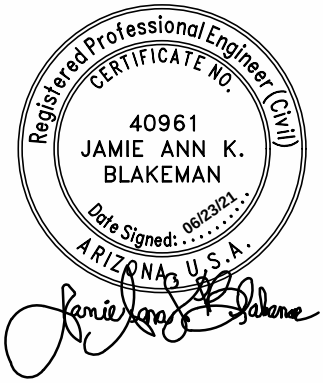
To: Michael F. Burke
DMB Associates, Inc.

Date: June 23, 2021

From: Jamie Blakeman, PE, PTOE

Job Number: 21.5215

RE: One Scottsdale Planning Unit II
Master Transportation System Plan – Update



INTRODUCTION

Lōkahi, LLC (Lōkahi) has prepared a Master Transportation System Plan Update for the Stacked 40s Master Transportation Plan, dated March 24, 2006. The Stacked 40s development will be referred to as One Scottsdale throughout the remainder of the report. The previously approved Master Transportation Plan addresses the development of two (2) planning units; Planning Unit II and III. This document serves as an update to Planning Unit II of the One Scottsdale development, located in Scottsdale, Arizona. Planning Unit II is bounded by Arizona State Route Loop 101 to the south (SR 101L), Scottsdale Road to the west, and Legacy Boulevard to the north. See **Exhibit 1** for the vicinity map and **Exhibit 2** for the site plan.

As stated in the City of Scottsdale Design Standards & Policies Manual, the plan "is used to establish the location, size, timing and nature of transportation improvements through the course of development on the site."

2016 VS. CURRENT SITE PLAN

A Transportation Impact and Mitigation Analysis (TIMA), dated May 27, 2016, was submitted to the City of Scottsdale. This prior study included the build out of Planning Unit II and III of the One Scottsdale development.

The 2016 proposed development of Planning Unit II included the following land uses:

- 234,400 square feet — Shopping Center
- 1,534,989 square feet — General Office Building
- 70,000 square feet — Quality Restaurant
- 400 hotel rooms — Hotel
- 1,710 dwelling units — Multi-Family Residential (Low-Rise)

4657 e. cotton gin loop, suite 102
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480.536.7150
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Since 2016, the proposed land uses for areas 4a and 4b as shown in **Exhibit 3** has since changed. In 2016, areas 4a and 4b included the following land uses:

2016 – Area 4a and 4b Land Uses

- 273 dwelling units — Multi-Family Residential (Low-Rise)
- 260 hotel rooms — Hotel
- 8,000 sf — Quality Restaurant

Currently, the proposed land uses for areas 4a and 4b includes:

Current – Area 4a and 4b Land Uses

- 410 dwelling units — Multi-Family Residential (Low-Rise)

Therefore, the Planning Unit II currently includes the following land uses:

- 234,400 square feet — Shopping Center
- 1,534,989 square feet — General Office Building
- 62,000 square feet — Quality Restaurant
- 140 hotel rooms — Hotel
- 1,847 dwelling units — Multi-Family Residential (Low-Rise)

Besides the Area 4a and 4b land use changes, all other land uses remain the same and the proposed and potential roadway network also remains the same.

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VICINITY MAP

EXHIBIT 1

23JUN21

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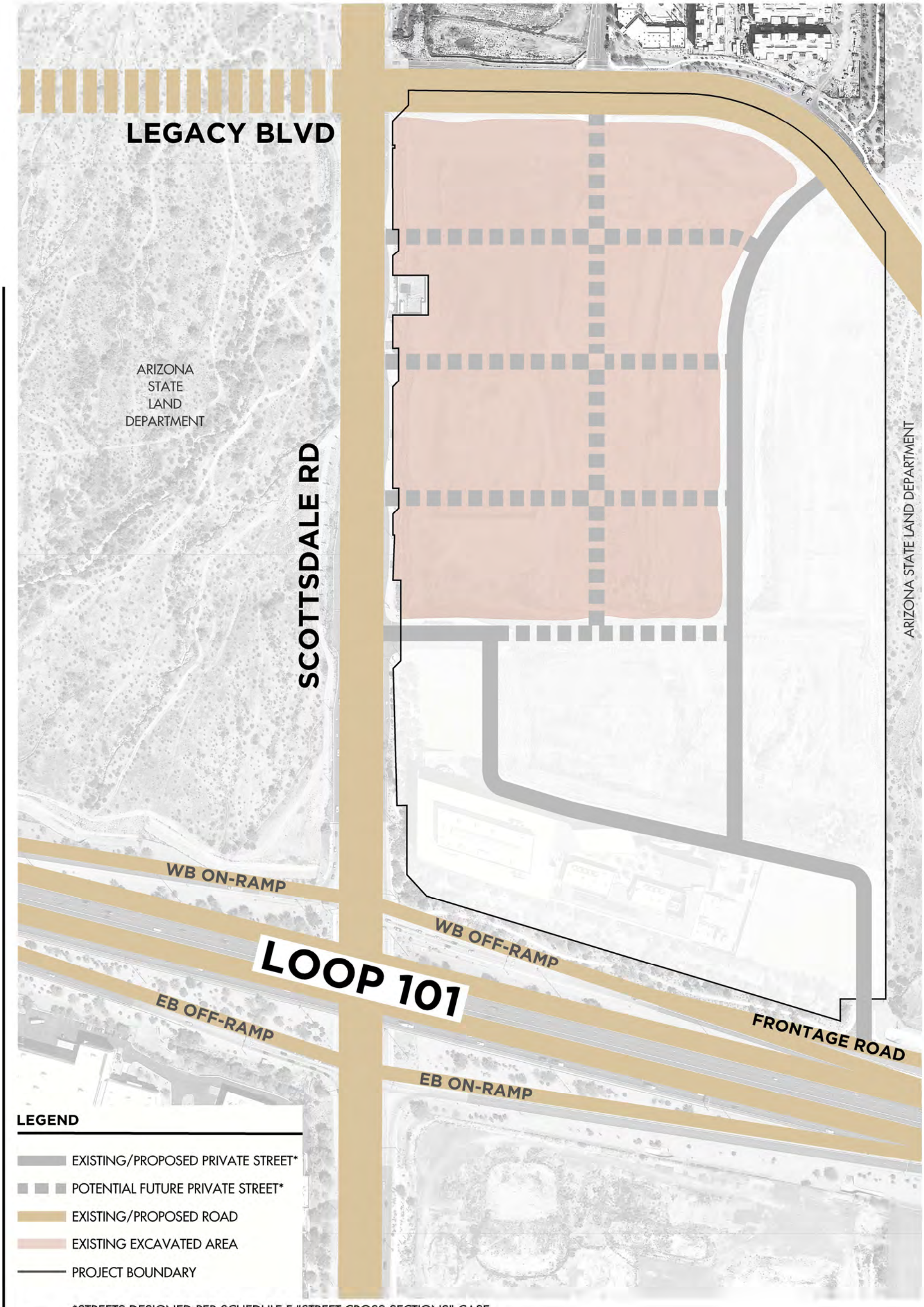
7/26/2021



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SITE PLAN
EXHIBIT 2
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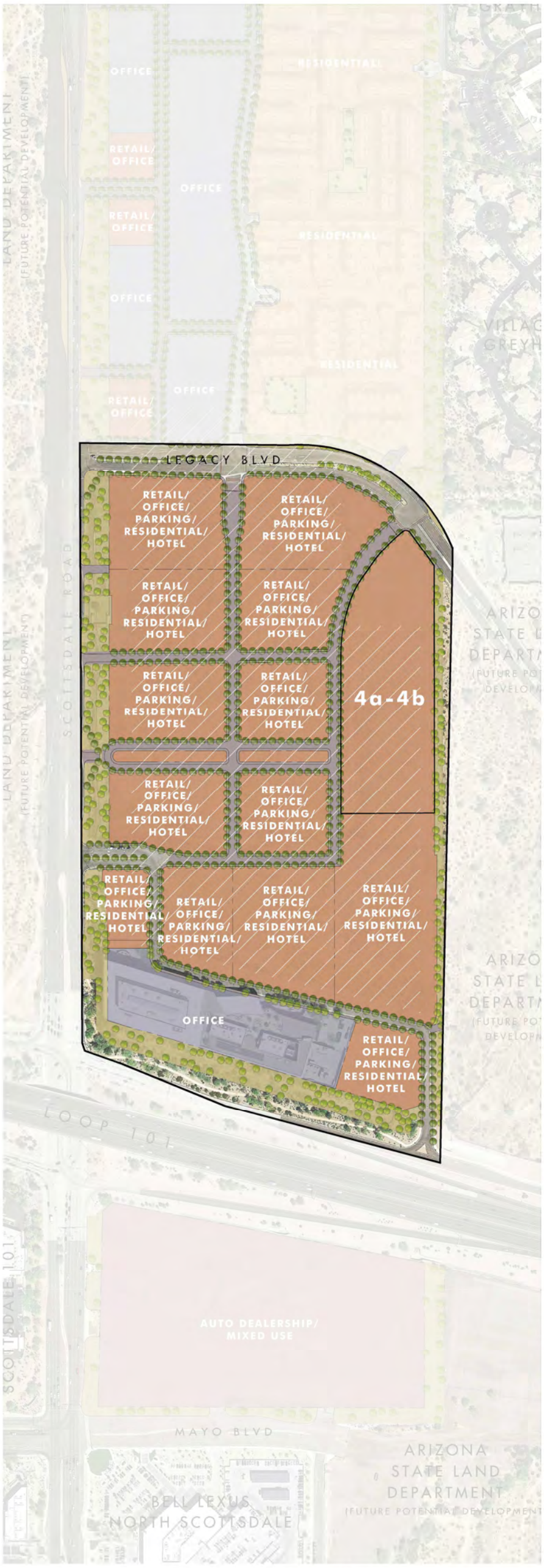
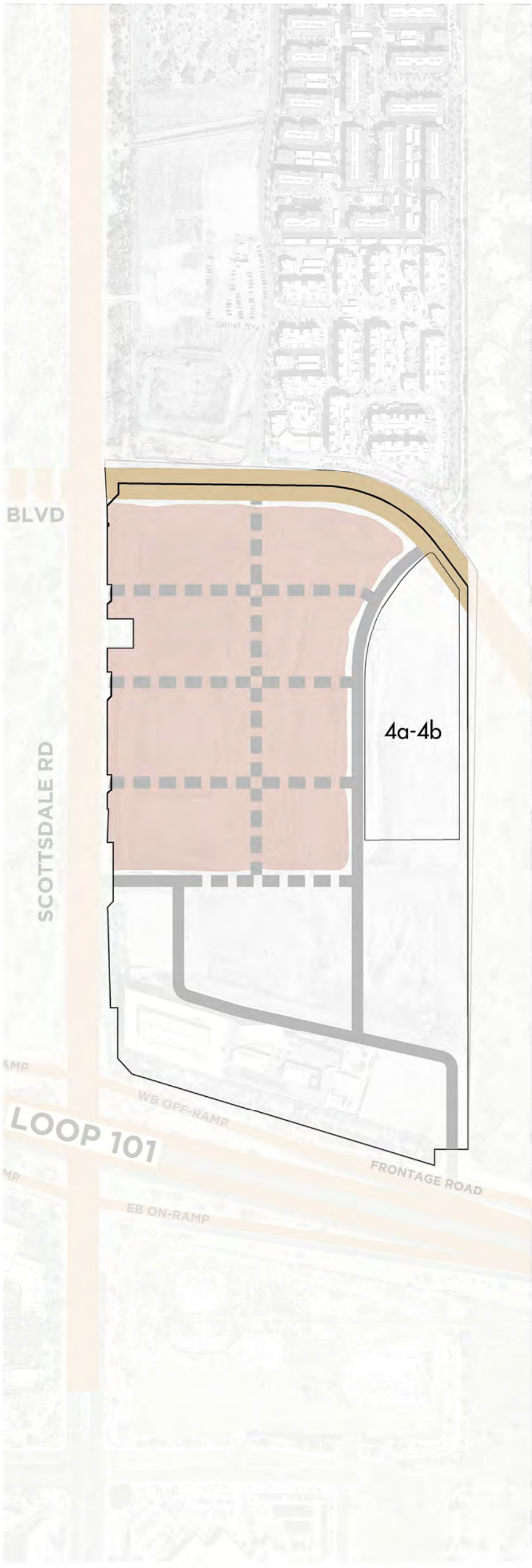


2016 SITE PLAN



CURRENT SITE PLAN

NORTH

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2016 VS. CURRENT SITE PLAN

EXHIBIT 3

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MASTER STREET CIRCULATION

The Master Street Circulation plan shows the existing, proposed, and potential regional and local roadway network within, adjacent and surrounding Planning Unit II of the One Scottsdale development. The internal roadway network is accessible via four (4) accesses located along Scottsdale Road. The southern access is the existing Henkel Way signalized intersection with three (3) additional potential internal roadways. There are two (2) accesses along Legacy Boulevard, one which is a potential internal roadway on the west side of the development, and one which is a proposed internal roadway on the east side of the development. See **Exhibit 4**.

MASTER BICYCLE CIRCULATION

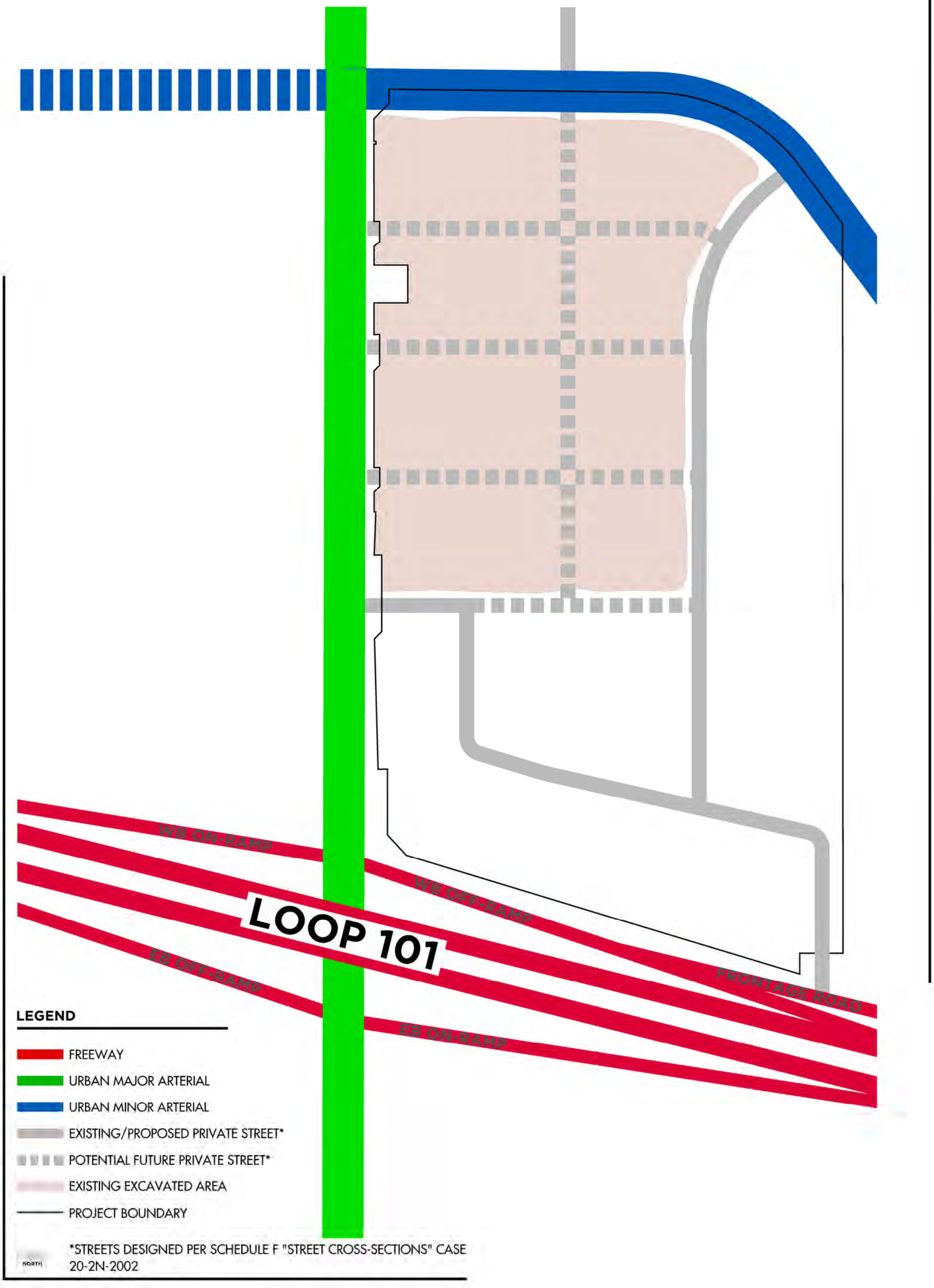
The Master Bicycle Circulation plan shows the existing and proposed bicycle facilities adjacent to the site. On-street bicycle lanes currently exist along both sides of Legacy Boulevard. Bicycle lanes are proposed along both sides of Scottsdale Road. The proposed and existing bicycle lanes located on Scottsdale Road and Legacy Boulevard will be utilized for off-site bicycle trips along the external roadway network. The internal roadway network is anticipated to operate with 25 mile per hour (mph) design speeds and therefore, may provide a variety of bicycle facility options including sharrows, bike paths, and bike lanes. See **Exhibit 5**.

MASTER PEDESTRIAN CIRCULATION

The Master Pedestrian Circulation plan shows the pedestrian facilities adjacent and within the proposed site. A paved multi-use path currently exists along the east side of Scottsdale Road and south side of the State Route Loop 101 westbound off-ramp. Pedestrian facilities are proposed along all internal roadways. See **Exhibit 6**. The pedestrian circulation system for Planning Unit II will link residential neighborhood districts, to the retail/office commercial districts, to internal open spaces and One Scottsdale facilities. In addition, the pedestrian circulation system for the proposed development will connect to the City's regional path/trail system. The vision for Planning Unit II is consistent with the 2006 MTP, to provide logical connections over a system of inviting, pedestrian-friendly paths, trails, and urban streetscape sidewalks.

MASTER TRAIL CIRCULATION

The Master Trail Circulation plan shows the new trail connections to existing local trails. A paved multi-use path currently exists along the east side of Scottsdale Road and south side of the State Route Loop 101 westbound off-ramp. A network of perimeter public multi-use paths and trails will provide continuous access along Scottsdale Road to points beyond the One Scottsdale project site boundaries. These facilities will include a paved multi-use trail within the eastside drainage corridor, a multi-use path and trail along Scottsdale Road and an internal path and trail system. Pedestrian facilities are proposed along all the internal roadways. See **Exhibit 7**.



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MASTER STREET CIRCULATION

EXHIBIT 4

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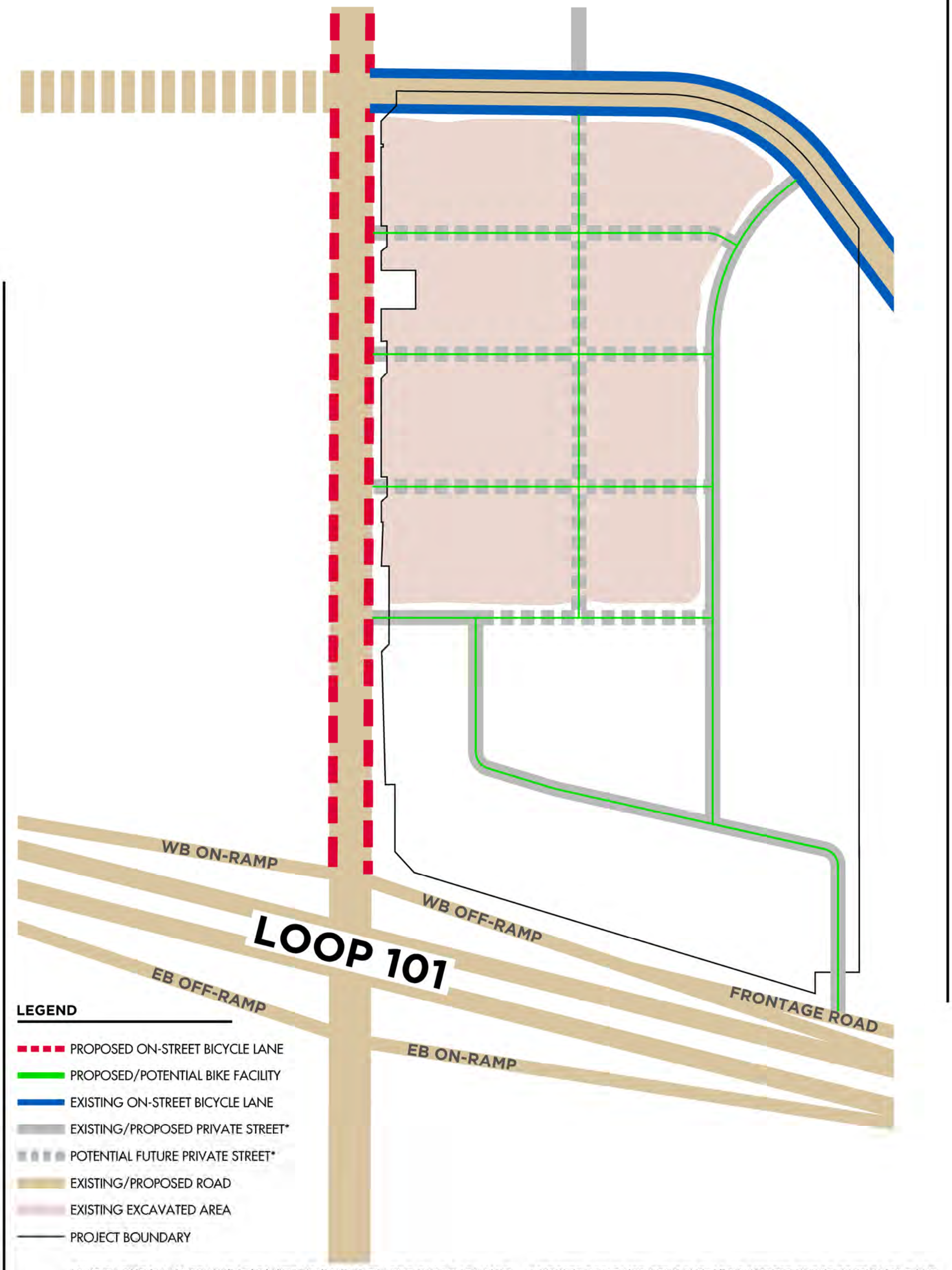

*BIKE FACILITY MAY COMMINGLE WITH VEHICULAR TRAFFIC ON ROADWAYS WITH A POSTED SPEED LIMIT NO GREATER THAN 35 MILES PER HOUR

*STREETS DESIGNED PER SCHEDULE F "STREET CROSS-SECTIONS" CASE 20-2N-2002

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MASTER BICYCLE CIRCULATION

EXHIBIT 5

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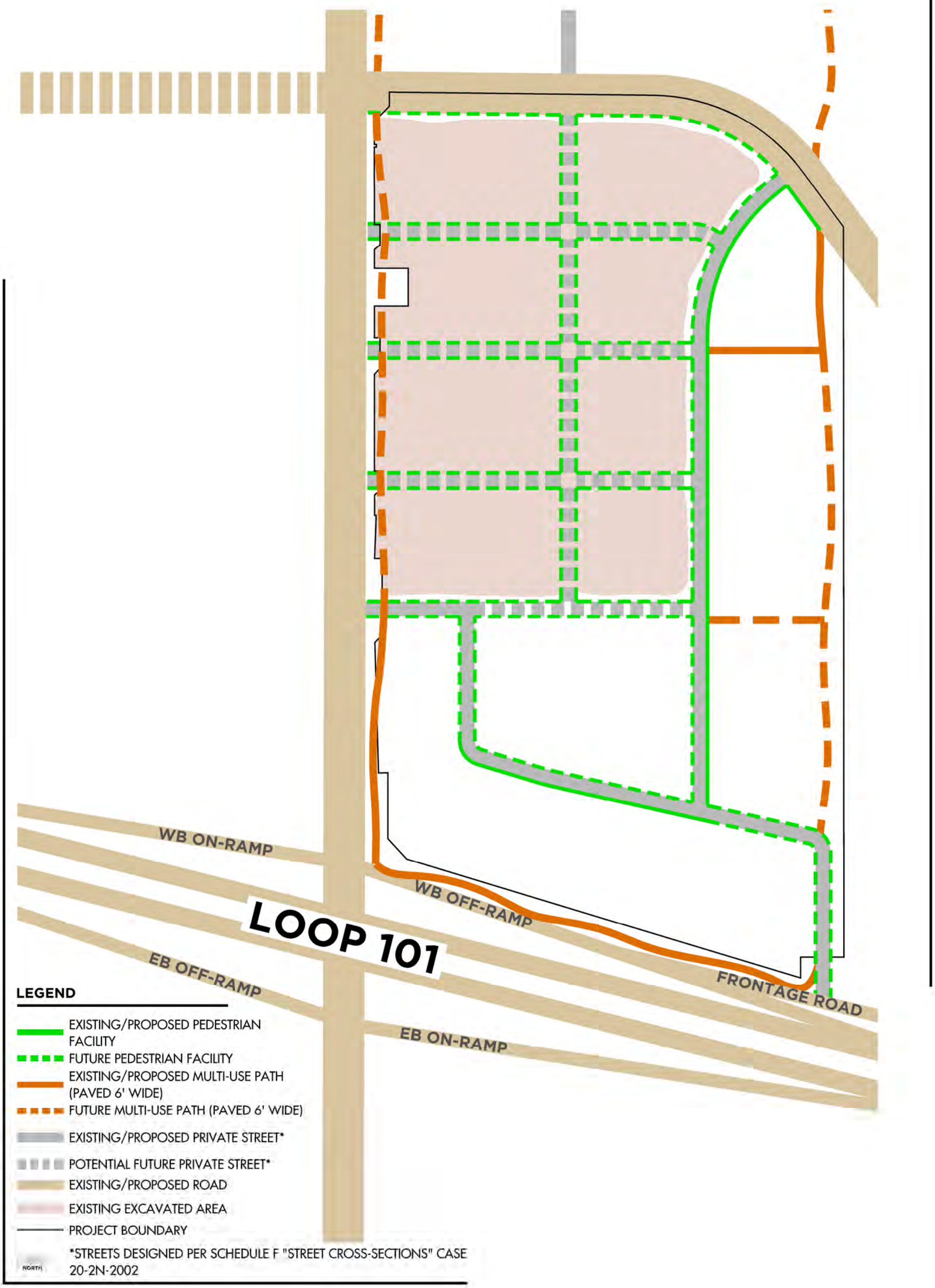

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MASTER PEDESTRIAN CIRCULATION

EXHIBIT 6

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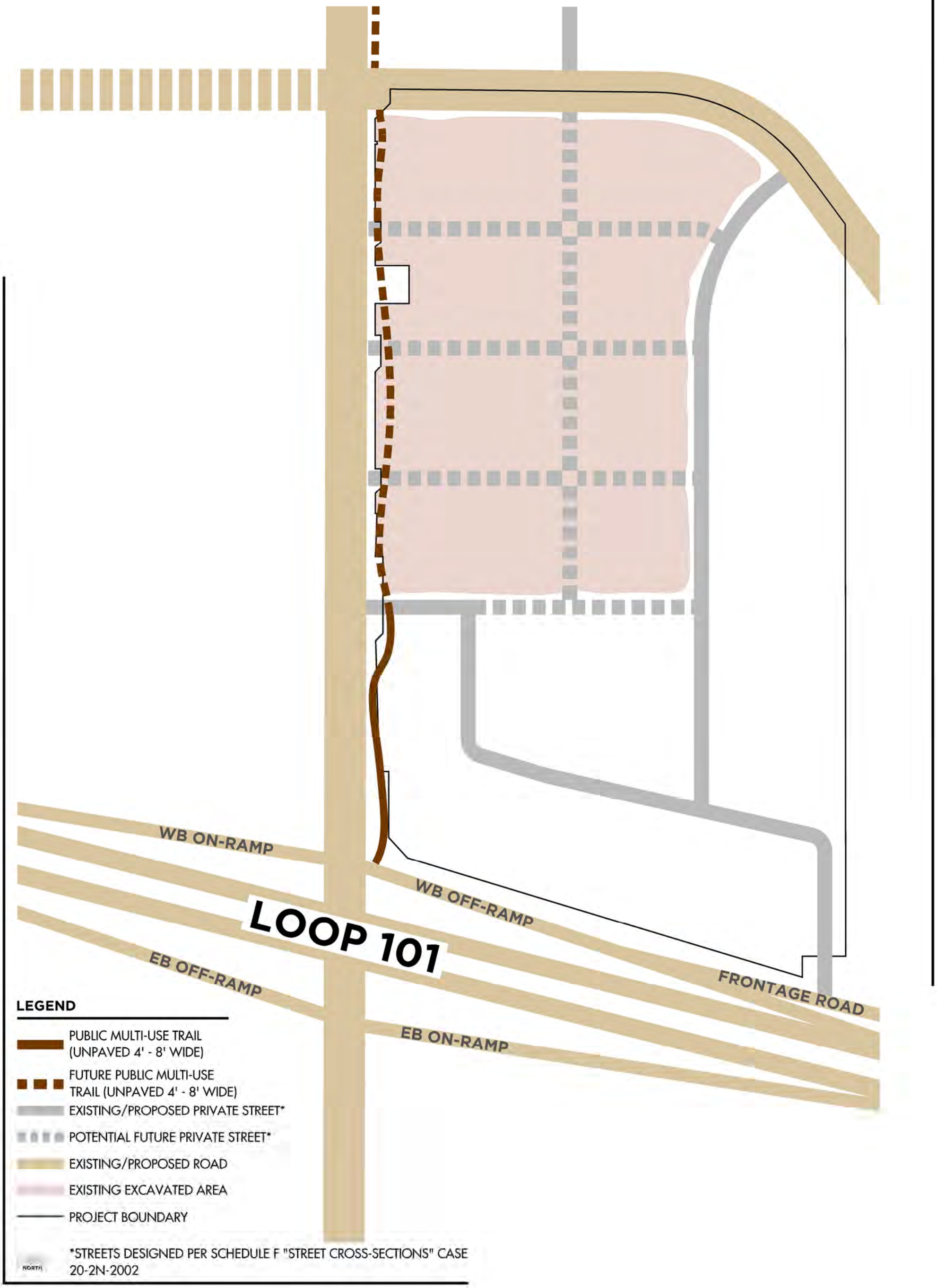

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MASTER TRAIL CIRCULATION

EXHIBIT 7

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7/26/2021

ITS APPLICATION PLAN

The proposed Intelligent Transportation Systems (ITS) Application Plan for Planning Unit II is shown in **Exhibit 8**. ITS infrastructure will connect traffic signals along Scottsdale Road and Legacy Boulevard. Planning Unit II will provide ITS infrastructure along Legacy Boulevard, adjacent to the project. Per the 2006 MTP, ITS infrastructure along Scottsdale Road will be installed by the City. The following ITS recommendations are consistent with the 2006 ITS Applications Plan. A traffic signal is located at the Scottsdale Road and Henkel Way intersection. With this installation, an ADOT Type 9 Pull Box was installed at the southeast corner. ITS infrastructure along Legacy Boulevard will include installing conduit and pull boxes on the south side of the roadway. The City recommended placing two (2) 1.5" Schedule 40 conduits on the south side of the roadway, and one (1) ADOT Type 9 Pull Box at the southeast corner of the intersection of Legacy Boulevard and Scottsdale Road.

TRIP GENERATION

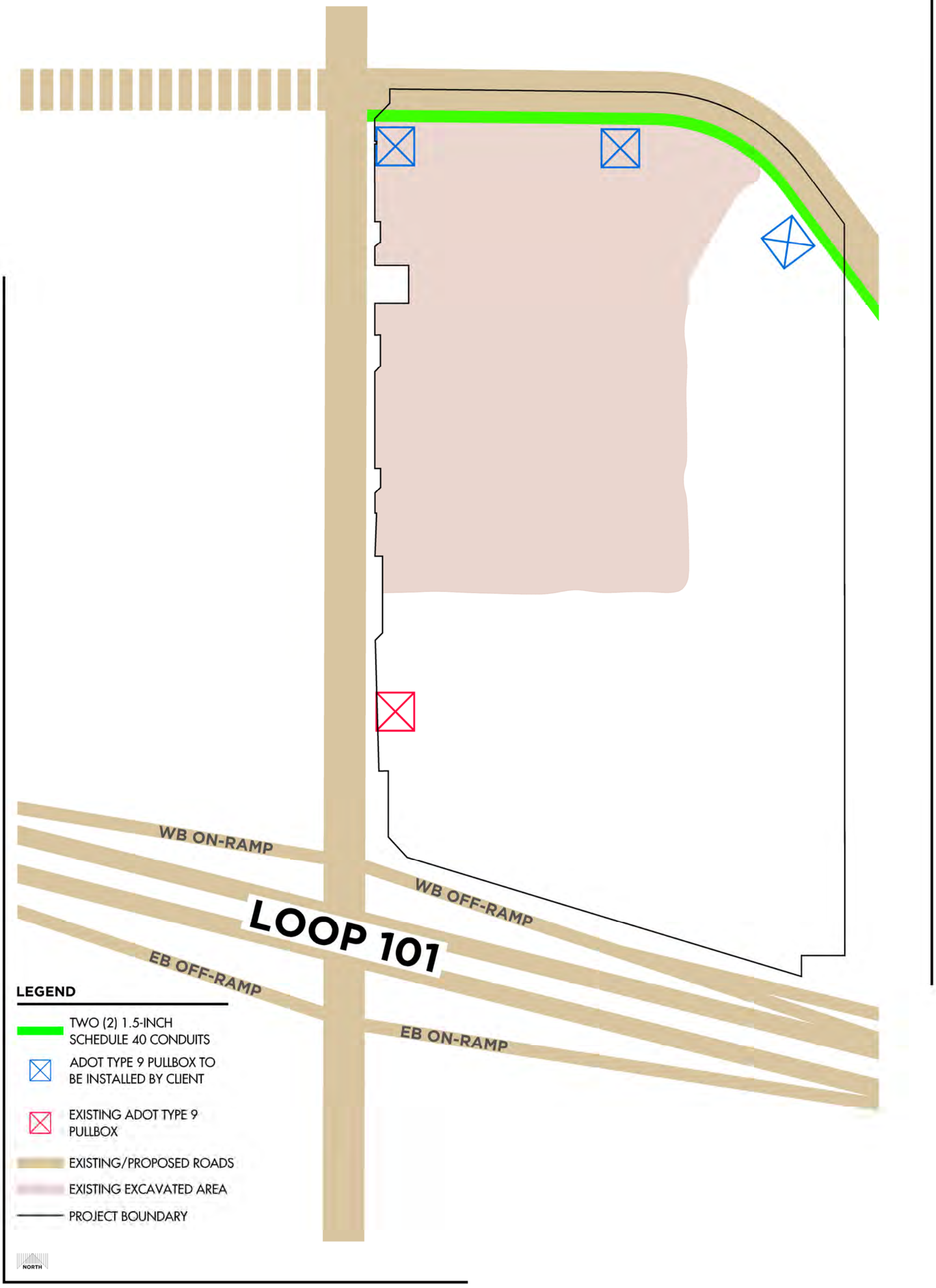
The trip generation was calculated utilizing the Institute of Transportation Engineers (ITE) publication entitled *Trip Generation, 10th Edition*. The ITE trip generation rates and fitted curve equations are based on studies that measure trip generation characteristics for various types of land uses.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

Internal Capture

Given the mixed-use nature of the proposed development which includes residential, retail, restaurant, hotel, and office land uses, it is anticipated that some of the trips will be internal, i.e. beginning and ending within 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.

Pass-by Trips

Pass-by trips are intermediate stops on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from the existing traffic passing the site on an adjacent street or roadway that offers direct access to the generator. These trips are not considered to add new traffic to the adjacent street network and may be reduced from the total external trips generated by the proposed development. Pass-by rates were applied to the Weekday, AM Peak Hour and PM Peak Hour trips generated by the proposed development. These rates are based on data provided in the *Trip Generation Handbook, 3rd Edition*.



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ITS APPLICATION PLAN

EXHIBIT 8

23JUN21

30_DR_2021_V1
7/26/2021

Proposed Development – One Scottsdale PU-II

The proposed development includes the following land uses:

- 234,400 square feet — Shopping Center
- 1,534,989 square feet — General Office Building
- 62,000 square feet — Quality Restaurant
- 140 hotel rooms — Hotel
- 1,847 dwelling units — Multi-Family Residential (Low-Rise)

Table 1 below shows the trip generation calculations, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Attachment A**.

Table 1 –Proposed Development – One Scottsdale PU-II

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	1847	Dwelling Units	13,922	761	175	586	792	499	293
Shopping Center	820	234	1000 SF GLA	10,730	269	167	102	1,021	490	531
All Suites Hotel	311	140	Rooms	624	48	25	23	50	24	26
Quality Restaurant	931	62.00	1000 SF GFA	5,198	45	25	20	484	324	160
General Office Building	710	1533.989	1000 SF GFA	14,996	1,468	1,262	206	1,524	244	1,280
Proposed One Scottsdale Development (PUII)				45,470	2,591	1,654	937	3,871	1,581	2,290
Internal Capture				9,292	320	160	160	1,104	552	552
TOTAL (After Internal Capture)				36,178	2,271	1,494	777	2,767	1,029	1,738
Pass-By Trips				13,159	0	0	0	304	185	119
TOTAL (After Internal Capture and Pass-by Trips)				**23,019**	**2,271**	**1,494**	**777**	**2,463**	**844**	**1,619**

Previously Proposed PU-II – 2016 Transportation Impact & Mitigation Analysis

A Transportation Impact and Mitigation Analysis (TIMA), dated May 27, 2016, was submitted to the City of Scottsdale. This prior study included the build out of Planning Unit II and III of the One Scottsdale development. The trip generation was calculated utilizing *Trip Generation, 9th Edition*, in combination with the *Trip Generation Handbook, 2nd Edition.* Therefore, the previously proposed trip generation for One Scottsdale Planning Unit II has been recalculated utilizing current standards. The previous site plan is considered to remain for this Master Transportation Plan Update, with the exception of the proposed land uses of 4a and 4b within Planning Unit II.

The previously proposed development of Planning Unit II included the following land uses:

- 234,400 square feet — Shopping Center
- 1,534,989 square feet — General Office Building
- 70,000 square feet — Quality Restaurant
- 400 hotel rooms — Hotel
- 1,710 dwelling units — Multi-Family Residential (Low-Rise)

Table 2 below shows the trip generation calculations, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Attachment A**.

Table 2 – Previously Proposed PU-II (2016 TIMA)

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	1710	Dwelling Units	12,887	708	163	545	739	466	273
Shopping Center	820	234	1000 SF GLA	10,730	269	167	102	1,021	490	531
All Suites Hotel	311	400	Rooms	1,784	136	72	64	144	69	75
Quality Restaurant	931	70	1000 SF GFA	5,869	51	28	23	546	366	180
General Office Building	710	1534.0	1000 SF GFA	14,996	1,468	1,262	206	1,524	244	1,280
Proposed One Scottsdale Development (PUII)				46,266	2,632	1,692	940	3,974	1,635	2,339
Internal Capture				10,290	372	186	186	1,206	603	603
TOTAL (After Internal Capture)				35,976	2,260	1,506	754	2,768	1,032	1,736
Pass-By Trips				13,670	0	0	0	304	189	115
TOTAL (After Internal Capture and Pass-by Trips)				**22,306**	**2,260**	**1,506**	**754**	**2,464**	**843**	**1,621**

Previously Proposed PU-II – 2006 Master Transportation Plan

A Master Transportation Plan (MTP), dated March 24, 2006, was submitted to the City of Scottsdale. This prior study included the build out of Planning Unit II and III of the One Scottsdale development. The trip generation was calculated utilizing *Trip Generation, 7th Edition*, in combination with the *Trip Generation Handbook, 5th Edition.* Therefore, the previously proposed trip generation for One Scottsdale Planning Unit II has been recalculated utilizing current standards.

The previously proposed development of Planning Unit II included the following land uses:

- 507,659 square feet — Shopping Center
- 1,292,341 square feet — General Office Building
- 320 hotel rooms — Hotel
- 390 dwelling units — Multi-Family Residential (Low-Rise)

Table 3 below shows the trip generation calculations, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Attachment A**.

Table 3 – Previously Proposed PU-II (2006 MTP)

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multifamily Housing (Low-Rise)	220	390	Dwelling Units	2,908	174	40	134	198	125	73
Shopping Center	820	507.659	1000 SF GLA	18,147	406	252	154	1,808	868	940
All Suites Hotel	311	320	Rooms	1,427	109	58	51	115	55	60
Quality Restaurant	931	0	1000 SF GFA	0	0	0	0	0	0	0
General Office Building	710	1292.341	1000 SF GFA	12,699	1,241	1,067	174	1,295	207	1,088
Proposed One Scottsdale Development (PUII)				35,181	1,930	1,417	513	3,416	1,255	2,161
Internal Capture				4,616	272	136	136	415	205	210
TOTAL (After Internal Capture)				30,565	1,658	1,281	377	3,001	1,050	1,951
Pass-By Trips				6,462	0	0	0	548	258	290
TOTAL (After Internal Capture and Pass-by Trips)				**24,103**	**1,658**	**1,281**	**377**	**2,453**	**792**	**1,661**

TRIP GENERATION COMPARISON

A trip generation comparison is provided below to reflect the proposed update to the land uses of Planning Unit II of the One Scottsdale development. **Table 4** below shows the trip generation calculations, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Attachment A**.

Table 4 – Previously Proposed PU-II vs. Proposed PU-II

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
	Total	Total	In	Out	Total	In	Out
2006 Master Transportation Plan	24,103	1,658	1,281	377	2,453	792	1,661
2016 Transportation Impact & Mitigation Analysis	22,306	2,260	1,506	754	2,464	843	1,621
2021 Update to the 2006 Master Transportation Plan	23,019	2,271	1,494	777	2,463	844	1,619
2006 MTP vs. 2021 Update MTP Difference	-1,084	613	213	400	10	52	-42
Percent Difference	-4%	37%	17%	106%	0%	7%	-3%
2016 TI&MA vs. 2021 Update MTP Difference	713	11	-12	23	-1	1	-2
Percent Difference	3%	0%	-1%	3%	0%	0%	0%

As shown in **Table 4**, the difference between the trips generated with the 2016 site plan versus the current site plan is minimal, ranging between -1% and 3%. With this minimal change, the proposed access locations, traffic control, and lane configurations are consistent with the recommendations in the 2016 Traffic Impact & Mitigation Analysis. See **Exhibit 9** for the intersection geometry and traffic control.

TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution procedure determines the general pattern of travel for vehicles entering and exiting the proposed development. The trip distribution for the proposed One Scottsdale Planning Unit II development is based on the distribution of the existing traffic along the surrounding roadway network, permitted movements at the proposed site driveways, and probable routes.

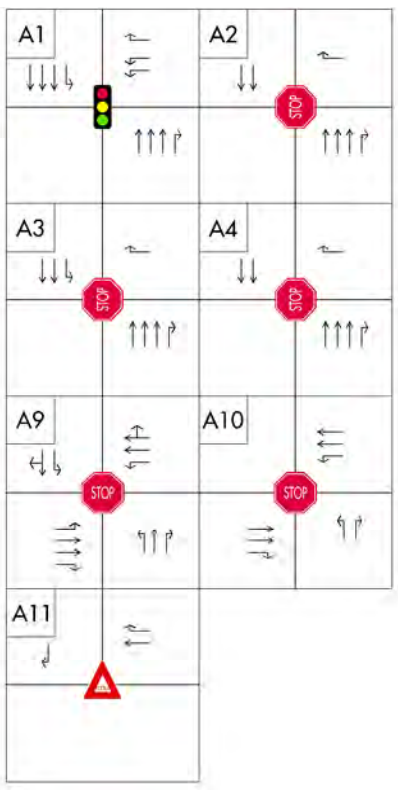
The trip assignment was generally based on proximity of the driveways, permitted turn movements, as well as ease and probability of use. See **Exhibit 9** for the Planning Unit II site generated average daily traffic (ADT) volumes.

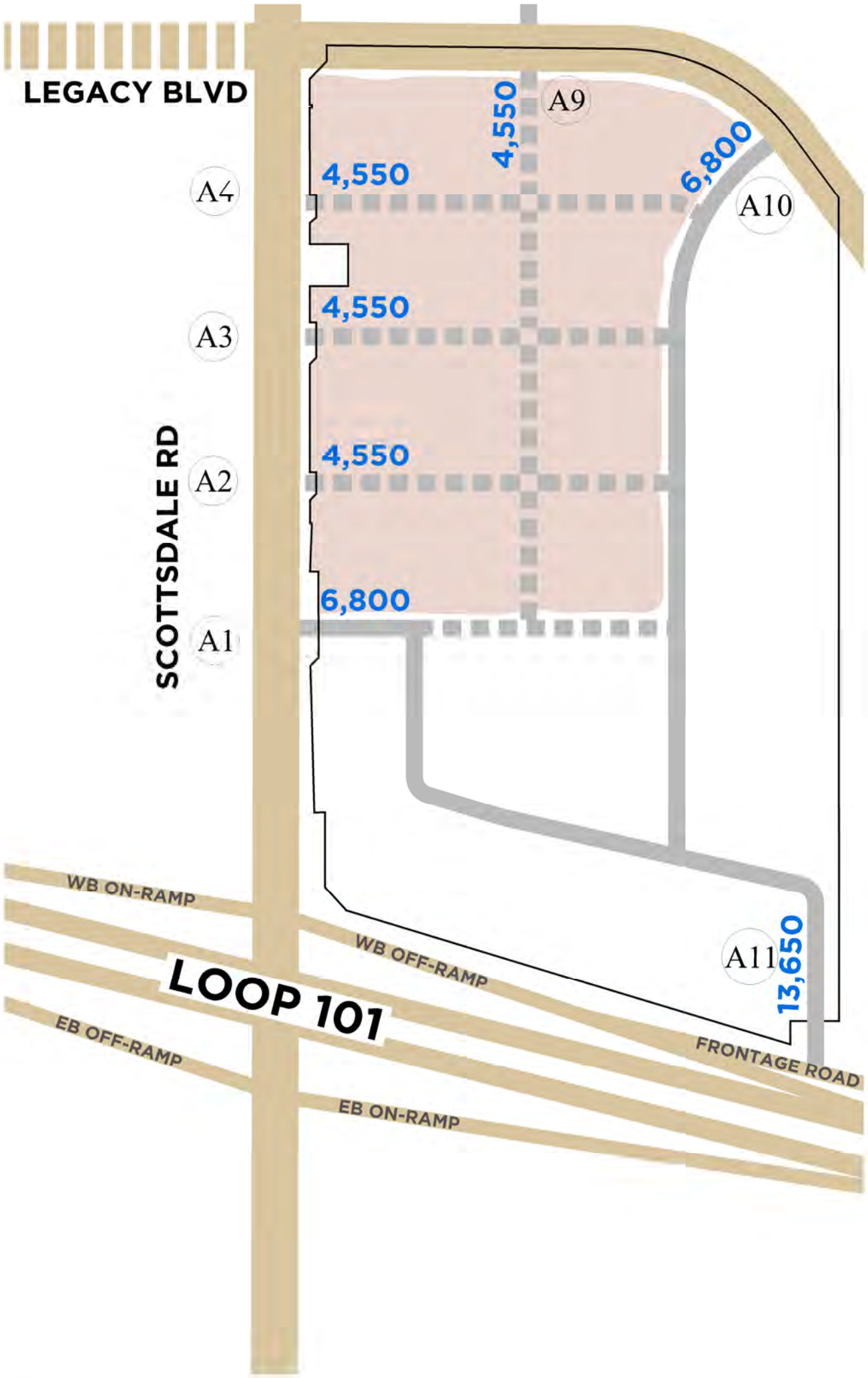
The internal site roadway cross-sections are shown in **Exhibit 10** and **Exhibit 11**. These cross-sections provide one lane for each direction of travel, allowing for flexibility in lane width, and parking configurations (parallel and angled), to allow for a tailored approach to be taken with

the submittal of each specific site plan. These are the approved cross-sections that were included in the Stacked 40s Master Transportation Plan, dated March 24, 2006.

TRANSPORTATION IMPROVEMENTS PHASING PLAN

The spine roadway, which runs north-south along the east side of Planning Unit II is anticipated to be constructed during the first phase of development. The remaining development schedule of the street system will occur as adjacent development occurs.





LEGEND

- X — INTERSECTION NUMBER
- [X,XXX] — AVERAGE DAILY TRAFFIC (ADT)
- TRAFFIC SIGNAL
- STOP CONTROLLED
- YIELD CONTROLLED
- EXISTING/PROPOSED PRIVATE STREET*
- POTENTIAL FUTURE PRIVATE STREET*
- EXISTING/PROPOSED ROAD
- EXISTING EXCAVATED AREA
- PROJECT BOUNDARY

*STREETS DESIGNED PER SCHEDULE F "STREET CROSS-SECTIONS" CASE 20-2N-2002

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INTERSECTION CONTROL & GEOMETRY

EXHIBIT 9

23JUN21

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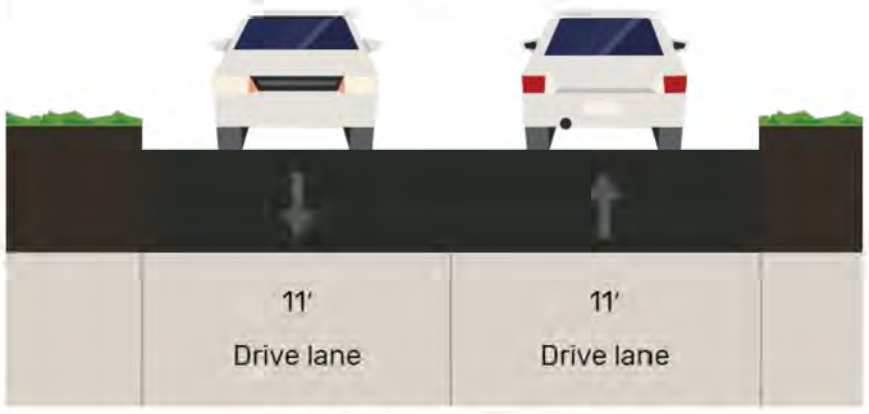
*CROSS-SECTION GRAPHICS ARE REFERENCED FROM THE APPROVED "SCHEDULE F" CROSS-SECTIONS 20-2N-2002

SECTION B1-a
2 LANES - NO PARKING NTS

SECTION B5-a
2 LANES - PARALLEL PARKING ON ONE SIDE NTS
*8 TO 9 FEET WIDTH AS APPROVED BY CITY STAFF

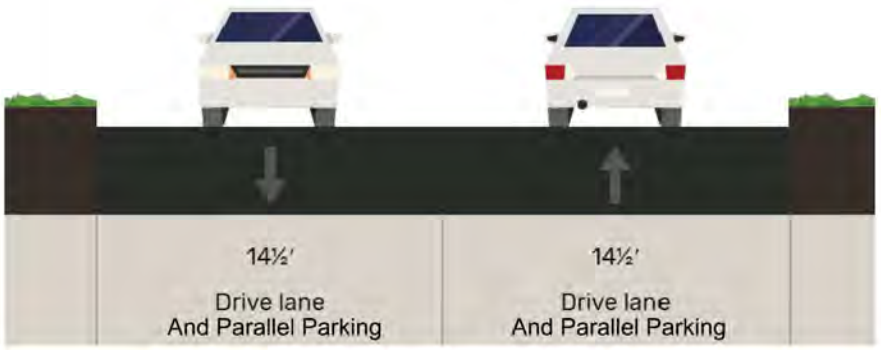


SECTION B1-b
2 LANES - NO PARKING NTS

SECTION B5-b
2 LANES - PARALLEL PARKING ON ONE SIDE

SECTION B2-a
2 LANES - PARALLEL PARKING ON BOTH SIDES NTS
* 8 TO 9 FEET WIDTH AS APPROVED BY CITY STAFF

SECTION B6
2 LANES - 60° PARKING ON ONE SIDE NTS



SECTION B2-b
2 LANES - PARALLEL PARKING ON BOTH SIDES NTS

SECTION B8
2 LANES - CENTER LEFT TURN LANE NTS

SECTION B3
2 LANES - 60° PARKING ON BOTH SIDES NTS

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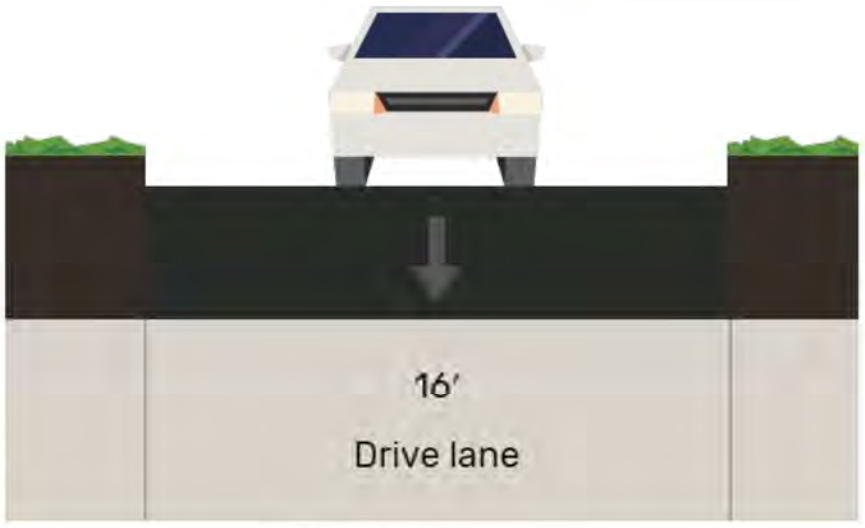
CROSS-SECTIONS
EXHIBIT 10
23JUN21

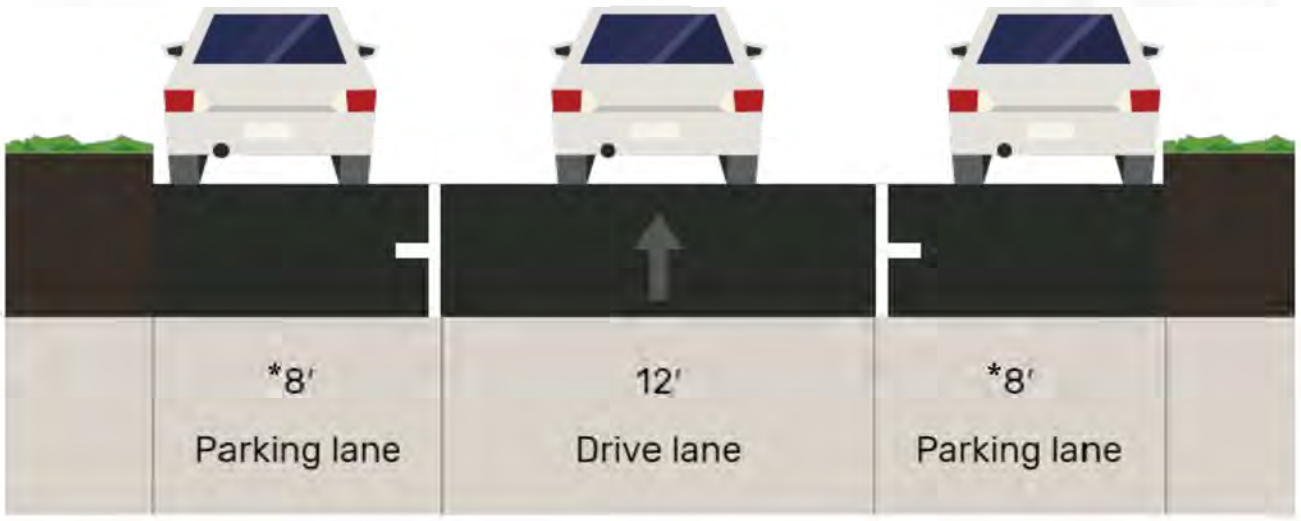
30_DR_2021_V1
7/26/2021

*CROSS-SECTION GRAPHICS ARE REFERENCED FROM THE APPROVED "SCHEDULE F" CROSS-SECTIONS 20-2N-2002

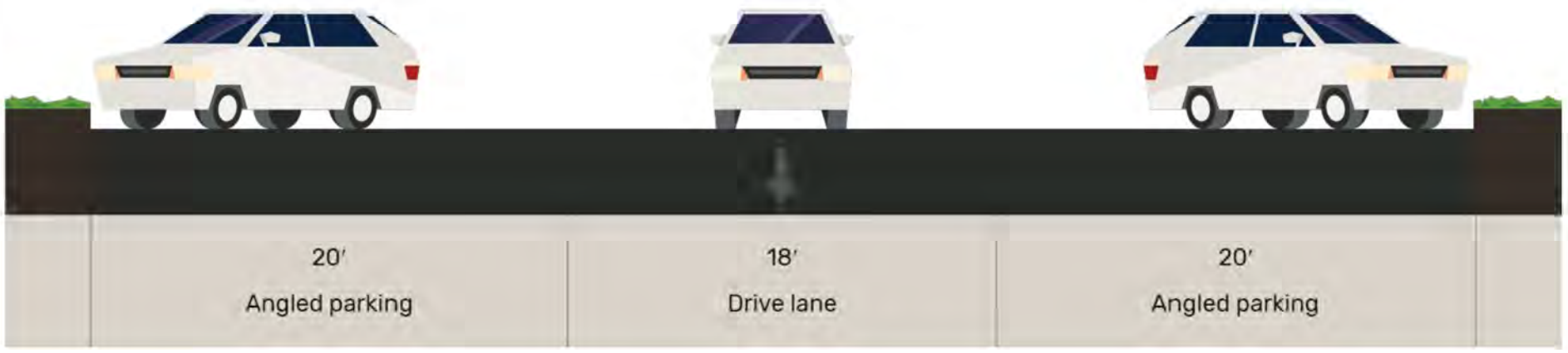


SECTION C1-a
1 LANE - NO PARKING NTS

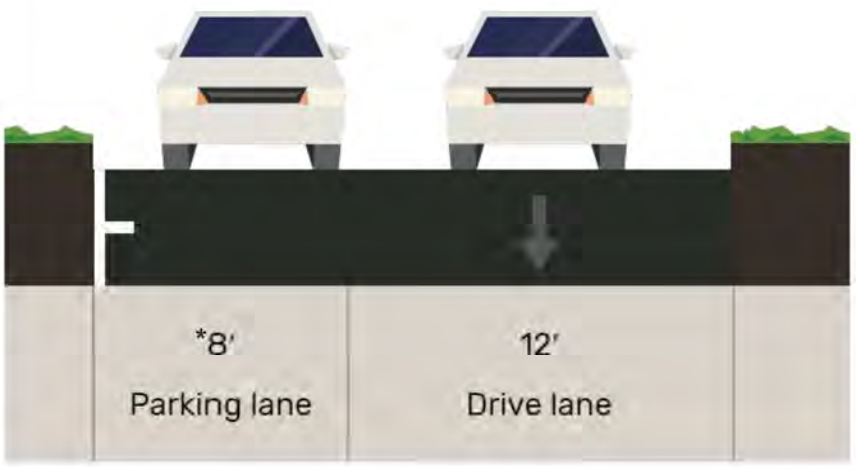
SECTION C1-b
1 LANE - NO PARKING NTS



SECTION C2
1 LANE - PARALLEL PARKING ON BOTH SIDES NTS
*8 TO 9 FEET WIDTH AS APPROVED BY CITY



SECTION C3
1 LANE - 60° PARKING ON BOTH SIDES NTS



SECTION C5
1 LANE - PARALLEL PARKING ON ONE SIDE NTS
*8 TO 9 FEET WIDTH AS APPROVED BY CITY

SECTION C6
1 LANE - 60° PARKING ON ONE SIDE NTS

NORTH

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CROSS-SECTIONS
EXHIBIT 11
23JUN21

ATTACHMENT A – TRIP GENERATION

One Scottsdale Planning Unit II
2021 Master Transportation Plan Update
DMB Associates, Inc.

Trip Generation Calculations

220 Multifamily Housing (Low-Rise) (One to Two Levels)

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 (Low-Rise)	220	1847	Dwelling Units	7.32	50%	50%	0.46	23%	77%	0.56	63%	37%	13,520	6,760	6,760	850	196	654	1,034	651	383	Average
Multifamily Housing (Low-Rise)	220	1847	Dwelling Units	4.45	50%	50%	0.18	23%	77%	0.18	63%	37%	8,219	4,110	4,109	332	76	256	332	209	123	Minimum
Multifamily Housing (Low-Rise)	220	1847	Dwelling Units	10.97	50%	50%	0.74	23%	77%	1.25	63%	37%	20,262	10,131	10,131	1,367	314	1053	2,309	1455	854	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 (Low-Rise)	**220**	**1847**	**Dwelling Units**	**T=7.56(X)-40.86**	**50%**	**50%**	**Ln(T)=0.95Ln(X)-0.51**	**23%**	**77%**	**Ln(T)=0.89Ln(X)-0.02**	**63%**	**37%**	**13,922**	**6,961**	**6,961**	**761**	**175**	**586**	**792**	**499**	**293**	**Equation**

Multifamily Housing (Low-Rise)	Standard Deviation	1.31	0.12	0.16
	Number of Studies	29	42	50
	Average Size	168	199	187
	R^2	0.96	0.90	0.86

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	234.4	1000 SF GLA	37.75	50%	50%	0.94	62%	38%	3.81	48%	52%	8,849	4425	4424	220	136	84	893	429	464	Average
Shopping Center	820	234.4	1000 SF GLA	7.42	50%	50%	0.18	62%	38%	0.74	48%	52%	1,739	870	869	42	26	16	173	83	90	Minimum
Shopping Center	820	234.4	1000 SF GLA	207.98	50%	50%	23.74	62%	38%	18.69	48%	52%	48,751	24376	24375	5,565	3450	2115	4,381	2103	2278	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**	**234.4**	**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%**	**10,730**	**5,365**	**5,365**	**269**	**167**	**102**	**1,021**	**490**	**531**	**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

311 All Suites Hotel

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	
All Suites Hotel	**311**	**140**	**Rooms**	**4.46**	**50%**	**50%**	**0.34**	**53%**	**47%**	**0.36**	**48%**	**52%**	**624**	**312**	**312**	**48**	**25**	**23**	**50**	**24**	**26**	**Average**
All Suites Hotel	311	140	Rooms	3.11	50%	50%	0.13	53%	47%	0.22	48%	52%	435	218	217	18	10	8	31	15	16	Minimum
All Suites Hotel	311	140	Rooms	6.02	50%	50%	0.51	53%	47%	0.47	48%	52%	843	422	421	71	38	33	66	32	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	
All Suites Hotel	311	140	Rooms	T=5.20(X)-119.26	50%	50%	T=0.51(X)-29.37	53%	47%	T=0.45(X)-14.07	48%	52%	609	305	304	42	22	20	49	24	25	Equation

All Suites Hotel	Standard Deviation	0.92	0.13	0.08
	Number of Studies	6	8	9
	Average Size	162	177	171
	R^2	0.89	0.70	0.84

931 Quality Restaurant

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	
Quality Restaurant	**931**	**62.0**	**1000 SF GFA**	**83.84**	**50%**	**50%**	**0.73**	**55%**	**45%**	**7.8**	**67%**	**33%**	**5,198**	**2,599**	**2,599**	**45**	**25**	**20**	**484**	**324**	**160**	**Average**
Quality Restaurant	931	62.0	1000 SF GFA	33.45	50%	50%	0.25	55%	45%	2.62	67%	33%	2,074	1037	1037	16	9	7	162	109	53	Minimum
Quality Restaurant	931	62.0	1000 SF GFA	139.93	50%	50%	1.6	55%	45%	18.68	67%	33%	8,676	4,338	4,338	99	54	45	1,158	776	382	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	
Quality Restaurant	931	62.0	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	N/A	N/A	N/A	N/A	N/A	N/A	Equation

Quality Restaurant	Standard Deviation	40.01	0.42	4.49
	Number of Studies	10	7	19
	Average Size	9	10	9
	R^2	N/A	N/A	N/A

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	1,534	1000 SF GFA	9.74	50%	50%	1.16	86%	14%	1.15	16%	84%	14,941	7,471	7,470	1,779	1530	249	1,764	282	1482	Average
General Office Building	710	1534	1000 SF GFA	2.71	50%	50%	0.37	86%	14%	0.47	16%	84%	4,157	2079	2078	568	488	80	721	115	606	Minimum
General Office Building	710	1534	1000 SF GFA	27.56	50%	50%	4.23	86%	14%	3.23	16%	84%	42,277	21,139	21,138	6,489	5,581	908	4,955	793	4162	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**	**1534**	**1000 SF GFA**	**Ln(T)=0.97Ln(X)+2.50**	**50%**	**50%**	**T=.94(X)+26.49**	**86%**	**14%**	**Ln(T)=0.95Ln(X)+0.36**	**16%**	**84%**	**14,996**	**7,498**	**7,498**	**1,468**	**1,262**	**206**	**1,524**	**244**	**1,280**	**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

One Scottsdale Planning Unit II
2021 Master Transportation Plan Update
DMB Associates, Inc.

Pass-by Calculations

	Land Use	Square Feet	Dwelling Units/Rooms	BEFORE REDUCTION AM PEAK HR			After Internal Capture BEFORE REDUCTION AM PEAK HR			PASS-BY	After Pass-By AM REDUCED				BEFORE REDUCTION PM PEAK HR			After Internal Capture BEFORE REDUCTION PM PEAK HR			PASS-BY	After Pass-By PM REDUCED		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL		ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL
1	Multifamily Housing (Low-Rise)		1,847	175	586	761	170	563	733		170	563	733		499	293	792	312	184	496		312	184	496
2	Shopping Center	234,400		167	102	269	102	56	158		102	56	158		490	531	1,021	332	284	616	34%	219	187	406
3	All Suites Hotel		140	25	23	48	24	2	26		24	2	26		24	26	50	6	6	12		6	6	12
4	Quality Restaurant	62		25	20	45	1	9	10		1	9	10		324	160	484	163	49	212	44%	91	27	118
5	General Office Building	1,534		1,262	206	1,468	1,197	147	1,344		1,197	147	1,344		244	1,280	1,524	216	1,215	1,431		216	1,215	1,431
	TOTAL			1,654	937	2,591	1,494	777	2,271		1,494	777	2,271		1,581	2,290	3,871	1,029	1,738	2,767		844	1,619	2,463
							90%	*83%*	*88%*		*90%*	*83%*	*88%*					*65%*	*76%*	*71%*		*53%*	*71%*	*64%*

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,534	1000 SF GLA	1468	1262	206
Retail	820	234.400	1000 SF GLA	269	167	102
Restaurant	931	62.000	1000 SF GLA	45	25	20
Cinema/Entertainment				0		
Residential	220	1,847	Units	761	175	586
Hotel	311	140	Rooms	48	25	23
All Other Land Uses[2]				0		
Total				2591	1654	937

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		53	6	0	0	0
Retail	30		12	0	4	0
Restaurant	6	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	12	6	5	0		0
Hotel	17	3	1	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	2,591	1,654	937
Internal Capture Percentage	12%	10%	17%
External Vehicle-Trips[3]	2,271	1,494	777
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	5%	29%
Retail	39%	45%
Restaurant	96%	55%
Cinema/Entertainment	N/A	N/A
Residential	3%	4%
Hotel	4%	91%

[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:	One Scottsdale Planning Unit II
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	1262	1262	1.00	206	206
Retail	1.00	167	167	1.00	102	102
Restaurant	1.00	25	25	1.00	20	20
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	175	175	1.00	586	586
Hotel	1.00	25	25	1.00	23	23

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		58	130	0	2	0
Retail	30		13	0	14	0
Restaurant	6	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	12	6	117	0		0
Hotel	17	3	2	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		53	6	0	0	0
Retail	50		13	0	4	0
Restaurant	177	13		0	9	1
Cinema/Entertainment	0	0	0		0	0
Residential	38	28	5	0		0
Hotel	38	7	2	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	65	1197	1262	1197	0	0
Retail	65	102	167	102	0	0
Restaurant	24	1	25	1	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	170	175	170	0	0
Hotel	1	24	25	24	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	59	147	206	147	0	0
Retail	46	56	102	56	0	0
Restaurant	11	9	20	9	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	23	563	586	563	0	0
Hotel	21	2	23	2	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:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,534	1000 SF GLA	1524	244	1280
Retail	820	234.400	1000 SF GLA	1021	490	531
Restaurant	931	62.000	1000 SF GLA	484	324	160
Cinema/Entertainment				0		
Residential	220	1,847	Units	792	499	293
Hotel	311	140	Rooms	50	24	26
All Other Land Uses[2]				0		
Total				3871	1581	2290

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		39	6	0	20	0
Retail	11		94	0	138	4
Restaurant	5	66		0	29	11
Cinema/Entertainment	0	0	0		0	0
Residential	12	49	45	0		3
Hotel	0	4	16	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,871	1,581	2,290
Internal Capture Percentage	29%	35%	24%
External Vehicle-Trips[3]	2,767	1,029	1,738
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	11%	5%
Retail	32%	47%
Restaurant	50%	69%
Cinema/Entertainment	N/A	N/A
Residential	37%	37%
Hotel	75%	77%

[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:	One Scottsdale Planning Unit II
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	244	244	1.00	1280	1280
Retail	1.00	490	490	1.00	531	531
Restaurant	1.00	324	324	1.00	160	160
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	499	499	1.00	293	293
Hotel	1.00	24	24	1.00	26	26

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		256	51	0	26	0
Retail	11		154	21	138	27
Restaurant	5	66		13	29	11
Cinema/Entertainment	0	0	0		0	0
Residential	12	123	62	0		9
Hotel	0	4	18	0	1	

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		39	6	0	20	0
Retail	76		94	0	230	4
Restaurant	73	245		0	80	17
Cinema/Entertainment	15	20	10		20	0
Residential	139	49	45	0		3
Hotel	0	10	16	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	28	216	244	216	0	0
Retail	158	332	490	332	0	0
Restaurant	161	163	324	163	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	187	312	499	312	0	0
Hotel	18	6	24	6	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	65	1215	1280	1215	0	0
Retail	247	284	531	284	0	0
Restaurant	111	49	160	49	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	109	184	293	184	0	0
Hotel	20	6	26	6	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.

One Scottsdale Planning Unit II
2006 Master Transportation Plan
DMB Associates, Inc.

Trip Generation Calculations

220 Multifamily Housing (Low-Rise) (One to Two Levels)

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 (Low-Rise)	220	390	Dwelling Units	7.32	50%	50%	0.46	23%	77%	0.56	63%	37%	2,855	1,428	1,427	179	41	138	218	137	81	Average
Multifamily Housing (Low-Rise)	220	390	Dwelling Units	4.45	50%	50%	0.18	23%	77%	0.18	63%	37%	1,736	868	868	70	16	54	70	44	26	Minimum
Multifamily Housing (Low-Rise)	220	390	Dwelling Units	10.97	50%	50%	0.74	23%	77%	1.25	63%	37%	4,278	2,139	2,139	289	66	223	488	307	181	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 (Low-Rise)	**220**	**390**	**Dwelling Units**	**T=7.56(X)-40.86**	**50%**	**50%**	**Ln(T)=0.95Ln(X)-0.51**	**23%**	**77%**	**Ln(T)=0.89Ln(X)-0.02**	**63%**	**37%**	**2,908**	**1,454**	**1,454**	**174**	**40**	**134**	**198**	**125**	**73**	**Equation**

Multifamily Housing (Low-Rise)	Standard Deviation	1.31		0.12	0.16
	Number of Studies	29		42	50
	Average Size	168		199	187
	R^2	0.96		0.90	0.86

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	507.7	1000 SF GLA	37.75	50%	50%	0.94	62%	38%	3.81	48%	52%	19,164	9582	9582	477	296	181	1,934	928	1006	Average
Shopping Center	820	507.7	1000 SF GLA	7.42	50%	50%	0.18	62%	38%	0.74	48%	52%	3,767	1884	1883	91	56	35	376	180	196	Minimum
Shopping Center	820	507.659	1000 SF GLA	207.98	50%	50%	23.74	62%	38%	18.69	48%	52%	105,583	52792	52791	12,052	7472	4580	9,488	4554	4934	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**	**507.659**	**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%**	**18,147**	**9,074**	**9,073**	**406**	**252**	**154**	**1,808**	**868**	**940**	**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

311 All Suites Hotel

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	
All Suites Hotel	**311**	**320**	**Rooms**	**4.46**	**50%**	**50%**	**0.34**	**53%**	**47%**	**0.36**	**48%**	**52%**	**1,427**	**714**	**713**	**109**	**58**	**51**	**115**	**55**	**60**	**Average**
All Suites Hotel	311	320	Rooms	3.11	50%	50%	0.13	53%	47%	0.22	48%	52%	995	498	497	42	22	20	70	34	36	Minimum
All Suites Hotel	311	320	Rooms	6.02	50%	50%	0.51	53%	47%	0.47	48%	52%	1,926	963	963	163	86	77	150	72	78	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	
All Suites Hotel	311	320	Rooms	T=5.20(X)-119.26	50%	50%	T=0.51(X)-29.37	53%	47%	T=0.45(X)-14.07	48%	52%	1,545	773	772	134	71	63	130	62	68	Equation

All Suites Hotel	Standard Deviation	0.92		0.13	0.08
	Number of Studies	6		8	9
	Average Size	162		177	171
	R^2	0.89		0.70	0.84

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	1,292	1000 SF GFA	9.74	50%	50%	1.16	86%	14%	1.15	16%	84%	12,587	6,294	6,293	1,499	1289	210	1,486	238	1248	Average
General Office Building	710	1292	1000 SF GFA	2.71	50%	50%	0.37	86%	14%	0.47	16%	84%	3,502	1751	1751	478	411	67	607	97	510	Minimum
General Office Building	710	1292	1000 SF GFA	27.56	50%	50%	4.23	86%	14%	3.23	16%	84%	35,617	17,809	17,808	5,467	4,702	765	4,174	668	3506	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**	**1292**	**1000 SF GFA**	**Ln(T)=0.97Ln(X)+2.50**	**50%**	**50%**	**T=.94(X)+26.49**	**86%**	**14%**	**Ln(T)=0.95Ln(X)+0.36**	**16%**	**84%**	**12,699**	**6,350**	**6,349**	**1,241**	**1,067**	**174**	**1,295**	**207**	**1,088**	**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

One Scottsdale Planning Unit II
2006 Master Transportation Plan
DMB Associates, Inc.

Pass-by Calculations

	Land Use	Square Feet	Dwelling Units/Rooms	BEFORE REDUCTION AM PEAK HR			After Internal Capture			PASS-BY	After Pass-By				BEFORE REDUCTION PM PEAK HR			After Internal Capture			PASS-BY	After Pass-By		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL		ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL
1	Multifamily Housing (Low-Rise)		390	40	134	174	39	130	169		39	130	169		125	73	198	62	37	99		62	37	99
2	Shopping Center	507,659		252	154	406	195	110	305		195	110	305		868	940	1,808	759	854	1,613	34%	501	564	1,065
3	All Suites Hotel		320	58	51	109	58	12	70		58	12	70		55	60	115	44	46	90		44	46	90
4	Quality Restaurant	-		-	-	-	-	-	-		-	-	-		-	-	-	-	-	-	44%	-	-	-
5	General Office Building	1,292		1,067	174	1,241	989	125	1,114		989	125	1,114		207	1,088	1,295	185	1,014	1,199		185	1,014	1,199
	TOTAL			1,417	513	1,930	1,281	377	1,658		1,281	377	1,658		1,255	2,161	3,416	1,050	1,951	3,001		792	1,661	2,453
							90%	*73%*	*86%*		*90%*	*73%*	*86%*					*84%*	*90%*	*88%*		*63%*	*77%*	*72%*

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,292	1000 SF GLA	1241	1067	174
Retail	820	507.659	1000 SF GLA	406	252	154
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	390	Units	174	40	134
Hotel	311	320	Rooms	109	58	51
All Other Land Uses[2]				0		
Total				1930	1417	513

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		49	0	0	0	0
Retail	43		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	0	0		0
Hotel	32	7	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,930	1,417	513
Internal Capture Percentage	14%	10%	27%
External Vehicle-Trips[3]	1,658	1,281	377
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	7%	28%
Retail	23%	29%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	3%
Hotel	0%	76%

[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:	One Scottsdale Planning Unit II
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	1067	1067	1.00	174	174
Retail	1.00	252	252	1.00	154	154
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	40	40	1.00	134	134
Hotel	1.00	58	58	1.00	51	51

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		49	110	0	2	0
Retail	45		20	0	22	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	1	27	0		0
Hotel	38	7	5	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		81	0	0	0	0
Retail	43		0	0	1	0
Restaurant	149	20		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	32	43	0	0		0
Hotel	32	10	0	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	78	989	1067	989	0	0
Retail	57	195	252	195	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	39	40	39	0	0
Hotel	0	58	58	58	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	49	125	174	125	0	0
Retail	44	110	154	110	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	130	134	130	0	0
Hotel	39	12	51	12	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:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,292	1000 SF GLA	1295	207	1088
Retail	820	507.659	1000 SF GLA	1808	868	940
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	390	Units	198	125	73
Hotel	311	320	Rooms	110	55	55
All Other Land Uses[2]				0		
Total				3411	1255	2156

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		69	0	0	5	0
Retail	19		0	0	58	9
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	31	0	0		2
Hotel	0	9	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,411	1,255	2,156
Internal Capture Percentage	12%	16%	10%
External Vehicle-Trips[3]	3,001	1,050	1,951
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	11%	7%
Retail	13%	9%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	50%	49%
Hotel	20%	16%

[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:	One Scottsdale Planning Unit II
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	207	207	1.00	1088	1088
Retail	1.00	868	868	1.00	940	940
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	125	125	1.00	73	73
Hotel	1.00	55	55	1.00	55	55

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		218	44	0	22	0
Retail	19		273	38	244	47
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	31	15	0		2
Hotel	0	9	37	0	1	

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		69	0	0	5	0
Retail	64		0	0	58	9
Restaurant	62	434		0	20	39
Cinema/Entertainment	12	35	0		5	1
Residential	118	87	0	0		7
Hotel	0	17	0	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	22	185	207	185	0	0
Retail	109	759	868	759	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	63	62	125	62	0	0
Hotel	11	44	55	44	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	74	1014	1088	1014	0	0
Retail	86	854	940	854	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	36	37	73	37	0	0
Hotel	9	46	55	46	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.

One Scottsdale Planning Unit II
2016 Transportation Impact & Mitigation Analysis
DMB Associates, Inc.

Trip Generation Calculations

220 Multifamily Housing (Low-Rise) (One to Two Levels)

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 (Low-Rise)	220	1710	Dwelling Units	7.32	50%	50%	0.46	23%	77%	0.56	63%	37%	12,517	6,259	6,258	787	181	606	958	604	354	Average
Multifamily Housing (Low-Rise)	220	1710	Dwelling Units	4.45	50%	50%	0.18	23%	77%	0.18	63%	37%	7,610	3,805	3,805	308	71	237	308	194	114	Minimum
Multifamily Housing (Low-Rise)	220	1710	Dwelling Units	10.97	50%	50%	0.74	23%	77%	1.25	63%	37%	18,759	9,380	9,379	1,265	291	974	2,138	1347	791	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 (Low-Rise)	**220**	**1710**	**Dwelling Units**	**T=7.56(X)-40.86**	**50%**	**50%**	**Ln(T)=0.95Ln(X)-0.51**	**23%**	**77%**	**Ln(T)=0.89Ln(X)-0.02**	**63%**	**37%**	**12,887**	**6,444**	**6,443**	**708**	**163**	**545**	**739**	**466**	**273**	**Equation**

Multifamily Housing (Low-Rise)	Standard Deviation	1.31		0.12	0.16
	Number of Studies	29		42	50
	Average Size	168		199	187
	R^2	0.96		0.90	0.86

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	234.4	1000 SF GLA	37.75	50%	50%	0.94	62%	38%	3.81	48%	52%	8,849	4425	4424	220	136	84	893	429	464	Average
Shopping Center	820	234.4	1000 SF GLA	7.42	50%	50%	0.18	62%	38%	0.74	48%	52%	1,739	870	869	42	26	16	173	83	90	Minimum
Shopping Center	820	234.4	1000 SF GLA	207.98	50%	50%	23.74	62%	38%	18.69	48%	52%	48,751	24376	24375	5,565	3450	2115	4,381	2103	2278	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**	**234.4**	**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%**	**10,730**	**5,365**	**5,365**	**269**	**167**	**102**	**1,021**	**490**	**531**	**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

311 All Suites Hotel

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	
All Suites Hotel	**311**	**400**	**Rooms**	**4.46**	**50%**	**50%**	**0.34**	**53%**	**47%**	**0.36**	**48%**	**52%**	**1,784**	**892**	**892**	**136**	**72**	**64**	**144**	**69**	**75**	**Average**
All Suites Hotel	311	400	Rooms	3.11	50%	50%	0.13	53%	47%	0.22	48%	52%	1,244	622	622	52	28	24	88	42	46	Minimum
All Suites Hotel	311	400	Rooms	6.02	50%	50%	0.51	53%	47%	0.47	48%	52%	2,408	1,204	1,204	204	108	96	188	90	98	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	
All Suites Hotel	311	400	Rooms	T=5.20(X)-119.26	50%	50%	T=0.51(X)-29.37	53%	47%	T=0.45(X)-14.07	48%	52%	1,961	981	980	175	93	82	166	80	86	Equation

All Suites Hotel	Standard Deviation	0.92		0.13	0.08
	Number of Studies	6		8	9
	Average Size	162		177	171
	R^2	0.89		0.70	0.84

931 Quality Restaurant

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	
Quality Restaurant	**931**	**70.0**	**1000 SF GFA**	**83.84**	**50%**	**50%**	**0.73**	**55%**	**45%**	**7.8**	**67%**	**33%**	**5,869**	**2,935**	**2,934**	**51**	**28**	**23**	**546**	**366**	**180**	**Average**
Quality Restaurant	931	70.0	1000 SF GFA	33.45	50%	50%	0.25	55%	45%	2.62	67%	33%	2,342	1171	1171	18	10	8	183	123	60	Minimum
Quality Restaurant	931	70.0	1000 SF GFA	139.93	50%	50%	1.6	55%	45%	18.68	67%	33%	9,795	4,898	4,897	112	62	50	1,308	876	432	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	
Quality Restaurant	931	70.0	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	N/A	N/A	N/A	N/A	N/A	N/A	Equation

Quality Restaurant	Standard Deviation	40.01		0.42	4.49
	Number of Studies	10		7	19
	Average Size	9		10	9
	R^2	N/A		N/A	N/A

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	1,534	1000 SF GFA	9.74	50%	50%	1.16	86%	14%	1.15	16%	84%	14,941	7,471	7,470	1,779	1530	249	1,764	282	1482	Average
General Office Building	710	1534	1000 SF GFA	2.71	50%	50%	0.37	86%	14%	0.47	16%	84%	4,157	2079	2078	568	488	80	721	115	606	Minimum
General Office Building	710	1534	1000 SF GFA	27.56	50%	50%	4.23	86%	14%	3.23	16%	84%	42,277	21,139	21,138	6,489	5,581	908	4,955	793	4162	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**	**1534**	**1000 SF GFA**	**Ln(T)=0.97Ln(X)+2.50**	**50%**	**50%**	**T=.94(X)+26.49**	**86%**	**14%**	**Ln(T)=0.95Ln(X)+0.36**	**16%**	**84%**	**14,996**	**7,498**	**7,498**	**1,468**	**1,262**	**206**	**1,524**	**244**	**1,280**	**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

One Scottsdale Planning Unit II
2016 Transportation Impact & Mitigation Analysis
DMB Associates, Inc.

Pass-by Calculations

	Land Use	Square Feet	Dwelling Units/Rooms	BEFORE REDUCTION AM PEAK HR			After Internal Capture BEFORE REDUCTION AM PEAK HR			PASS-BY	After Pass-By AM REDUCED				BEFORE REDUCTION PM PEAK HR			After Internal Capture BEFORE REDUCTION PM PEAK HR			PASS-BY	After Pass-By PM REDUCED		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL		ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	Rate %	ENTER	EXIT	TOTAL
1	Multifamily Housing (Low-Rise)		1,710	163	545	708	159	523	682		159	523	682		466	273	739	277	154	431		277	154	431
2	Shopping Center	234,400		167	102	269	99	56	155		99	56	155		490	531	1,021	318	264	582	34%	210	174	384
3	All Suites Hotel		400	72	64	136	71	17	88		71	17	88		69	75	144	36	47	83		36	47	83
4	Quality Restaurant	70		28	23	51	1	11	12		1	11	12		366	180	546	184	56	240	44%	103	31	134
5	General Office Building	1,534		1,262	206	1,468	1,176	147	1,323		1,176	147	1,323		244	1,280	1,524	217	1,215	1,432		217	1,215	1,432
	TOTAL			1,692	940	2,632	1,506	754	2,260		1,506	754	2,260		1,635	2,339	3,974	1,032	1,736	2,768		843	1,621	2,464
							89%	*80%*	*86%*		*89%*	*80%*	*86%*					*63%*	*74%*	*70%*		*52%*	*69%*	*62%*

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

*Internal Capture calculated on NCHRP_RPT_684 spreadsheet

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,534	1000 SF GLA	1468	1262	206
Retail	820	234.400	1000 SF GLA	269	167	102
Restaurant	931	70.000	1000 SF GLA	51	28	23
Cinema/Entertainment				0		
Residential	220	1,710	Units	708	163	545
Hotel	311	400	Rooms	136	72	64
All Other Land Uses[2]				0		
Total				2632	1692	940

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		53	6	0	0	0
Retail	30		13	0	3	0
Restaurant	7	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	11	5	6	0		0
Hotel	38	7	2	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	2,632	1,692	940
Internal Capture Percentage	14%	11%	20%
External Vehicle-Trips[3]	2,260	1,506	754
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	7%	29%
Retail	41%	45%
Restaurant	96%	52%
Cinema/Entertainment	N/A	N/A
Residential	2%	4%
Hotel	1%	73%

[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:	One Scottsdale Planning Unit II
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	1262	1262	1.00	206	206
Retail	1.00	167	167	1.00	102	102
Restaurant	1.00	28	28	1.00	23	23
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	163	163	1.00	545	545
Hotel	1.00	72	72	1.00	64	64

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		58	130	0	2	0
Retail	30		13	0	14	0
Restaurant	7	3		0	1	1
Cinema/Entertainment	0	0	0		0	0
Residential	11	5	109	0		0
Hotel	48	9	6	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		53	6	0	0	0
Retail	50		14	0	3	0
Restaurant	177	13		0	8	3
Cinema/Entertainment	0	0	0		0	0
Residential	38	28	6	0		0
Hotel	38	7	2	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	86	1176	1262	1176	0	0
Retail	68	99	167	99	0	0
Restaurant	27	1	28	1	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	4	159	163	159	0	0
Hotel	1	71	72	71	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	59	147	206	147	0	0
Retail	46	56	102	56	0	0
Restaurant	12	11	23	11	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	22	523	545	523	0	0
Hotel	47	17	64	17	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:	One Scottsdale Planning Unit II	**Organization:**	Lokahi
Project Location:	City of Scottsdale	**Performed By:**	KS
Scenario Description:		**Date:**	6/14/2021
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	1,534	1000 SF GLA	1524	244	1280
Retail	820	234.400	1000 SF GLA	1021	490	531
Restaurant	931	70.000	1000 SF GLA	546	366	180
Cinema/Entertainment				0		
Residential	220	1,710	Units	739	466	273
Hotel	311	400	Rooms	144	69	75
All Other Land Uses[2]				0		
Total				3974	1635	2339

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		39	7	0	19	0
Retail	11		106	0	138	12
Restaurant	5	74		0	32	13
Cinema/Entertainment	0	0	0		0	0
Residential	11	49	51	0		8
Hotel	0	10	18	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	3,974	1,635	2,339
Internal Capture Percentage	30%	37%	26%
External Vehicle-Trips[3]	2,768	1,032	1,736
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	11%	5%
Retail	35%	50%
Restaurant	50%	69%
Cinema/Entertainment	N/A	N/A
Residential	41%	44%
Hotel	48%	37%

[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:	One Scottsdale Planning Unit II
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	244	244	1.00	1280	1280
Retail	1.00	490	490	1.00	531	531
Restaurant	1.00	366	366	1.00	180	180
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	466	466	1.00	273	273
Hotel	1.00	69	69	1.00	75	75

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		256	51	0	26	0
Retail	11		154	21	138	27
Restaurant	5	74		14	32	13
Cinema/Entertainment	0	0	0		0	0
Residential	11	115	57	0		8
Hotel	0	12	51	0	2	

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		39	7	0	19	0
Retail	76		106	0	214	12
Restaurant	73	245		0	75	49
Cinema/Entertainment	15	20	11		19	1
Residential	139	49	51	0		8
Hotel	0	10	18	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	27	217	244	217	0	0
Retail	172	318	490	318	0	0
Restaurant	182	184	366	184	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	189	277	466	277	0	0
Hotel	33	36	69	36	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	65	1215	1280	1215	0	0
Retail	267	264	531	264	0	0
Restaurant	124	56	180	56	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	119	154	273	154	0	0
Hotel	28	47	75	47	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.