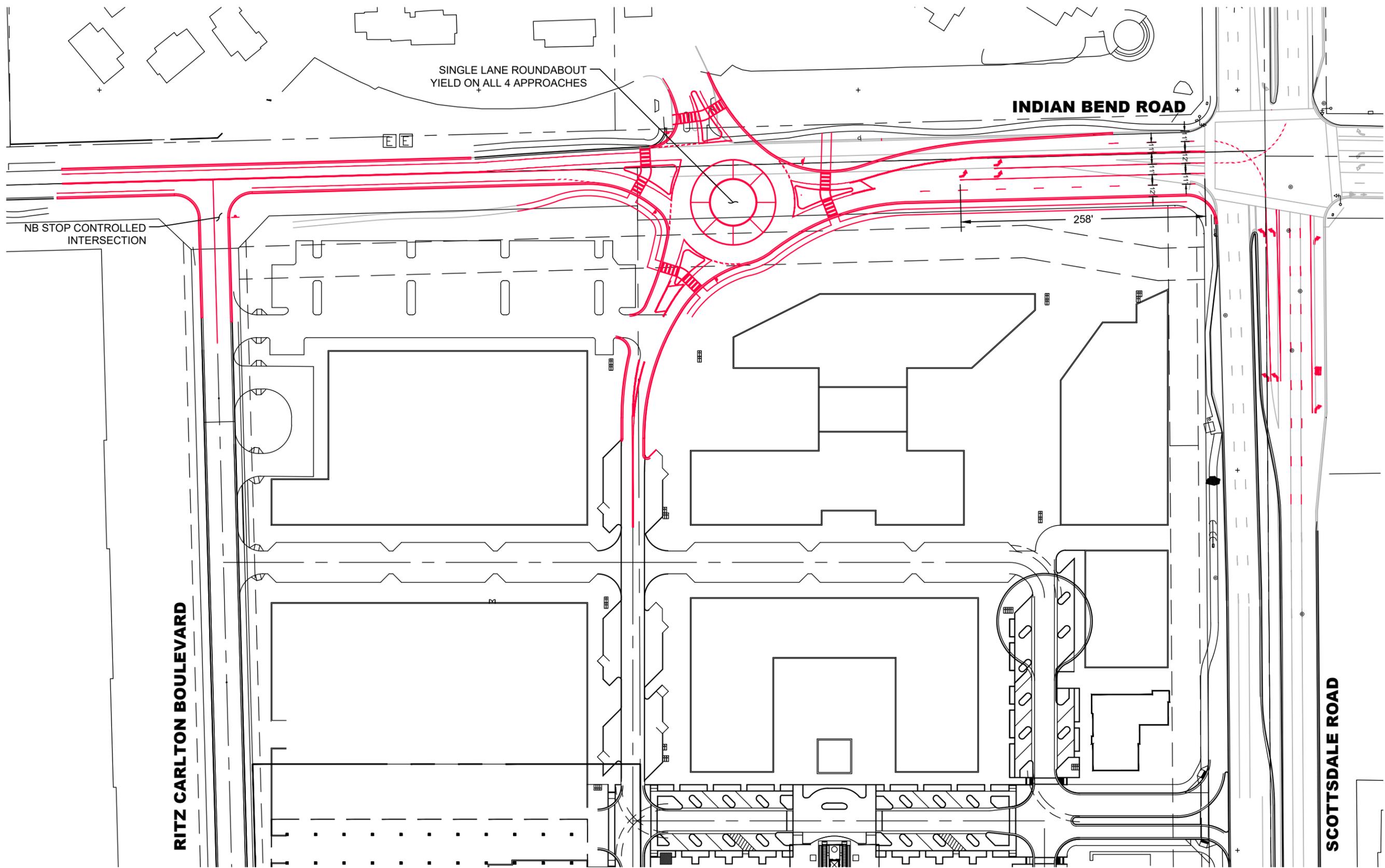


Exhibit B: 2023 Projected Conditions with Traffic Calming

Source: CivTech, Inc. 2017

Indain Bend Road - Traffic Statement

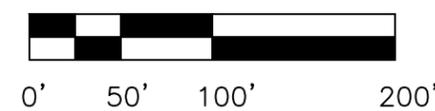




PROPOSED STREET MODIFICATION

SCALE: 1"=100'

SCALE: 1"=100'



JOB NO:	16-###
1ST SUBMITTAL:	03/2018
2ND SUBMITTAL:	-
SCALE:	1"=100'
DESIGN:	G. WHITE
DRAWN:	G. WHITE
CHECKED:	D. CARTER

SCOTTSDALE ROAD & 6750 NORTH

PALMERAIE

PRELIMINARY
REVIEW
NOT FOR
CONSTRUCTION
OR RECORDING

SHEET
FIG-A3
1 OF 1

CivTech Inc.
10605 N. Hayden Rd. 480.659.4250 p
Suite 140 480.659.0566 f
Scottsdale, AZ 85260 info@civtech.com

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
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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	2635	
Split %	AM		PM			
	44.3%	55.7%	50.8%	49.2%	60.3%	
Peak Hour	08:15	07:45	07:45	12:30	14:45	12:30
Volume	97	129	219	121	117	218
P.H.F.	0.81	0.85	0.81	0.84	0.81	0.88

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				
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04:30			1	0	16:30			33	32				
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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				
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11:00			21	19	23:00			0	3				
11:15			23	20	23:15			1	4				
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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

Daily Totals

NB	SB	EB	WB	Combined
		1508	1682	3190

AM

PM

Split %	50.8%	49.2%	38.5%	45.1%	54.9%	61.5%
Peak Hour	07:30	11:45	07:30	17:00	15:00	17:00
Volume	140	131	264	165	139	302
P.H.F.	0.95	0.80	0.93	0.79	0.87	0.82