Lokahi

To: Ben Brosseau
Banyan Residential

Date: October 23, 2019

From: Jamie Blakeman, PE, PTOE

Job Number: 19.5021.01

RE: Scottsdale Entrada
Traffic Impact & Mitigation Analysis

Registered Professional Engineer (Civil) CERTIFICATE NO. 40961 JAMIE ANN K. BLAKEMAN Date Signed: 10/23/19 ARIZONA, U.S.A.

INTRODUCTION

Lōkahi, LLC (Lōkahi) has prepared a Category I Traffic Impact and Mitigation Analysis for the proposed Scottsdale Entrada development located on the northeast corner (NEC) of 64th Street and McDowell Road in Scottsdale, Arizona. See **Figure 1** for the vicinity map.

Figure 1 - Vicinity Map

The proposed Scottsdale Entrada development will be comprised of 722 multi-family residential units, 250,000 sf of office, 3,500 sf of retail, 10,000 sf of restaurant, and 1,500 sf of coffee shop. See **Attachment A** and **Figure 2** for the site plan.

The purpose of this Traffic Impact & Mitigation Analysis is to analyze the traffic related impacts of the proposed development to the adjacent roadway network, as well as to provide an update to the 64th Street and McDowell Road Traffic Impact Study dated May 20, 2016.

EXISTING CONDITIONS

The proposed development is bordered by McDowell Road to the south, 64th Street to the west, and the Crosscut Canal to the east. The surrounding area consists of single-family residential neighborhoods to the north and the east, the Desert Botanical Garden to the south, and Papago Sports Complex to the west.

ACCEPTED
CITY OF SCOTTSDALE
TRANSPORTATION DEPARTMENT
10/24/19
DATE:
Doug Ostler
REVIEWER:

collaboration unity harmony cooperation

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phoenix, az 85004
480.536.7150
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McDowell Road runs east-west and provides three (3) through lanes for each direction of travel with a raised landscaped median. There is a posted speed limit of 45 miles per hour (mph). Per the City of Scottsdale's *2016 Transportation Master Plan,* McDowell Road is classified as an urban major arterial. The average daily traffic volume along McDowell Road, between 64th Street and 68th Street is 31,000 vehicles per day (vpd), according to the City of Scottsdale *2016 Average Daily Traffic Volumes Segment Map*.

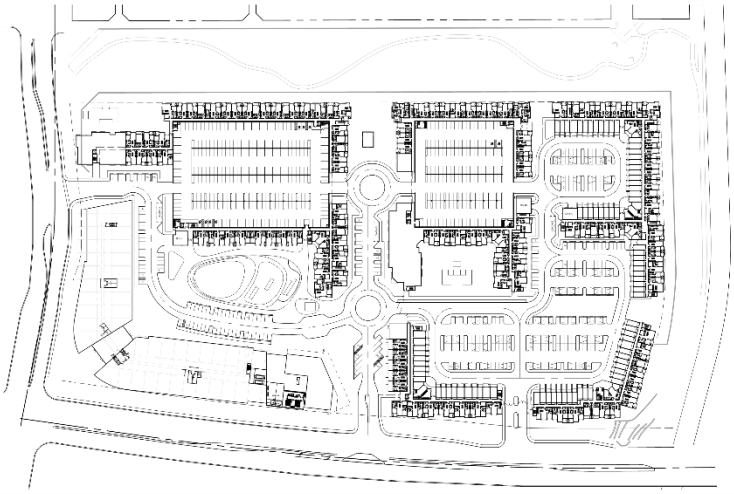


Figure 2 - Site Plan

64th Street/Galvin Parkway runs north-south and provides two (2) through lanes in each direction of travel with a raised landscaped median. There is a posted speed limit of 40 mph. Per the City of Scottsdale *2016 Transportation Master Plan*, 64th Street is classified as a suburban minor arterial. The average daily traffic volume along 64th Street, between McDowell Road and Oak Street is 18,000 vpd, according to the City of Scottsdale *2016 Average Daily Traffic Volumes Segment Map*.

McDowell Road and 64th Street currently operates as a signalized intersection under the jurisdiction of the City of Scottsdale. The northbound and the southbound approaches each have an exclusive left turn lane, two (2) through lanes, and an exclusive right turn lane. The eastbound and the westbound approaches each have an exclusive left turn lane, three (3) through lanes, and an exclusive right turn lane. Bike lanes are provided along 64th Street for both directions of travel. Approximately 450 feet west of the intersection, for both directions of travel, bike lanes are provided along McDowell Road.

COLLISION HISTORY

The most recent 3-year collision history, from January 2016 to December 2018, was obtained from the City of Scottsdale. See **Attachment B** for collision data.

64th Street and McDowell Road

During the three year period, there were a total of 10 crashes, of which there were 3 angle, 3 sideswipe same direction, 2 rear end, 1 single vehicle, and 1 other collision. Violations included speed too fast for conditions (20%), failed to yield right-of-way (20%), and other unsafe passing (20%). The remaining 40% of the crash violations were recorded as followed too closely, drove in

opposite traffic lane, failed to keep in proper lane, and unknown. One crash involved a non-incapacitating injury, one possible injury, one unknown, and the remaining collisions were property damage only.

On October 12, 2017 at 2:31 am, an angle collision occurred with a driver under the influence of alcohol. Both vehicles were headed southbound, and vehicle 1 was sited with speed too fast for conditions. This collision resulted in property damage only.

On December 10, 2017 at 10:14 am, there was a crash involving a bicyclist traveling east who was struck by an eastbound vehicle. This resulted in a possible injury.

McDowell Road (100 feet east of 64th Street to the Crosscut Canal)

During the three year period, there were a total of 3 crashes, of which there were 2 rear ends and 1 angle collision. There were no reported injuries.

64th Street (100 feet north of McDowell Road to the Papago Sports Complex Driveway)

During the three year period, there was 1 rear end collision that resulted in no injuries, and a driver being cited for failing to yield to the right-of-way.

COLLISION RATES

The City of Scottsdale's *2016 Traffic Volume and Collision Rate Data* report provides collision rate and traffic volume information on major roadway segments and at major intersections within the City of Scottsdale. Segment collisions are collisions that occur on a major street more than 100 feet from the major intersections that define the segment, including at minor intersections within the segment. Intersection collisions are collisions that occur at or within 100 feet of a major intersection. The collision rates and city-wide rankings for the study segments and the study intersection are shown in **Table 1** and **Table 2**, respectively.

Table 1 – Collision Rates - Study Roadway Segments

Segment	From	To	Collision Rate	Rank
McDowell Road	64th Street	68th Street	0.87	175
64th Street	McDowell Road	Oak Street	0.16	291
2016 City of Scottsdale Average Segment Collision Rate			1.50	

Table 2 – Collision Rates - Study Intersections

Intersection	Collision Rate	Rank
McDowell Road and 64th Street	0.09	188
2016 City of Scottsdale Average Intersection Collision Rate	0.65	

TRIP GENERATION

TRAFFIC IMPACT STUDY (DATED MAY 20, 2016)

In 2016, the 64th Street and McDowell Traffic Impact Study (Zoning Case 5-ZN-2016) was submitted to the City of Scottsdale. See **Attachment C**. The proposed development included 333 multi-family residential units, a 228 key hotel, 566,256 sf of office, 14,400 sf of retail, and 6,400 sf of retail.

The trip generation for the previously approved site is shown in **Table 3** below. This trip generation includes reductions for internal capture and pass-by trips. The trips shown in **Table 3** are taken directly from the 64th Street and McDowell Traffic Impact Study dated May 20, 2016.

Table 3 – Trip Generation – 64th Street and McDowell TIS (Dated May 20, 2016)

Land Use	Weekday	AM Peak Hour			PM Peak Hour			Saturday	Saturday Peak Hour		
	Total	Total	In	Out	Total	In	Out	Total	Total	In	Out
Traffic Impact Study (ZN-5-16), dated May 20, 2016	13,441	1,353	1,023	330	1,225	334	891	9,068	623	337	286

PROPOSED DEVELOPMENT

The proposed Scottsdale Entrada development will be comprised of 722 multi-family residential units, 250,000 sf of office, 3,500 sf of retail, 10,000 sf of restaurant, and 1,500 sf of coffee shop.

Site Access

Three (3) site accesses will be provided. The main access will be located along McDowell Road, approximately 700 feet east of 64th Street, and will operate as a full access driveway allowing all movements to and from the proposed development. An additional access will be provided on McDowell Road approximately 1,000 feet east of 64th Street. This access will be limited to right-in and right-out movements. The third access will be located on 64th Street approximately 470 feet north of McDowell Road. This will operate as a full access driveway allowing all movements to and from the proposed development.

Trip Generation

The trip generation for the proposed Scottsdale Entrada was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 10th Edition*. The ITE rates are based on studies that measure the trip generation characteristics for various types of land uses. The rates are expressed in terms of trips per unit of land use type. This publication is considered to be the standard for the transportation engineering profession.

ITE Land Use 221 – Multifamily Housing (Mid-Rise), ITE Land Use 710 – General Office Building, ITE Land Use 820 – Shopping Center, ITE Land Use 932 – High-Turnover (Sit-Down) Restaurant, and ITE Land Use 936 – Coffee/Donut Shop without Drive-Through were used to calculate the

trips generated by the proposed Scottsdale Entrada development. The internal trip capture rates were applied to the AM and PM peak hour traffic volumes, based on *NCHRP Report 684 – Enhancing Internal Trip Capture of Mixed-Use Developments*. The City of Scottsdale advised to reduce the AM peak hour internal capture rate, therefore 12% was used rather than what is reported in the NCHRP (20%) for only the AM peak hour. The total trip generation is shown in **Table 4**. Detailed trip generation calculations are provided in **Attachment D**.

Table 4 – Trip Generation - Proposed Scottsdale Entrada Development

Land Use	Weekday	AM Peak Hour			PM Peak Hour			Saturday	Saturday Peak Hour		
	Total	Total	In	Out	Total	In	Out	Total	Total	In	Out
General Office Building	2,435	290	249	41	288	46	242	553	133	72	61
Multifamily Housing (Mid-Rise)	3,928	260	68	192	318	194	124	3,545	318	156	162
Shopping Center	132	3	2	1	13	6	7	161	16	8	8
High-Turnover (Sit-Down) Restaurant	1,122	99	54	45	98	61	37	1,224	112	57	55
Coffee/Donut Shop without Drive-Through	1,132	152	78	74	54	27	27	1,010	89	44	45
Total	**8,749**	**804**	**451**	**353**	**771**	**334**	**437**	**6,493**	**668**	**337**	**331**
Adjusted Internal Capture	1,556	96	48	48	92	46	46	-	-	-	-
Total (After Adjusted Internal Capture)	**7,193**	**708**	**403**	**305**	**679**	**288**	**391**	**6,493**	**668**	**337**	**331**

TRIP GENERATION COMPARISON

A comparison between trips generated by the previously approved site and the proposed Scottsdale Entrada development is shown in **Table 5**.

Table 5 – Trip Generation Comparison (Proposed Scottsdale Entrada vs. May 2016 TIS)

Land Use	Weekday	AM Peak Hour			PM Peak Hour			Saturday	Saturday Peak Hour		
	Total	Total	In	Out	Total	In	Out	Total	Total	In	Out
Proposed Entrada Scottsdale	7,193	708	403	305	679	288	391	6,493	668	337	331
Traffic Impact Study (ZN-5-16), dated May 20, 2016	13,441	1,353	1,023	330	1,225	334	891	9,068	623	337	286
Difference	**-6,248**	**-645**	**-620**	**-25**	**-546**	**-46**	**-500**	**-2,575**	**45**	**0**	**45**

The proposed Scottsdale Entrada development is expected to generate 6,248 fewer weekday daily trips, 645 fewer weekday AM peak hour trips, and 546 fewer weekday PM peak hour trips than the previously approved site. Additionally, the proposed Scottsdale Entrada development is expected to generate 2,575 fewer Saturday daily trips and 45 more Saturday peak hour trips.

CONCLUSION

The proposed Scottsdale Entrada development located on the NEC of McDowell Road and 64th Street will be comprised of 722 multi-family residential units, 250,000 sf of office, 3,500 sf of retail, 10,000 sf of restaurant, and 1,500 sf of coffee shop.

Trip Generation

The proposed Scottsdale Entrada development is anticipated to generate 7,193 weekday daily trips, with 708 and 679 occurring during the AM and PM peak hours, respectively. On Saturday it is anticipated to generate 6,493 trips, with 668 occurring during the peak hour.

Trip Generation Comparison

In 2016, the 64th Street and McDowell Traffic Impact Study (Zoning Case 5-ZN-2016) was submitted to the City of Scottsdale which included the analysis of 333 multi-family residential units, a 228 key hotel, 566,256 sf of office, 14,400 sf of retail, and 6,400 sf of retail developed on the site.

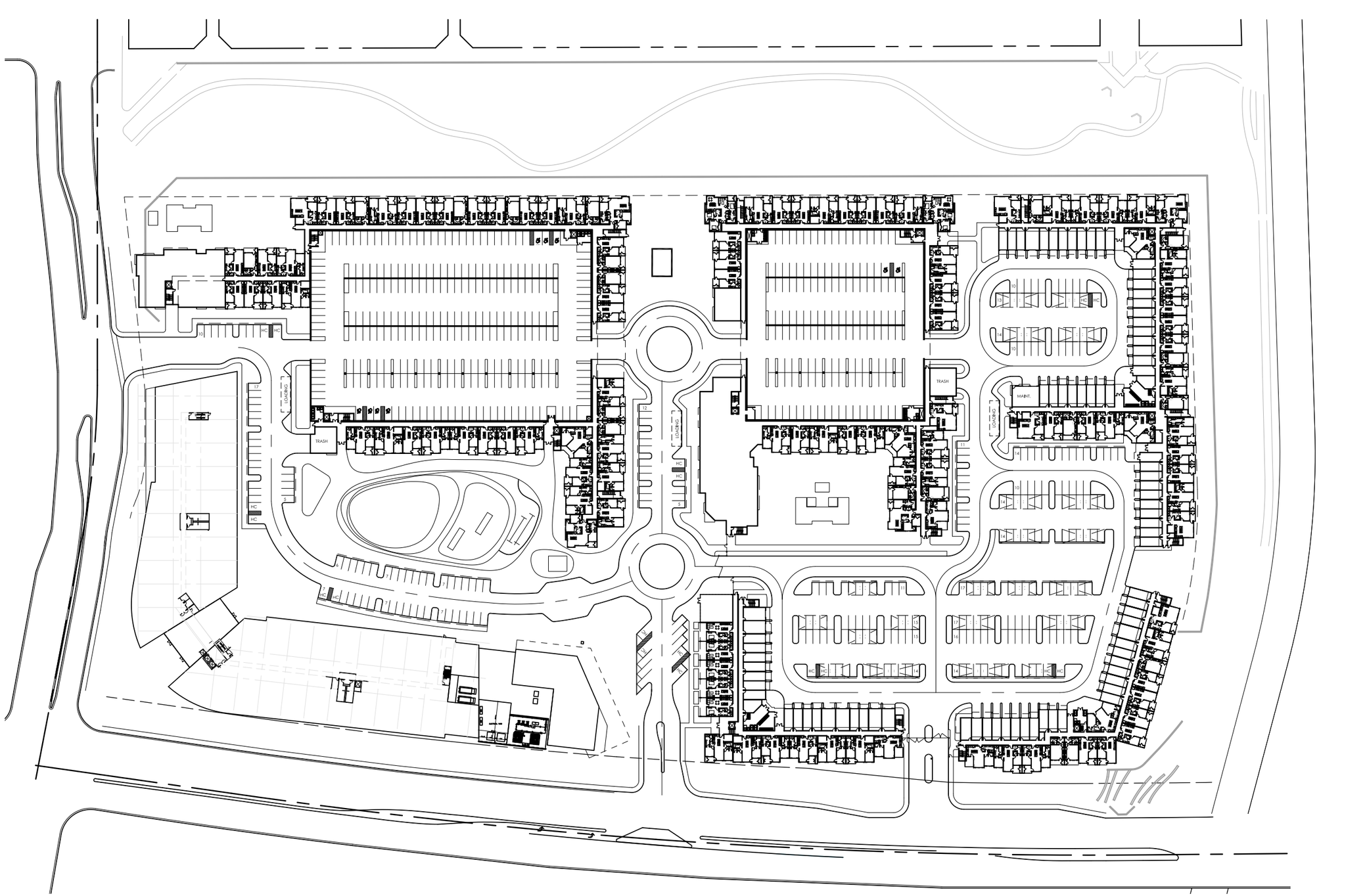
The proposed Scottsdale Entrada development is expected to generate 6,248 (46%) fewer weekday daily trips, 645 (48%) fewer weekday AM peak hour trips, and 546 (45%) fewer weekday PM peak hour trips than the previously approved site (Zoning Case 5-ZN-2016). Additionally, the proposed development is expected to generate 2,575 (28%) fewer Saturday daily trips, while generating 45 (7%) more during the Saturday peak hour trips.

The 2016 previously approved site provided three (3) accesses on McDowell Road, similar to the proposed Scottsdale Entrada access, with the exception of the elimination of the west most right-in right-out driveway. Along 64th Street, the prior and current site plans proposed a full access driveway. With approximately 50% of the anticipated traffic generated by this new proposed site in comparison to the prior proposed site plan, it is anticipated that these driveways will operate at acceptable levels of service.

The 2016 traffic study also states that a traffic signal is warranted at the main access on McDowell Road between 40% to 50% of the build out of the site. Therefore, with approximately 50% of the site traffic and one less driveway along McDowell Road, it can be concluded that the signal at this location will also be warranted closer to build out of the proposed Scottsdale Entrada development.

In conclusion, the proposed Scottsdale Entrada development is anticipated to have significantly less traffic related impacts to the surrounding roadway network as compared to the previously approved May 20, 2016 64th Street and McDowell Traffic Impact Study.

ATTACHMENT A – PROPOSED SITE PLAN



SCHEMATIC DESIGN SITE PLAN

SCOTTSDALE ENTRADA

TODD & ASSOCIATES, INC.
ARCHITECTURE PLANNING LANDSCAPE ARCHITECTURE
602.952.8280p www.toddassoc.com

Scottsdale, Arizona
CLIENT PACKAGE
Project No. 18-2047-01 Date 7-24-2019

SCHEMATIC NOT FOR CONSTRUCTION OR RECORDING

TODD & ASSOCIATES, INC.
Critical Thinking • Creative Design

PROJECT SUMMARY

UNIT TYPE	UNIT AREA	#DU	RATIO	PS RATIO (PS/DU)	PS REQ'D	PS REQ'D	TARGET MIX
STUDIO		**105**	**15%**	1.25	131	105	15%
S01	535	105					
		0					
1 BD		**333**	**46%**	1.3	433	333	45%
A01	845	5					
A02	743	265					
A03	861	19					
A04	1,039	44					
2 BD		**260**	**36%**	1.7	442	520	35%
B01	1,070	93					
B02	1,128	62					
B03	1,161	76					
B04	1,305	25					
B05	1,243	4					
3 BD		**24**	**3%**	1.9	46	72	5%
C01	1,412	24					
		0					
TOTALS		**722**	**100%**		**1,052**	**1,030**	100%

BLDG	AREA (SF)*	#DU	PS REQ'D
A	71,183	76	110
B	77,028	90	118
C	160,205	175	251
D	153,003	167	248
E	187,118	214	303
TOTAL	**648,537**	**722**	**1,030**

*unit net rentable s.f. = the unit gross area is measured from the outside face of the exterior stud wall to the cener of the units party wall to the outside face of the corridor stud wall. Area does not include building frame-outs, pop-outs, other faux elevation features, patios, balconies, breezeways or patio/ balcony storage rooms.

TODD & ASSOCIATES, INC.
Critical Thinking • Creative Design

ENTRADA UNIT MIX
July 24, 2019
TAI Project No. 18-2047-01

BUILDING A — 71,183 SF

UNIT SUMMARY

UNIT TYPE	#DU	RATIO	PS REQ'D
STUDIO	**6**	**8%**	
S01	6	8%	6
S02	0	0%	0
1 BD	**36**	**47%**	
A01	5	7%	5
A02	21	28%	21
A03	4	5%	4
A04	6	8%	6
2 BD	**34**	**45%**	
B01	14	18%	28
B02	5	7%	10
B03	12	16%	24
B04	3	4%	6
B05	0	0%	0
3 BD	**0**	**0%**	
C01	0	0%	0
C02	0	0%	0
	76	**100%**	**110**

LEVEL 1

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	0	- SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	5	4,225 SF
A02	743 SF	0	- SF
A03	861 SF	1	861 SF
A04	1,039 SF	0	- SF
2 BD			
B01	1,070 SF	2	2,140 SF
B02	1,128 SF	0	- SF
B03	1,161 SF	4	4,644 SF
B04	1,305 SF	0	- SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		12	**11,870 SF**

LEVEL 2

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	2	1,070 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	4	2,972 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	4	4,280 SF
B02	1,128 SF	0	- SF
B03	1,161 SF	3	3,483 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		17	**16,049 SF**

LEVEL 3

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	2	1,070 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	9	6,687 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	4	4,280 SF
B02	1,128 SF	0	- SF
B03	1,161 SF	5	5,805 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		24	**22,086 SF**

LEVEL 4

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	2	1,070 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	8	5,944 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	4	4,280 SF
B02	1,128 SF	5	5,640 SF
B03	1,161 SF	0	- SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		23	**21,178 SF**

BUILDING B — 77,028 SF

UNIT SUMMARY

UNIT TYPE	#DU	RATIO	PS REQ'D
STUDIO	**15**	**17%**	
S01	15	17%	15
S02	0	0%	0
1 BD	**47**	**52%**	
A01	0	0%	0
A02	36	40%	36
A03	4	4%	4
A04	7	8%	7
2 BD	**28**	**31%**	
B01	11	12%	22
B02	9	10%	18
B03	4	4%	8
B04	0	0%	0
B05	4	4%	8
3 BD	**0**	**0%**	
C01	0	0%	0
C02	0	0%	0
	90	**100%**	**118**

LEVEL 1

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	3	1,605 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	6	4,458 SF
A03	861 SF	1	861 SF
A04	1,039 SF	1	1,039 SF
2 BD			
B01	1,070 SF	2	2,140 SF
B02	1,128 SF	0	- SF
B03	1,161 SF	1	1,161 SF
B04	1,305 SF	0	- SF
B05	1,243 SF	1	1,243 SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		15	**12,507 SF**

LEVEL 2

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	4	2,140 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	10	7,430 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	3	3,210 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	1	1,161 SF
B04	1,305 SF	0	- SF
B05	1,243 SF	1	1,243 SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		25	**21,507 SF**

LEVEL 3

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	4	2,140 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	10	7,430 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	3	3,210 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	1	1,161 SF
B04	1,305 SF	0	- SF
B05	1,243 SF	1	1,243 SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		25	**21,507 SF**

LEVEL 4

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	4	2,140 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	10	7,430 SF
A03	861 SF	1	861 SF
A04	1,039 SF	2	2,078 SF
2 BD			
B01	1,070 SF	3	3,210 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	1	1,161 SF
B04	1,305 SF	0	- SF
B05	1,243 SF	1	1,243 SF
3 BD			
C01	1,412 SF	0	- SF
C02	1,323 SF	0	- SF
		25	**21,507 SF**

BUILDING C — 160,205 SF

UNIT SUMMARY

UNIT TYPE	#DU	RATIO	PS REQ'D
STUDIO	**23**	**13%**	
S01	23	13%	23
S02	0	0%	0
1 BD	**80**	**46%**	
A01	0	0%	0
A02	62	35%	62
A03	3	2%	3
A04	15	9%	15
2 BD	**68**	**39%**	
B01	24	14%	48
B02	10	6%	20
B03	23	13%	46
B04	11	6%	22
B05	0	0%	0
3 BD	**4**	**2%**	
C01	4	2%	12
C02	0	0%	0
	175	**100%**	**251**

LEVEL 1

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	5	2,675 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	8	5,944 SF
A03	861 SF	0	- SF
A04	1,039 SF	3	3,117 SF
2 BD			
B01	1,070 SF	3	3,210 SF
B02	1,128 SF	1	1,128 SF
B03	1,161 SF	5	5,805 SF
B04	1,305 SF	2	2,610 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	1	1,412 SF
C02	1,323 SF	0	- SF
		28	**25,901 SF**

LEVEL 2

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	6	3,210 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	18	13,374 SF
A03	861 SF	1	861 SF
A04	1,039 SF	4	4,156 SF
2 BD			
B01	1,070 SF	7	7,490 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	3	3,915 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	1	1,412 SF
C02	1,323 SF	0	- SF
		49	**44,768 SF**

LEVEL 3

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	6	3,210 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	18	13,374 SF
A03	861 SF	1	861 SF
A04	1,039 SF	4	4,156 SF
2 BD			
B01	1,070 SF	7	7,490 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	3	3,915 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	1	1,412 SF
C02	1,323 SF	0	- SF
		49	**44,768 SF**

LEVEL 4

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	6	3,210 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	18	13,374 SF
A03	861 SF	1	861 SF
A04	1,039 SF	4	4,156 SF
2 BD			
B01	1,070 SF	7	7,490 SF
B02	1,128 SF	3	3,384 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	3	3,915 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	1	1,412 SF
C02	1,323 SF	0	- SF
		49	**44,768 SF**

BUILDING D — 153,003 SF

UNIT SUMMARY

UNIT TYPE	#DU	RATIO	PS REQ'D
STUDIO	**23**	**14%**	
S01	23	14%	23
S02	0	0%	0
1 BD	**75**	**45%**	
A01	0	0%	0
A02	61	37%	61
A03	6	4%	6
A04	8	5%	8
2 BD	**57**	**34%**	
B01	18	11%	36
B02	18	11%	36
B03	14	8%	28
B04	7	4%	14
B05	0	0%	0
3 BD	**12**	**7%**	
C01	12	7%	36
C02	0	0%	0
	167	**100%**	**248**

LEVEL 1

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	2	1,070 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	13	9,659 SF
A03	861 SF	1	861 SF
A04	1,039 SF	1	1,039 SF
2 BD			
B01	1,070 SF	4	4,280 SF
B02	1,128 SF	4	4,512 SF
B03	1,161 SF	2	2,322 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	3	4,236 SF
C02	1,323 SF	0	- SF
		31	**29,284 SF**

LEVEL 2

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	5	2,675 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	14	10,402 SF
A03	861 SF	1	861 SF
A04	1,039 SF	1	1,039 SF
2 BD			
B01	1,070 SF	4	4,280 SF
B02	1,128 SF	4	4,512 SF
B03	1,161 SF	2	2,322 SF
B04	1,305 SF	2	2,610 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	3	4,236 SF
C02	1,323 SF	0	- SF
		36	**32,937 SF**

LEVEL 3

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	8	4,280 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	17	12,631 SF
A03	861 SF	2	1,722 SF
A04	1,039 SF	3	3,117 SF
2 BD			
B01	1,070 SF	5	5,350 SF
B02	1,128 SF	5	5,640 SF
B03	1,161 SF	5	5,805 SF
B04	1,305 SF	2	2,610 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	3	4,236 SF
C02	1,323 SF	0	- SF
		50	**45,391 SF**

LEVEL 4

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	8	4,280 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	17	12,631 SF
A03	861 SF	2	1,722 SF
A04	1,039 SF	3	3,117 SF
2 BD			
B01	1,070 SF	5	5,350 SF
B02	1,128 SF	5	5,640 SF
B03	1,161 SF	5	5,805 SF
B04	1,305 SF	2	2,610 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	3	4,236 SF
C02	1,323 SF	0	- SF
		50	**45,391 SF**

BUILDING E

187,118 SF

UNIT SUMMARY

UNIT TYPE	#DU	RATIO	PS REQST'D
STUDIO	**38**	**18%**	
S01	38	18%	38
S02	0	0%	0
1 BD	**95**	**44%**	
A01	0	0%	0
A02	85	40%	85
A03	2	1%	2
A04	8	4%	8
2 BD	**73**	**34%**	
B01	26	12%	52
B02	20	9%	40
B03	23	11%	46
B04	4	2%	8
B05	0	0%	0
3 BD	**8**	**4%**	
C01	8	4%	24
C02	0	0%	0
	214	**100%**	**303**

LEVEL 1

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	9	4,815 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	20	14,860 SF
A03	861 SF	0	- SF
A04	1,039 SF	1	1,039 SF
2 BD			
B01	1,070 SF	6	6,420 SF
B02	1,128 SF	4	4,512 SF
B03	1,161 SF	5	5,805 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	2	2,824 SF
C02	1,323 SF	0	- SF
		48	**41,580 SF**

LEVEL 2

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	9	4,815 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	21	15,603 SF
A03	861 SF	0	- SF
A04	1,039 SF	1	1,039 SF
2 BD			
B01	1,070 SF	6	6,420 SF
B02	1,128 SF	4	4,512 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	2	2,824 SF
C02	1,323 SF	0	- SF
		50	**43,484 SF**

LEVEL 3

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	10	5,350 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	22	16,346 SF
A03	861 SF	1	861 SF
A04	1,039 SF	3	3,117 SF
2 BD			
B01	1,070 SF	7	7,490 SF
B02	1,128 SF	6	6,768 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	2	2,824 SF
C02	1,323 SF	0	- SF
		58	**51,027 SF**

LEVEL 4

UNIT	AREA	#DU	TOTAL AREA
STUDIO			
S01	535 SF	10	5,350 SF
S02	595 SF	0	- SF
1 BD			
A01	845 SF	0	- SF
A02	743 SF	22	16,346 SF
A03	861 SF	1	861 SF
A04	1,039 SF	3	3,117 SF
2 BD			
B01	1,070 SF	7	7,490 SF
B02	1,128 SF	6	6,768 SF
B03	1,161 SF	6	6,966 SF
B04	1,305 SF	1	1,305 SF
B05	1,243 SF	0	- SF
3 BD			
C01	1,412 SF	2	2,824 SF
C02	1,323 SF	0	- SF
		58	**51,027 SF**

ATTACHMENT B – CRASH DATA

64th Street & McDowell Road

REPORT #	YYMMDD	HHMM	NS ST	NS SF	EW ST	EW SF	DIR FROM	DIST FROM	X REF	FROM	DOB 1	DOB 2	INJ SEV 1	INJ SEV 2	PHYSICAL C	PHYSICAL C	VIOL 1	VIOL 2	ACTION 1	ACTION 2	RAVEL DIR	RAVEL DIR	MANNER	COMMENTS	DATE ENTERED
16-08502	160410	2123	64	ST	MCDOWELL	RD	AT				12/2/1993		3		0		13		1		EB		1		5/3/2016
1713359	170615	0823	64	ST	MCDOWELL	RD	E	467			5/13/1983	6/27/1994	1	1	0	0	4	1	1	1	WB	WB	4		7/5/2017
1715683	170715	0144	64	ST	MCDOWELL	RD	AT					11/3/1986	99	1	99	0	8	1	4	1	EB	EB	6	HIT AND RUN	7/25/2017
1719931	170908	1841	64	ST	MCDOWELL	RD	AT				4/12/1982	1/22/1993	1	1	0	0	20	1	4	1	EB	WB	2	MULTI VEH 3	9/20/2017
1722564	171012	0231	64	ST	MCDOWELL	RD					1/23/1985	1/1/1990	1	1	4	0	2	1	1	3	SB	SB	2	PHOENIX, DUI	10/31/2017
1725889	171122	1322	64	ST	MCDOWELL	RD	E	437			9/3/1929	1/31/1983	1	1	0	0	12	1	8	1	EB	EB	2		12/27/2017
1727315	171210	1014	64	ST	MCDOWELL	RD	AT				11/7/1975	5/1/1950	1	2	0	0	15	1	1	97	EB	EB	6	CAR/BICYCLE	1/16/2018
1727319	171210	1129	64	ST	MCDOWELL	RD	E	100			2/26/1997	5/11/1995	1	1	0	0	4	97	2	2	WB	WB	4		1/16/2018
1728353	171223	1135	64	ST	MCDOWELL	RD	E	60			12/7/1983	2/26/1978	1	1	0	0	2	1	1	3	WB	WB	4		1/29/2018
1801338	180118	1406	64	ST	MCDOWELL	RD	AT				1/24/1944	6/17/1933	1	1	0	0	15	1	5	1	NB	EB	2		3/2/2018
1802474	180202	0815	64	ST	MCDOWELL	RD	AT				3/17/1996	7/28/1965	1	1	0	0	20	1	5	1	EB	EB	6		3/15/2018
1808111	180411	1626	64	ST	MCDOWELL	RD	E	380			1/31/1990	10/5/1995	1	1	0	0	12	1	8	1	EB	EB	4		4/19/2018
1809501	180428	1250	64	ST	MCDOWELL	RD	N	500			3/31/1969	1/27/1987	1	1	0	0	20	1	2	2	SB	SB	4		5/23/2018
1810698	180514	1008	64	ST	MCDOWELL	RD	E	100			9/26/1995	10/17/1976	1	1	0	0	99	1	97	1	WB	WB	97	MULTI VEH 3	6/6/2018

ATTACHMENT C – TRIP GENERATION REPORT DATED MAY 20, 2016

Lokahi

BURGESS & NIPLE
Engineers ■ Architects ■ Planners

64th St & McDowell Road
Draft Traffic Impact Study

Prepared for SunChase Holdings, Inc.

May 2016

ACCEPTED
CITY OF SCOTTSDALE
TRANSPORTATION DEPARTMENT

DATE: 6/24/16

REVIEWER: John PBA

Registered Professional Engineer (Civil)
CERTIFICATE NO.
49490
RANDY M.
KILL
Date Signed 5/26/16
ARIZONA U.S.A.
EXPIRES 06-30-2018

5-ZN-2016
06/20/16

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Traffic Counts
Trip Generation for Three Additional Site Plans
HCS 2010 No Build Analysis Output for Year 2025
Signal Warrant Analysis for Year 2025
HCS 2010 Build Analysis Output for Year 2025

Introduction

SunChase Holdings, Inc. proposes to develop approximately 23.5 acres of the former Scottsdale Auto Park dealership site as a mix-use residential, office, retail, hotel and restaurant development. The site is located in the northeast corner of 64th Street and McDowell Road in the City of Scottsdale, Arizona, as illustrated in **Figure 1**. Burgess & Niple has been retained to prepare a Traffic Impact Study in accordance with the Category 2 study guidelines of the Design Standards & Policies Manual, Section 5-1, Transportation Impact Studies, 2004 Update.

Figure 1 – Study Area

The objectives of this Traffic Impact Study are to:

- Analyze existing traffic conditions
- Estimate new traffic generated by the proposed mix-use development
- Distribute and assign new traffic to adjacent street network
- Determine the need for auxiliary lanes at study intersections
- Evaluate operation of adjacent street network with the new site
- Recommend traffic control measures at study intersections

- Evaluate historical collision data on adjacent street network

The proposed development is shown conceptually on **Figure 2** and includes the following site accesses:

- McDowell Road and Main Access (aligns with existing main entrance to the former dealerships)
- Two additional access points (at Road A and Road B) onto McDowell Road
- 64th Street Access and Road A (aligns with existing dealership access)

Figure 2 – Conceptual Site Plan

Executive Summary

McDowell Road and 64th Street

This existing signalized intersection will operate at an acceptable overall LOS D or better in 2025 with the proposed site. It is recommended that the northbound right turn storage length on 64th Street be increased from 215' to 265', the southbound left turn storage length be increased from 210' to 235', and the southbound right turn storage length be increased from 150' to 225'. Additionally, it is recommended the existing median between 64th Street and Main Access intersections on McDowell Road be modified to provide equal storage lengths for the westbound left turn lane at 64th Street and the eastbound left turn lane at Main Access.

McDowell Road and Main Access

This T-intersection warrants a traffic signal with the development between 40% and 50% built out. Therefore, in 2025, under full build conditions, the intersection will warrant a signal. The 2025 analyses of this signalized intersection indicate that it will operate at an acceptable LOS C or better during all three analyzed peak hours. It is recommended that this intersection be monitored to determine at what phase of the development a signal is warranted at this location. In the interim, a "pork chop" median design will be constructed to provide a safer left turn into and out of the site.

It is recommended that if southbound left and right turn length storages be provided, they should be175' and 125', respectively. Additionally, as stated above, it is recommended the existing median between 64th Street and Main Access intersections on McDowell Road be modified to provide equal storage lengths for the westbound left turn lane at 64th Street and the eastbound left turn lane at Main Access.

64th Street and Road A

This T-intersection operates at an acceptable LOS C or better as unsignalized in 2025, with the exception of the westbound left turn movement which operates at lower LOS E and LOS F. However, with the modified median to provide a refuge area for outbound left turning vehicles, the actual operation of this configuration is expected to be better than what is shown in this analysis. The southbound left turn storage length of 100' is sufficient. It is recommended that an exclusive northbound right turn deceleration lane be provided on 64th Street at Road A with a minimum of 100' of storage to meet the City of Scottsdale standards. Additionally, it is recommended that should westbound left and right turn storage lengths be provided on Road A, they be 100' each in accordance with City of Scottsdale requirements.

Road A and Road B at McDowell Road

Both of these driveways operate acceptably under all peak hours as right-in/right-out accesses. Exclusive westbound right turn lanes on McDowell Road at Road A and Road B are not required as a result of the operational analysis.

Proposed Pedestrian and Bicycle Facilities

The sidewalks along the frontage of the development will be maintained to provide a connection between the multi-use path parallel to the Cross Cut Canal and to the bike lanes along 64th Street, Galvin Parkway, and McDowell Road west of 64th Street. Additional pedestrian connections will be provided from the development connecting to the Cross Cut Canal on the north and east sides of the development so that non-vehicular traffic from within the development can easily access the existing multi-use paths.

Figure 3 – Recommended Storage Lengths

Existing Conditions

Existing Land Use

The existing vacant site is currently zoned for commercial uses (C-4) and was formerly occupied by car dealerships with total existing building area of 155,900 square feet. The trip generation for the previous site was determined using ITE Land Use Code 841 and is provided in **Table 1**.

Table 1 – Trip Generation for Former Site

	AM Peak Hour		PM Peak Hour		Weekday	Saturday Peak Hour		Saturday
	In	Out	In	Out		In	Out	
Automobile Sales (ITE Land Use Code 841)	224	75	163	245	5,036	313	313	4,636

Existing Roadway Characteristics

The primary roadways serving the site are McDowell Road and 64th Street. McDowell Road is an east-west 6-lane Urban Major Arterial with raised landscape medians. There is an existing median break, located approximately 700'east of 64th Street, which served as main full access to the former dealership site. Additionally, an approximately 700-feet long

westbound right-turn deceleration lane exists on McDowell Road from the main full access to the former dealership site to the intersection with 64th Street. Posted speed limit on McDowell Road is 45mph.

64th Street is a 4-lane north-south Suburban Minor Arterial with raised landscaped medians. An existing median break is located approximately 470' north from McDowell Road and provides a full access to the site. Posted speed limit is 40 mph. 64th Street serves as a divider between the City of Scottsdale and City of Phoenix city limits.

The intersection of McDowell Road and 64th Street is controlled by a traffic signal while the two existing full access intersections into the site are controlled by stop signs. Exclusive right and left turn lanes are provided at this intersections as well as at each existing site access intersection along McDowell Road and 64th Street with exception of northbound right turn lane at the site intersection with 64th Street.

Typical ¼-mile or ½-mile signal spacing exist within the City of Scottsdale in the vicinity of the site, with signals at 68th Street, 70th Street, Scottsdale Road, 74th Street, Miller Road, 77th Street, and Hayden road to the east and at Oak Street, Thomas Street, and Indian School to the north. Closest signals to the west and the south (City of Phoenix) are located approximately 1 mile from the McDowell Road/64th Street intersection at 54th Street and Moreland Street, respectively.

Existing Transit, Pedestrian and Bicycle Facilities

Two existing bus routes are currently operating along McDowell Road in the site vicinity. Valley Metro's local bus service (Route 17) runs along McDowell Road with closest stops at 44th Street to the west and at Scottsdale Road to the east. Second local bus service (Route 56) is provided from Galvin Parkway turning east on McDowell Road with closest stops at Desert Botanical Garden/Galvin Parkway to the south and at Scottsdale Road/McDowell Road to the east.

According to the Maricopa Association of Government Regional Bike Map, the City of Phoenix provides bike lanes along three legs of the McDowell Road/64th Street intersection, i.e. the north leg (64th Street), the south leg (Galvin Parkway), and the west leg of McDowell Road. No designated bike lanes exists along the site frontage on the east leg of McDowell Road. Additionally, the City of Scottsdale maintains a paved multi-use path along Arizona Cross Cut Canal (the eastern site border) as well as along the northern border of the existing site. Attached sidewalks are also provided along the site frontage on McDowell Road and 64th Street.

Existing Traffic Counts

Traffic Research and Analysis, Inc. was retained to obtain daily traffic counts for the adjacent to site segments of McDowell Road and 64th Street as well as turning movement counts at the intersection of McDowell Road and 64th Street. The traffic counts were collected beginning Thursday, December 10, 2015 through Saturday, December 12, 2015. Existing morning (AM), evening (PM), and Saturday traffic volumes are illustrated in **Figure 4** through **Figure 6**, respectively. Traffic count data is also presented in the **Appendix**.

Horizon Years

Category 2 study is based on traffic conditions for the build-out or completion year of the development, which according to the developer is year 2025.

Annual Growth Rate (Background Traffic)

Burgess & Niple reviewed the 2035 MAG model. The model showed negative growth within the study area. The historical traffic counts from the City of Scottsdale were then reviewed. According to this data McDowell Road and 64th

Street traffic experience net annual decrease from 2000 to 2012. Although two different sources indicated decrease in traffic volumes, with the redevelopment of the McDowell Road corridor occurring, it is reasonable to assume that a portion of the negative growth in recent years will return to the area, especially by 2025. Therefore, a conservative growth rate of 0.5% per year for 10 years was assumed.

Figure 4 – Existing AM Peak Traffic Volumes

Figure 5 – Existing PM Peak Traffic Volumes

Figure 6 – Existing Saturday Peak Traffic Volumes

Proposed Development

The proposed site is located on the vacant former auto dealership site. The surrounding land consists primarily of single-family residential properties to the north and the east. Desert Botanical Garden is located south of the site with access to Galvin Parkway (south leg of 64th Street/McDowell intersection) and no direct access to McDowell Road. The City of Phoenix park land is located to the west. The proposed conceptual plan is a mixture of residential, office, retail, hotel and restaurant parcels. Four conceptual site plans are being presented by SunChase Holdings, Inc. as part of Rezoning Development process. Burgess & Niple has evaluated trip generation scenarios associated with each of the proposed site plans and in coordination with the City of Scottsdale chose one that best represents the potential traffic impacts on the nearby area. This conceptual site plan (Option 1) with its internal roadways is shown on **Figure 2.** It is anticipated that the site will be fully developed in 2025. The **Appendix** contains trip generation for the remaining three site plans.

Land Uses

The site occupies approximately 30 acres. The following are the assumed land uses for the development plan:

Building B1 (4-level office)	128,060	square feet (SF)
Building B2 (4-level office)	163,800	SF
Building B3 (4-level office)	144,796	SF
Building B4 (4-level office)	129,600	SF
Building D (4-level hotel)	228	rooms
Building E (4-level residential)	165	dwelling units (DU)
Building F (4-level office)	168	DU
Retail (shopping center)	14,400	SF
Restaurant (assumed as high-turnover sit-down)	6,400	SF

Trip Generation

The traffic volumes generated by the proposed development were estimated using the Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 9th Edition*. The ITE data is based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of vehicular trips per unit of land use. **Table 2** and **Table 3** summarize the expected number of trips for each parcel during the Weekday and Saturday, respectively.

Table 2 - Trip Generation for Weekday

Description	Units	Amount	ITE Land Use Code	AM		PM		Weekday
				In	Out	In	Out	
Office (Building B1)	SF	128,060	710	205	28	38	184	1,584
Office (Building B2)	SF	163,800	710	250	34	45	217	1,910
Office (Building B3)	SF	144,796	710	226	31	41	200	1,740
Office (Building B4)	SF	129,600	710	207	28	38	186	1,599
Hotel (Building D)	Rooms	228	310	71	50	70	67	1,863
Residential (Building E)	DU	165	230	13	64	61	30	994
Residential (Building F)	DU	168	230	13	65	62	30	1,010
Shopping Center (Retail)	SF	14,400	820	30	18	79	85	1,927
Restaurant (High-Turnover Sit-Down)	SF	6,400	932	38	31	38	25	814
Total Trips for Weekday				1,053	349	472	1,024	13,441

Table 3 - Trip Generation for Saturday						
Description	Units	Amount	ITE Land Use Code	Peak Hour		Saturday Day
				In	Out	
Office (Building B1)	SF	128,060	710	30	25	316
Office (Building B2)	SF	163,800	710	38	32	402
Office (Building B3)	SF	144,796	710	34	29	356
Office (Building B4)	SF	129,600	710	30	26	318
Hotel (Building D)	Rooms	228	310	91	71	1,867
Residential (Building E)	DU	165	230	49	41	1,030
Residential (Building F)	DU	168	230	49	42	1,040
Shopping Center (Retail)	SF	14,400	820	129	119	2,725
Restaurant	SF	6,400	932	48	42	1,014
Total Trips for Saturday				498	427	9,068

Internal Capture

Given the mix-use nature of the proposed development which includes office, retail, restaurant, residential and hotel components, it is expected that several of the estimated trips will be internal to the development. Based on *the NCHRP Report 684 – Enhancing Internal Trip Capture Estimation of Mixed-Use Developments*, the internal capture rates for trip origins and trip destinations within a multi-use development were applied for weekday AM and PM hours. Since Saturday Peak Hour rates were not available, it was assumed that the Saturday peak internal capture rate was the same as the PM peak hour. **Table 4** summarizes the trip reductions for the internal capture rate. Supporting calculations are presented in the **Appendix**.

Table 4 – Trip Generation with Internal Capture Reduction									
Description	Reduced AM Peak Hour			Reduced PM Peak Hour			Reduced Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Office (Buildings B1, B2, B3, B4)	880	120	1,000	154	752	906	126	107	233
Hotel (Building D)	71	49	120	50	48	98	64	51	115
Residential (Buildings E, F)	26	127	153	73	36	109	58	49	107
Shopping Center	19	12	31	55	60	115	91	84	175
Restaurant	27	22	49	22	15	37	28	25	53
Total Trips After Internal Capture Reduction	1,023	330	1,353	354	911	1,265	367	316	683

Pass-By Trip Reduction

A number of the trips generated by the retail and restaurant components are expected to be pass-by trips coming from travelers passing the site on their way to their actual destination. Both the McDowell Road corridor and 64th Street are convenient and popular commuter routes within the cities of Phoenix and Scottsdale. Based on research and guidance from the ITE *Trip Generation Handbook*, the following pass-by rates were assumed:

- Shopping Center: 25% in Weekly PM and Saturday peak hours

- High-Turnover (Sit-Down) Restaurant: 30% in Weekly PM and Saturday peak hours

Table 5 summarizes the pass-by reductions taken for this development. The adjusted assigned site trip volumes used for analysis are illustrated in **Figures 8** through Figure **10**, for the morning (AM), evening (PM), and Saturday peak, respectively.

Table 5 – Trip Generation with Pass-By Reduction									
	Total AM Peak Hour			Total PM Peak Hour			Total Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Trip Trips After Internal Capture Reduction	1,023	330	1,353	354	911	1,265	367	316	683
Shopping Center Pass-By Reduction	-	-	-	14	14	28	22	22	44
Restaurant Pass-By Reduction	-	-	-	6	6	12	8	8	16
Total External Trips	**1,023**	**330**	**1,353**	**334**	**891**	**1,225**	**337**	**286**	**623**

Trip Generation Comparison

Table 6 compares the trip generation of the previous land use (automobile sales) to the proposed land use.

Table 6 – Trip Generation Comparison									
	Total External Trips AM Peak Hour			Total External Trips PM Peak Hour			Total External Trips Saturday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Previous Land Use	224	75	299	163	245	408	313	313	626
Proposed Land Use	1,023	330	1,353	334	891	1,223	337	286	623
Difference	**799**	**255**	**1,054**	**171**	**646**	**815**	**24**	**-27**	**-3**

Trip Distribution

The trip distribution procedure determines the general pattern of travel for vehicles entering and leaving the proposed development. For this study, the trips will be distributed using existing traffic count data as well as the general knowledge of the major destinations in the area. The assumed trip distribution was determined according to the following:

- 20% to/from the north on 64th Street
- 20% to/from the south on 64th Street
- 30% to/from the east on McDowell Road
- 30% to/from west on McDowell Road

Trip Assignment

The site traffic will utilize the Main Access as well as the two additional right-in-right-out access points onto McDowell Road. Additional full access is provided via 64th Street. **Figure 7** summarizes the trip assignment at the four access points to the site. **Figures 8** through **10** shown the total site trips for the AM, PM, and Saturday peak hours, respectively.

Total (Background + Site) Future Traffic

The total future volumes used for analysis are illustrated in **Figure 11** through **Figure 13**. These total volumes were obtained by adding the 2025 background volumes (existing counts grown by 0.5% per year for 10 years) and the total adjusted site trips.

Figure 7 – Trip Assignment

Figure 8 – Site AM Peak Traffic Volumes

Figure 9 – Site PM Peak Traffic Volumes

Figure 10 – Site Saturday Peak Traffic Volumes

Figure 11 – Total 2025 AM Peak Hour Traffic Volumes

Figure 12 – Total 2025 PM Peak Hour Traffic Volumes

Figure 13 – Total 2025 Saturday Peak Hour Traffic Volumes

No Build Traffic Analysis

To evaluate the proposed development's impacts on the study intersection of McDowell Road and 64th Street, a "no build" analysis was conducted using 2025 background volumes (no site trips). Analysis was conducted utilizing *HCS 2010* software using methodologies from the *Highway Capacity Manual* (HCM). This manual measures the average delay per vehicle to determine the Level-Of-Service (LOS) for signalized and unsignalized intersections. LOS A represents the best operation with least delay, while LOS F represents the worst operation. City of Scottsdale considers LOS D or better an acceptable operation for the overall intersection and LOS E or better an acceptable operation of intersection approaches and turning movements during the peak hours.

Under the No Build analysis, the existing intersection lane configurations and cycle lengths were not modified, however, vehicle splits were optimized. The No Build analysis results for the AM, PM and Saturday peak are illustrated in **Table 7.** The LOS, delay (sec/veh), volume-to-capacity ratios [v/c] are reported from *HCS 2010* output.

Table 7 – 2025 No Build Level-Of-Service Results

McDowell Road and 64th Street Intersection

	Overall LOS	Eastbound McDowell Road			Westbound McDowell Road			Northbound 64th Street			Southbound 64th Street		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour	C 28.1	C (30.4) [0.91]	C (21.1) [0.38]	B (15.7) [0.02]	B (15.8) [0.68]	C (25.0) [0.60]	B (14.4) [0.22]	D (42.0) [0.10]	D (46.9) [0.48]	C (34.6) [0.20]	D (37.5) [0.49]	D (43.2) [0.64]	C (34.6) [0.63]
		C (23.5)			C (22.5)			D (43.8)			D (39.3)		
PM Peak Hour	D (37.0)	D (38.9) [0.88]	C (34.0) [0.72]	C (22.5) [0.21]	D (41.4) [0.88]	C (32.8) [0.54]	C (20.7) [0.24]	D (35.5) [0.24]	E (56.2) [0.87]	D (41.6) [0.75]	D (39.2) [0.77]	D (37.0) [0.51]	C (23.3) [0.36]
		C (34.2)			C (33.0)			D (49.8)			C (34.0)		
Saturday Peak	C (22.3)	B (12.5) [0.62]	B (14.6) [0.28]	B (10.1) [0.03]	B (13.4) [0.22]	B (18.6) [0.34]	B (13.2) [0.19]	C (34.7) [0.26]	D (40.4) [0.49]	D (37.1) [0.54]	C (33.7) [0.42]	D (37.2) [0.28]	C (32.2) [0.58]
		B (13.9)			B (17.2)			D (38.4)			C (34.0)		

Outputs from *HCS 2010* are provided in the **Appendix**. The signalized intersection of McDowell Road and 64th Street and all movements and approaches operate at LOS D or better in 2025 during all three peak hours.

Signal Warrant Analysis

The Manual on Uniformed Traffic Control Devices (MUTCD) published by the United States Department of Transportation is a source used in determining the need for traffic signal installation through the United Stated. This document establishes nine (9) separate, related sets of criteria termed "warrants". If none of the warrants is satisfied then a signal should not be installed. If one or more of the warrants is satisfied, then a signal might be appropriate if the signal is shown to improve the overall safety and/or operation of the intersection.

The MUTCD process was utilized to determine if a signal is warranted with the proposed development at the intersection of McDowell Road and Main Access. 24 hour counts from a similar site were used to determine the volume

distribution by time of day on the southbound leg. A portion of, if not the majority of, the southbound right turns at this driveway would not benefit from signalization. Therefore, analyses were conducted where all (100%) of the right turn volumes were included, 40% of the right turn volumes were included, 25% of the right turn volumes were included, and none of the right turn volumes were included (0%). While there are nine warrants, only Warrant 1 (Eight-Hour Vehicular Volume) was conducted for this study. Because the major street speed limit exceeds 40 mph, the reduced (70% factor) hourly volumes were applied put MUTCD guidance. **Table 8** summarizes the results of the signal warrant analysis for Warrant 1 with the detailed signal warrant analyses provided in the **Appendix**.

Table 8 – Signal Warrant Analysis

	Condition A	Condition B	Condition A & B
100% Developed			
100% Rights	Yes (14 hours)	Yes (16 hours)	Yes (14 hours)
40% Rights	Yes (11 hours)	Yes (14 hours)	Yes (13 hours)
25% Rights	Yes (10 hours)	Yes (14 hours)	Yes (12 hours)
0% Rights	No (6 hours)	Yes (14 hours)	Yes (10 hours)
50% Developed			
100% Rights	No (6 hours)	Yes (14 hours)	Yes (10 hours)
40% Rights	No (3 hours)	Yes (11 hours)	No (6 hours)
25% Rights	No (3 hours)	Yes (10 hours)	No (5 hours)
0% Rights	No (1 hour)	Yes (8 hours)	No (3 hours)
40% Developed			
100% Rights	No (4 hours)	Yes (12 hours)	No (6 hours)
40% Rights	No (1 hour)	Yes (8 hours)	No (4 hours)
25% Rights	No (1 hour)	No (6 hours)	No (3 hours)
0% Rights	No (0 hours)	No (5 hours)	No (1 hour)

According to the MUTCD, Condition A is intended for locations with a large volume of intersecting traffic while Condition B is used at locations where Condition A is not satisfied and where the traffic volume on the major road is so heavy that traffic on the minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. The combination of Conditions A and B is used when Condition A and Condition B are not satisfied alone. If any one of these conditions (Condition A, Condition B, or a combination) are satisfied, then Warrant 1 is satisfied. In this case, Condition B most fits the location and Warrant 1 is met even with all right turning volumes removed when the development is at 50% of its full build. At 40% development, the warrant is not met when all right turning volume is removed. Therefore, it can be said that the signal will be warranted sometime between a 40% and 50% development level. A signal will definitely be warranted when the development is 100% complete.

Build Traffic Analysis

The Build traffic analysis analyzes the total future traffic incorporating the trips generated by the proposed development and the background trips. *HCS 2010* was also used in this analysis. The Build analysis assumed the existing intersection lane configurations were not modified, however the signal timing and cycle lengths were optimized. The proposed site full access points on McDowell Road (Main Access) and 64th Street (Road A Access) were also analyzed. Because a signal is warranted at full-build, and the 2025 analysis is considered full-build of the development, McDowell Road and Main Access intersection was analyzed as a signal. The HCM does not analyze unsignalized intersections with more than

three through lanes on an approach as is the case with the two unsignalized site driveways along McDowell Road. For analysis purposes, the intersections were coded as having two exclusive through lanes and one shared through and right-turn lane. The westbound through volume was reduced by 20% to account for the traffic that would be traveling in the left-most travel lane that is not included in this analysis.

Per discussions with the City of Scottsdale, the median along 64th Street will be modified to provide a refuge area in the median at the main site driveway. This configuration will provide a two-stage left turn movement for outbound traffic from the main site driveway on 64th Street. This left turn configuration for 64th Street and Road A cannot be modeled in HCM. Therefore, this movement was modeled as a typical left turn from a stop-controlled approach with a median wide enough to store one vehicle. Given the proposed configuration, actual operations for this movement are expected to be much better than summarized herein. The operational results for the three study intersections for the three peak hours are illustrated in **Table 9**. The LOS, delay, and volume-to-capacity ratios (v/c) are reported from the *HCS 2010* output which are provided in the **Appendix.**

Table 9 – 2025 Build Level-Of-Service Results

McDowell Road and 64th Street Intersection (Signalized)

	Overall LOS	Eastbound McDowell Road			Westbound McDowell Road			Northbound 64th Street			Southbound 64th Street		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour	C (32.7)	D (40.0) [0.92]	C (26.9) [0.43]	B (18.3) [0.02]	D (35.7) [0.92]	C (29.4) [0.69]	B (15.2) [0.24]	D (42.7) [0.09]	D (50.0) [0.73]	D (36.1) [0.44]	D (39.7) [0.67]	D (41.5) [0.61]	C (31.5) [0.61]
		C (29.6)			C (29.1)			D (45.2)			D (37.8)		
PM Peak Hour	D (47.8)	D (47.6) [0.93]	E (55.6) [0.96]	C (28.8) [0.26]	E (72.4) [0.97]	D (35.3) [0.67]	C (22.5) [0.31]	D (36.3) [0.28]	E (66.8) [0.94]	C (30.4) [0.65]	E (79.6) [0.95]	D (39.8) [0.59]	C (24.4) [0.43]
		D (52.1)			D (42.4)			D (51.8)			D (44.4)		
Saturday Peak	C (23.1)	B (13.8) [0.66]	B (16.1) [0.34]	B (10.8) [0.03]	B (14.0) [0.35]	B (19.6) [0.38]	B (13.7) [0.21]	C (34.3) [0.26]	D (40.5) [0.54]	D (37.9) [0.61]	C (33.4) [0.49]	D (36.7) [0.29]	C (32.1) [0.59]
		B (15.3)			B (18.0)			D (38.7)			C (33.8)		

McDowell Road and Main Access Intersection (Signalized)

	Overall LOS	Eastbound McDowell Road		Westbound McDowell Road		Southbound Main Access	
		LT	TH	TH	RT	LT	RT
AM Peak Hour	B (19.0)	C (32.9) [0.91]	A (2.9) [0.31]	C (25.1) [0.93]	B (12.0) [0.24]	C (30.2) [0.62]	B (14.4) [0.17]
		B (11.9)		C (24.1)		C (23.0)	
PM Peak Hour	B (11.7)	B (10.0) [0.45]	A (7.6) [0.62]	B (14.1) [0.65]	A (9.4) [0.07]	C (24.2) [0.79]	B (17.8) [0.51]
		A (7.8)		B (13.9)		C (21.3)	
Saturday Peak	A (7.0)	A (5.0) [0.32]	A (3.1) [0.29]	A (8.9) [0.44]	A (7.0) [0.07]	C (22.1) [0.48]	B (16.7) [0.23]
		A (3.4)		A (8.8)		B (19.6)	

64th Road and Road A Intersection (Unsignalized)					
		Westbound Road A			Southbound 64th Street
		LT	RT		LT
AM Peak Hour		E (38.4) [0.25]	B (11.7) [0.09]		B (11.3) [0.23]
		C (22.4)			
PM Peak Hour		F (65.6) [0.65]	C (18.1) [0.35]		B (12.7) [0.10]
		E (37.0)			
Saturday Peak		C (18.8) [0.11]	B (11.3) [0.08]		A (9.7) [0.07]
		B (14.3)			
McDowell Road and Road A Intersection (Unsignalized)					
					Southbound Road A
					RT
AM Peak Hour					C (23.3) [0.15]
PM Peak Hour					C (18.1) [0.26]
Saturday Peak					B (13.4) [0.07]
McDowell Road and Road B Intersection (Unsignalized)					
					Southbound Road B
					RT
AM Peak Hour					C (23.3) [0.15]
PM Peak Hour					C (21.0) [0.30]
Saturday Peak					B (13.5) [0.07]

The signalized intersection of McDowell Road and 64th Street will operate at an acceptable LOS D or better under Build Conditions during the 2025 AM, PM and Saturday peak hour with existing intersection lane configurations. The signalized intersection of McDowell Road and Main Access will operate at LOS C or better during all three peak hours. Although the westbound left turn movement at the unsignalized intersection of 64th Street and Road A operates at LOS E during the AM peak hour and LOS F during the PM peak hour, no v/c are greater than 1.0 indicating that no movement is

over capacity. As previously stated, with the proposed configuration of the left turn movement, operations are expected to be better than shown in this analysis.

Collision Analysis

Burgess & Niple obtained the most recent 3-year collision history (2012-2014) near the intersection of McDowell Road and 64th Street. This data included crashes at the intersection as well as its proximity along McDowell Road and 64th Street (also recorded as Galvin Parkway). There were a total of 12 crashes reported, with five crashes each in 2012 and 2013 and only two in 2014. The intersection collisions are summarized in the charts and **Table 10.** Collision summaries indicate that majority of the collisions were angle type. Improper turning and speeding accounted for more than half of the crashes. Four of the crashes (33%) resulted in incapacitating injuries and one (8%) in non-incapacitating injury. Additionally, one collision involved alcohol-impaired driver and one ill-impaired driver who failed to keep his vehicle in proper lane striking another vehicle.

Table 10 - Collision by Type and Direction

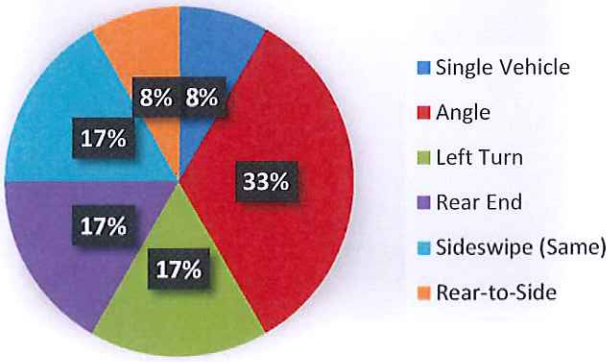
	McDowell Road		64th Street	
Manner of Collision	EB	WB	NB	SB
Single Vehicle	0	0	0	**1**
Angle	**1**	0	**2**	**1**
Left Turn	0	0	0	**2**
Rear End	0	**2**	0	0
Sideswipe (Same)	**2**	0	0	0
Rear-to-Side	**1**	0	0	0
Total	4	2	2	4

Twelve collisions for the 3-year period for the analyzed intersection of McDowell Road and 64th Street is very small with the latest 2014 data only documenting two crashes. For an intersection of this size and traffic volume, twelve crashes in 3-year period is unusually low.

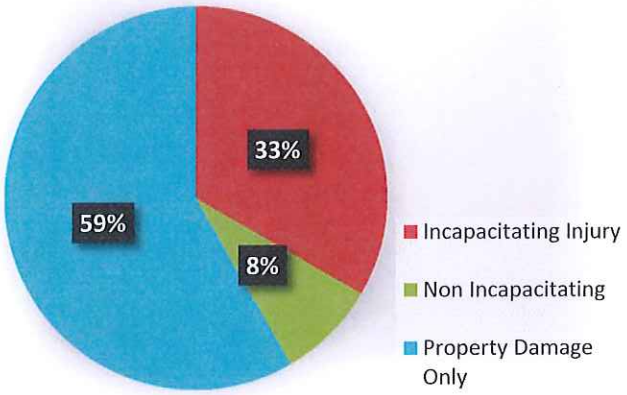
Every two years the City of Scottsdale publishes Traffic Volume and Collision Rate Data report for major intersections and major roadway segments within the city. According to the latest 2014 document, the following 10-year statistics exist for intersections and segments within the study area, listed in **Table 11**.

The intersection of McDowell Road and 64th Street as well as the two analyzed segments of McDowell Road and 64th Street have lower collision rates than the citywide averages for intersections and segments within the city. Additionally, historical data indicates general downward trends within the study area.

Collisions by Manner of Collision



Collisions by Severity



Collisions by Violation

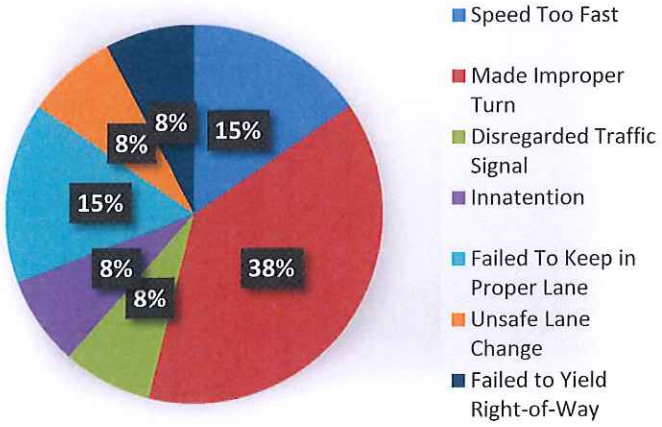


Table 11 - Collision Rate Comparison by Year							
		2014	2012	2010	2008	2006	2004
Intersection	Citywide	0.57	0.52	0.48	0.53	0.64	0.66
	McDowell Road and 64th Street Intersection	0.13	0.12	0.18	0.16	0.22	0.22
Segment	Citywide	1.35	1.31	1.27	1.28	1.87	1.84
	McDowell Road between 64th and 68th Streets	0.36	0.89	0.31	0.71	1.03	1.07
	64th Street between McDowell Road and Oak Street	0	0	0.30	0	1.00	0.67

Turn Lane Length Analysis

The existing right and left turn lanes at the three study intersections were evaluated to determine the storage requirements with the proposed site in year 2025. HCS Software estimates 95th percentile queue lengths. The required storage lengths were determined based on the highest peak turning volumes. Average passenger vehicle length is assumed to be 25'.

McDowell Road and Main Access

The required southbound left turn storage length was determined based on the highest peak turning volumes of 276 vehicles per hour (vph). The 95th percentile queue during the PM peak hour is 6.8 vehicles per lane, hence a total required storage is 170'.

The existing westbound right turn storage length is approximately 120'. The required length was determined based on the highest AM peak right turning volumes of 157 vph. The 95th percentile queue during the AM and PM peak hours is 1.6 vehicles per lane, hence the available storage of 120' is sufficient.

Same procedure was used to calculate all other storage lengths at study intersections. Recommended storage length are shown in **Table 12** and on **Figure 14**.

Table 12- Recommended Storage Lengths

Intersection/ Turn Lane		2025 Design Volumes (vph)			Highest 50th/95th Percentile Queue (length)	Existing Storage	Recommended Storage
		AM	PM	Saturday			
McDowell Road and Main Access	EB LT	**460**	150	152	10.0 (250')	120'	*
	WB RT	**153**	50	51	2.3 (58')	120'	No change
	SB LT	99	**267**	86	6.6 (165')	N/A	175'
	SB RT	83	**223**	72	4.5(113')	N/A	125'
McDowell Road and 64th Street	NB RT	180	**393**	193	10.0 (250')	215'	265'
	SB LT	190	**222**	133	8.5 (213')	210'	235'
	SB RT	**329**	273	254	8.4 (210')	150'	225'
	EB LT	311	**371**	296	9.8 (245')	280'	No change
	WB LT	342	**397**	138	11.8 (295')	280'	*
	WB RT	192	**206**	161	4.1 (103')	700'	No change
64th Street and Road A	SB LT	**153**	50	51	0.9 (23')	100'	No change
	NB RT	**102**	33	33	0.0 (0')	None	100'**
	WB LT	33	**89**	29	3.6 (90')	N/A	100'
	WB RT	50	**134**	43	1.5 (38')	N/A	100'**

*Due to proximity of the Main Access and 64th Street intersections with McDowell Road, a possibility of extending the eastbound left turn bay at Main Access and the westbound left turn bay at 64th Street is limited. Dual left turn lanes were considered, however left turn signal phasing must be changed from permissive + protective to protective only, which reduces signal operations at these locations. It is recommended that the existing median be modified to provide equal storage capacity for these two back-to-back left turn bays.

**100 feet meets minimum storage length requirements for City of Scottsdale

Figure 14 – Recommended Storage Lengths

Conclusions and Recommendations

McDowell Road and 64th Street

This existing signalized intersection will operate at an acceptable overall LOS D or better in 2025 with the proposed site. It is recommended that the northbound right turn storage length on 64th Street be increased from 215' to 265', the southbound left turn storage length be increased from 210' to 235', and the southbound right turn storage length be increased from 150' to 225'. Additionally, it is recommended the existing median between 64th Street and Main Access intersections on McDowell Road be modified to provide equal storage lengths for the westbound left turn lane at 64th Street and the eastbound left turn lane at Main Access.

McDowell Road and Main Access

This T-intersection warrants a traffic signal with the development between 40% and 50% built out. Therefore, in 2025, under full build conditions, the intersection will warrant a signal. The 2025 analyses of this signalized intersection indicate that it will operate at an acceptable LOS C or better during all three analyzed peak hours. It is recommended that this intersection be monitored to determine at what phase of the development a signal is warranted at this location. In the interim, a "pork chop" median design will be constructed to provide a safer left turn into and out of the site.

It is recommended that if southbound left and right turn length storages be provided, they should be175' and 125', respectively. Additionally, as stated above, it is recommended the existing median between 64th Street and Main Access intersections on McDowell Road be modified to provide equal storage lengths for the westbound left turn lane at 64th Street and the eastbound left turn lane at Main Access.

64th Street and Road A

This T-intersection operates at an acceptable LOS C or better as unsignalized in 2025, with the exception of the westbound left turn movement which operates at lower LOS E and LOS F. However, with the modified median to provide a refuge area for outbound left turning vehicles, the actual operation of this configuration is expected to be better than what is shown in this analysis. The southbound left turn storage length of 100' is sufficient. It is recommended that an exclusive northbound right turn deceleration lane be provided on 64th Street at Road A with a minimum of 100' of storage to meet the City of Scottsdale standards. Additionally, it is recommended that should westbound left and right turn storage lengths be provided on Road A, they be 100' each in accordance with City of Scottsdale requirements.

Road A and Road B at McDowell Road

Both of these driveways operate acceptably under all peak hours as right-in/right-out accesses. Exclusive westbound right turn lanes on McDowell Road at Road A and Road B are not required as a result of the operational analysis.

Proposed Pedestrian and Bicycle Facilities

The sidewalks along the frontage of the development will be maintained to provide a connection between the multi-use path parallel to the Cross Cut Canal and to the bike lanes along 64th Street, Galvin Parkway, and McDowell Road west of 64th Street. Additional pedestrian connections will be provided from the development connecting to the Cross Cut Canal on the north and east sides of the development so that non-vehicular traffic from within the development can easily access the existing multi-use paths.

ATTACHMENT D – TRIP GENERATION

Lokahi

Entrada Scottsdale

Completed: SAS 8/7/2019
Checked: GT 8/9/2019

Trip Generation Calculations

710 General Office Building

Land Use	ITE Code	Qty	Unit	Weekday Rate	Weekday % In	Weekday % Out	AM Peak Hour Rate	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Rate	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
General Office Building	**710**	**250.0**	**1000 SF GFA**	**9.74**	**50%**	**50%**	**1.16**	**86%**	**14%**	**1.15**	**16%**	**84%**	**2,435**	**1218**	**1217**	**290**	**249**	**41**	**288**	**46**	**242**	**Average**
General Office Building	710	250.0	1000 SF GFA	2.71	50%	50%	0.37	86%	14%	0.47	16%	84%	678	339	339	93	80	13	118	19	99	Minimum
General Office Building	710	250.0	1000 SF GFA	27.56	50%	50%	4.23	86%	14%	3.23	16%	84%	6,890	3,445	3,445	1,058	910	148	808	129	679	Maximum
Land Use	ITE Code	Qty	Unit	Weekday Equation	Weekday % In	Weekday % Out	AM Peak Hour Equation	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Equation	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
General Office Building	710	250.0	1000 SF GFA	Ln(T)=0.97Ln(X)+2.50	50%	50%	T=0.94(X)+26.49	86%	14%	Ln(T)=0.95Ln(X)+0.36	16%	84%	2,581	1,291	1,290	261	224	37	272	44	228	Equation

General Office Building	Standard Deviation	5.15	0.47	0.42	
	Number of Studies	66	35	32	
	Average Size	171	117	114	
	R^2	0.83	0.85	0.88	

221 Multifamily Housing (Mid-Rise)

Land Use	ITE Code	Qty	Unit	Weekday Rate	Weekday % In	Weekday % Out	AM Peak Hour Rate	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Rate	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
Multifamily Housing (Mid-Rise)	**221**	**722**	**Dwelling Units**	**5.44**	**50%**	**50%**	**0.36**	**26%**	**74%**	**0.44**	**61%**	**39%**	**3,928**	**1964**	**1964**	**260**	**68**	**192**	**318**	**194**	**124**	**Average**
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	1.27	50%	50%	0.06	26%	74%	0.15	61%	39%	917	459	458	43	11	32	108	66	42	Minimum
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	12.50	50%	50%	1.61	26%	74%	1.11	61%	39%	9,025	4513	4512	1,162	302	860	801	489	312	Maximum
Land Use	ITE Code	Qty	Unit	Weekday Equation	Weekday % In	Weekday % Out	AM Peak Hour Equation	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Equation	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	T=5.45(X)-1.75	50%	50%	Ln(T)=0.98Ln(X)-0.98	26%	74%	Ln(T)=0.96Ln(X)-0.63	61%	39%	3,933	1,967	1,966	238	62	176	296	181	115	Equation

Multifamily Housing (Mid-Rise)	Standard Deviation	2.03	0.19	0.19	
	Number of Studies	27	53	60	
	Average Size	205	207	208	
	R^2	0.77	0.67	0.72	

820 Shopping Center

Land Use	ITE Code	Qty	Unit	Weekday Rate	Weekday % In	Weekday % Out	AM Peak Hour Rate	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Rate	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
Shopping Center	**820**	**3.5**	**1000 SF GLA**	**37.75**	**50%**	**50%**	**0.94**	**62%**	**38%**	**3.81**	**48%**	**52%**	**132**	**66**	**66**	**3**	**2**	**1**	**13**	**6**	**7**	**Average**
Shopping Center	820	3.5	1000 SF GLA	7.42	50%	50%	0.18	62%	38%	0.74	48%	52%	26	13	13	1	1	0	3	1	2	Minimum
Shopping Center	820	3.5	1000 SF GLA	207.98	50%	50%	23.74	62%	38%	18.69	48%	52%	728	364	364	83	51	32	65	31	34	Maximum
Land Use	ITE Code	Qty	Unit	Weekday Equation	Weekday % In	Weekday % Out	AM Peak Hour Equation	AM Peak Hour % In	AM Peak Hour % Out	PM Peak Hour Equation	PM Peak Hour % In	PM Peak Hour % Out	Weekday Total	Weekday In	Weekday Out	AM Peak Hour Total	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	
Shopping Center	820	3.5	1000 SF GLA	Ln(T)=0.68Ln(X)+5.57	50%	50%	T=0.50(X)+151.78	62%	38%	Ln(T)=0.74Ln(X)+2.89	48%	52%	615	308	307	154	95	59	45	22	23	Equation

Shopping Center	Standard Deviation	16.41	0.87	2.04	
	Number of Studies	147	84	261	
	Average Size	453	351	327	
	R^2	0.76	0.50	0.82	

932	High-Turnover (Sit-Down) Restaurant																					
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
High-Turnover (Sit-Down) Restaurant	**932**	**10**	**1000 SF GLA**	**112.18**	**50%**	**50%**	**9.94**	**55%**	**45%**	**9.77**	**62%**	**38%**	**1,122**	**561**	**561**	**99**	**54**	**45**	**98**	**61**	**37**	**Average**
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	13.04	50%	50%	0.76	55%	45%	0.92	62%	38%	130	65	65	8	4	4	9	6	3	Minimum
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	742.41	50%	50%	102.39	55%	45%	62.00	62%	38%	7,424	3,712	3,712	1,024	563	461	620	384	236	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

High-Turnover (Sit-Down) Restaurant	Standard Deviation	72.51		11.33		7.37
	Number of Studies	50		39		107
	Average Size	5		5		6
	R^2	N/A		N/A		N/A

936	Coffee/Donut Shop without Drive-Through																					
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Coffee/Donut Shop without Drive-Through	**936**	**1.5**	**1000 SF GLA**	**754.55**	**50%**	**50%**	**101.14**	**51%**	**49%**	**36.31**	**50%**	**50%**	**1,132**	**566**	**566**	**152**	**78**	**74**	**54**	**27**	**27**	**Average**
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	754.55	50%	50%	38.76	51%	49%	15.5	50%	50%	1,132	566	566	58	30	28	23	12	11	Minimum
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	754.55	50%	50%	255.48	51%	49%	74.84	50%	50%	1,132	566	566	383	195	188	112	56	56	Maximum
Land Use	ITE Code	Qty	Unit	Weekday			AM Peak Hour			PM Peak Hour			Weekday			AM Peak Hour			PM Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	Total	In	Out	
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

Coffee/Donut Shop without Drive-Through	Standard Deviation	N/A		43.44		13.22
	Number of Studies	1		21		12
	Average Size	1		2		2
	R^2	N/A		N/A		N/A

Entrada Scottsdale

Completed: SAS 8/7/2019
Checked: GT 8/9/2019

Trip Generation Calculations

710 General Office Building

Land Use	ITE Code	Qty	Unit	Saturday Rate	Saturday % In	Saturday % Out	Saturday Peak Hour Rate	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
General Office Building	**710**	**250.0**	**1000 SF GFA**	**2.21**	**50%**	**50%**	**0.53**	**54%**	**46%**	**553**	**277**	**276**	**133**	**72**	**61**	**Average**
General Office Building	710	250.0	1000 SF GFA	1.24	50%	50%	0.3	54%	46%	310	155	155	75	41	34	Minimum
General Office Building	710	250.0	1000 SF GFA	7.46	50%	50%	1.57	54%	46%	1,865	933	932	393	212	181	Maximum
Land Use	ITE Code	Qty	Unit	Saturday Equation	Saturday % In	Saturday % Out	Saturday Peak Hour Equation	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
General Office Building	710	250.0	1000 SF GFA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

General Office Building	Standard Deviation	1.70		0.52
	Number of Studies	5		3
	Average Size	94		82
	R^2	N/A		N/A

221 Multifamily Housin (Three to Ten Levels)

Land Use	ITE Code	Qty	Unit	Saturday Rate	Saturday % In	Saturday % Out	Saturday Peak Hour Rate	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
Multifamily Housing (Mid-Rise)	**221**	**722**	**Dwelling Units**	**4.91**	**50%**	**50%**	**0.44**	**49%**	**51%**	**3,545**	**1773**	**1772**	**318**	**156**	**162**	**Average**
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	4.03	50%	50%	0.34	49%	51%	2,910	1455	1455	245	120	125	Minimum
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	8.51	50%	50%	0.73	49%	51%	6,144	3072	3072	527	258	269	Maximum
Land Use	ITE Code	Qty	Unit	Saturday Equation	Saturday % In	Saturday % Out	Saturday Peak Hour Equation	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
Multifamily Housing (Mid-Rise)	221	722	Dwelling Units	T=3.04(X)+417.11	50%	50%	T=0.42(X)+6.73	49%	51%	2,612	1,306	1,306	310	152	158	Equation

Multifamily Housing (Mid-Rise)	Standard Deviation	1.26		0.08
	Number of Studies	6		8
	Average Size	224		264
	R^2	0.73		0.89

820 Shopping Center

Land Use	ITE Code	Qty	Unit	Saturday Rate	Saturday % In	Saturday % Out	Saturday Peak Hour Rate	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
Shopping Center	**820**	**3.5**	**1000 SF GLA**	**46.12**	**50%**	**50%**	**4.5**	**52%**	**48%**	**161**	**81**	**80**	**16**	**8**	**8**	**Average**
Shopping Center	820	3.5	1000 SF GLA	13.01	50%	50%	1.42	52%	48%	46	23	23	5	3	2	Minimum
Shopping Center	820	3.5	1000 SF GLA	167.89	50%	50%	15.1	52%	48%	588	294	294	53	28	25	Maximum
Land Use	ITE Code	Qty	Unit	Saturday Equation	Saturday % In	Saturday % Out	Saturday Peak Hour Equation	Saturday Peak Hour % In	Saturday Peak Hour % Out	Saturday Total	Saturday In	Saturday Out	Saturday Peak Hour Total	Saturday Peak Hour In	Saturday Peak Hour Out	
Shopping Center	820	3.5	1000 SF GLA	Ln(T)=0.62Ln(X)+6.24	50%	50%	Ln(T)=0.79Ln(X)+2.79	52%	48%	1,115	558	557	44	23	21	Equation

Shopping Center	Standard Deviation	17.91		1.88
	Number of Studies	58		119
	Average Size	602		416
	R^2	0.71		0.87

932 High-Turnover (Sit-Down) Restaurant

Land Use	ITE Code	Qty	Unit	Saturday			Saturday Peak Hour			Saturday			Saturday Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	
High-Turnover (Sit-Down) Restaurant	**932**	**10**	**1000 SF GLA**	**122.4**	**50%**	**50%**	**11.19**	**51%**	**49%**	**1,224**	**612**	**612**	**112**	**57**	**55**	**Average**
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	101.99	50%	50%	1.63	51%	49%	1,020	510	510	16	8	8	Minimum
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	173.07	50%	50%	50.4	51%	49%	1,731	866	865	504	257	247	Maximum
Land Use	ITE Code	Qty	Unit	Saturday			Saturday Peak Hour			Saturday			Saturday Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	
High-Turnover (Sit-Down) Restaurant	932	10	1000 SF GLA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

High-Turnover (Sit-Down) Restaurant	Standard Deviation	36.99		8.3
	Number of Studies	3		22
	Average Size	6		5
	R^2	N/A		N/A

936 Coffee/Donut Shop without Drive-Through

Land Use	ITE Code	Qty	Unit	Saturday			Saturday Peak Hour			Saturday			Saturday Peak Hour			
				Rate	% In	% Out	Rate	% In	% Out	Total	In	Out	Total	In	Out	
Coffee/Donut Shop without Drive-Through	**936**	**1.5**	**1000 SF GLA**	**673.64**	**50%**	**50%**	**59.01**	**49%**	**51%**	**1,010**	**505**	**505**	**89**	**44**	**45**	**Average**
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	673.64	50%	50%	36.87	49%	51%	1,010	505	505	55	27	28	Minimum
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	673.64	50%	50%	117.42	49%	51%	1,010	505	505	176	86	90	Maximum
Land Use	ITE Code	Qty	Unit	Saturday			Saturday Peak Hour			Saturday			Saturday Peak Hour			
				Equation	% In	% Out	Equation	% In	% Out	Total	In	Out	Total	In	Out	
Coffee/Donut Shop without Drive-Through	936	1.5	1000 SF GLA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Equation

Coffee/Donut Shop without Drive-Through	Standard Deviation	N/A		30.5
	Number of Studies	1		5
	Average Size	1		2
	R^2	N/A		N/A

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Entrada Scottsdale	**Organization:**	Lokahi, LLC
Project Location:	City of Scottsdale	**Performed By:**	SAS
Scenario Description:		**Date:**	8/7/2019
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	250	1000 SF GFA	290	249	41
Retail	820	3.5	1000 SF GLA	3	2	1
Restaurant	932/936	11.5	1000 SF GLA	251	132	119
Cinema/Entertainment				0		
Residential	221	722	Dwelling Units	260	68	192
Hotel				0		
All Other Land Uses[2]				0		
Total				804	451	353

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	26	0	0	0
Retail	0		0	0	0	0
Restaurant	35	0		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	0	26	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	804	451	353
Internal Capture Percentage	24%	21%	27%
External Vehicle-Trips[3]	614	356	258
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	16%	66%
Retail	50%	0%
Restaurant	39%	32%
Cinema/Entertainment	N/A	N/A
Residential	4%	16%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Entrada Scottsdale
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	249	249	1.00	41	41
Retail	1.00	2	2	1.00	1	1
Restaurant	1.00	132	132	1.00	119	119
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	68	68	1.00	192	192
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		11	26	0	0	0
Retail	0		0	0	0	0
Restaurant	37	17		0	5	4
Cinema/Entertainment	0	0	0		0	0
Residential	4	2	38	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	30	0	0	0
Retail	10		66	0	1	0
Restaurant	35	0		0	3	0
Cinema/Entertainment	0	0	0		0	0
Residential	7	0	26	0		0
Hotel	7	0	8	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	39	210	249	210	0	0
Retail	1	1	2	1	0	0
Restaurant	52	80	132	80	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	65	68	65	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	27	14	41	14	0	0
Retail	0	1	1	1	0	0
Restaurant	38	81	119	81	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	30	162	192	162	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Entrada Scottsdale	**Organization:**	Lokahi, LLC
Project Location:	City of Scottsdale	**Performed By:**	SAS
Scenario Description:		**Date:**	8/7/2019
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	250	1000 SF GFA	288	46	242
Retail	820	3.5	1000 SF GLA	13	6	7
Restaurant	932/936	11.5	1000 SF GLA	152	88	64
Cinema/Entertainment				0		
Residential	221	722	Dwelling Units	318	194	124
Hotel				0		
All Other Land Uses[2]				0		
Total				771	334	437

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	2	0	5	0
Retail	0		2	0	2	0
Restaurant	2	3		0	12	0
Cinema/Entertainment	0	0	0		0	0
Residential	5	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	771	334	437
Internal Capture Percentage	12%	14%	11%
External Vehicle-Trips[3]	679	288	391
External Transit-Trips[4]	0	0	0
External Non-Motorized Trips[4]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	15%	3%
Retail	67%	57%
Restaurant	18%	27%
Cinema/Entertainment	N/A	N/A
Residential	10%	15%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Project Name:	Entrada Scottsdale
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	46	46	1.00	242	242
Retail	1.00	6	6	1.00	7	7
Restaurant	1.00	88	88	1.00	64	64
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	194	194	1.00	124	124
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		48	10	0	5	0
Retail	0		2	0	2	0
Restaurant	2	26		5	12	4
Cinema/Entertainment	0	0	0		0	0
Residential	5	52	26	0		4
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	2	0	8	0
Retail	14		26	0	89	0
Restaurant	14	3		0	31	0
Cinema/Entertainment	3	0	3		8	0
Residential	26	1	12	0		0
Hotel	0	0	4	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	39	46	39	0	0
Retail	4	2	6	2	0	0
Restaurant	16	72	88	72	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	19	175	194	175	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	7	235	242	235	0	0
Retail	4	3	7	3	0	0
Restaurant	17	47	64	47	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	18	106	124	106	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.