

Exterior Building Color & Material Samples

Color Drawdowns

Archaeological Resources

Airport Vicinity Development Checklist

Parking Study

Trip Generation Comparison

Parking Master Plan

La Via

The Village for Innovation and Art

Traffic Impact and Mitigation Analysis



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1. Introduction to Summary

1.1. Purpose of Report and Study Objectives

J2 Engineering and Environmental Design was retained by JDM Partners LLC, to complete a Traffic Impact and Mitigation Analysis for the proposed La Via development located on the northeast corner of Scottsdale Road and Tierra Buena Lane, in Scottsdale, Arizona. The objective of this Traffic Impact and Mitigation Analysis is to analyze the traffic related impacts of the proposed development to the adjacent roadway network. See **Figure 1** for vicinity map.

The proposed mixed-use development will include office, retail, restaurants, a grocery store, multi-family residential, a hotel and spa, and a theater. See **Figure 2** for the preliminary proposed land uses.

1.2. Executive Summary

This report presents the analyses and the results of a traffic study prepared for the proposed La Via Development, located on an approximately 28-acre parcel on the northeast corner of Scottsdale Road and Tierra Buena Lane. The proposed development is bound by Paradise Lane to the north, Dial Boulevard to the east, Tierra Buena Lane to the south and Scottsdale Road to the west.

The proposed development will be comprised of the following land uses:

- | | |
|-----------------------|--------------------|
| • 700,000 square feet | Office |
| • 60,000 square feet | Retail/Restaurants |
| • 40,000 square feet | Grocery |
| • 10,000 square feet | Theater |
| • 650 units | Apartments |
| • 188 units | Condominiums |
| • 180 rooms | Hotel |

This Traffic Impact and Mitigation Analysis includes:

- Level of service (LOS) analysis of existing conditions for the AM and PM peak hours
- Crash analysis for sixteen (16) intersections
- Trip generation calculations and comparisons
- LOS analysis of year 2022 no build and build conditions for the AM and PM peak hours
- LOS analysis of year 2027 no build and build conditions for the AM and PM peak hours

Collision History

The most recent 3-year collision history (June 2014 – June 2017) was obtained from the City of Scottsdale for the thirteen (13) existing intersections and driveways.



- Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1)
- Scottsdale Road and Paradise Lane (2)
- Scottsdale Road and Tierra Buena Lane (3)
- Scottsdale Road and Kierland Boulevard/Greenway Hayden Loop (4)
- Scottsdale Road and Greenway Parkway/Butherus Drive (5)
- Dial Boulevard and Paradise Lane (6)
- Dial Boulevard and Monte Cristo Avenue (7)
- Dial Boulevard and Tierra Buena Lane (8)
- Kierland Boulevard/Greenway Hayden Loop and Dial Boulevard (9)
- 76th Street and Frank Lloyd Wright Boulevard (10)
- 76th Street and Paradise Lane (11)
- Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)
- Greenway Hayden Loop and Paradise Lane (13)

There were 266 collisions reported at the studied intersections listed above. 149 collisions were reported along Scottsdale Road, 89 collisions were reported along Greenway Hayden Loop, 2 collisions were reported along Dial Boulevard, and 26 collisions were reported along 76th Street. The intersection of Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard had the highest number of collisions 63.

The one fatal collision that occurred at the intersection of 76th Street and Frank Lloyd Wright Boulevard (10) on October 6th 2014, at 6:20 am and involved two (2) vehicles. A motorcycle traveling eastbound along Frank Lloyd Wright Boulevard was traveling at a speed too fast for conditions and struck a SUV making a westbound left off Frank Lloyd Wright Boulevard.

The one fatal collision that occurred at the intersection of Greenway Hayden Loop and Paradise Lane (13) on March 3, 2015, at 4:00 pm and involved three (3) vehicles. A motorcycle traveling eastbound along Paradise Lane failed to yield the right-of-way and was struck by a northbound vehicle traveling along Greenway Hayden Loop at a speed listed “too fast for conditions”.

The segment of Scottsdale Road from Paradise Lane to Frank Lloyd Wright Boulevard had a collision rate of 2.59, highest of all study roadway segments, which ranked 59th in the City. The intersection of Greenway Hayden Loop and Frank Lloyd Wright Boulevard had a 0.83 collision rate, highest of all study intersections, which ranked 53rd in the City.

No unusual collision patterns were identified among the reported collisions.

Existing Conditions

The AM and PM peak hour existing conditions capacity analysis were completed for the sixteen (16) existing intersections and driveways. Eight (8) of the sixteen (16) intersections currently operate with AM and/or PM peak hour movements LOS E or F.



- Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) – Signalized
- Scottsdale Road and Paradise Lane (2) – Signalized
- Scottsdale Road and Tierra Buena Lane (3) – Two-Way Stop Controlled
- Scottsdale Road and Kierland Boulevard/Greenway Hayden Loop (4) - Signalized
- Scottsdale Road and Greenway Parkway/Butherus Drive (5) – Signalized
- Frank Lloyd Wright Boulevard and 76th Street (10) - Signalized
- Frank Lloyd Wright Boulevard and Greenway Hayden Loop (12) – Signalized
- Greenway Hayden Loop and Paradise Lane (13) – Two-Way Stop Controlled

Trip Generation

The trip generations for the existing CrackerJax site, the current C-4 zoning, as well as the proposed La Via development were calculated.

Trip Generation – Existing Use (CrackerJax)

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multipurpose Recreational Facility	435	27.94	Acres	2,525	54	38	16	161	56	105

The existing CrackerJax site generates 2,525 weekday daily trips, with 54 trips during the AM peak hour, and 161 trips during the PM peak hour.

Trip Generation – Current C-4 Zoning

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Automobile Sales	841	27.70	1000 SF GLA	895	53	40	13	73	29	44
Automobile Care Center	942	44.72	1000 SF GLA	1,061	101	66	34	139	67	72
Furniture Store	890	130.37	1000 SF GLA	660	22	15	7	59	28	31
Free-Standing Super Store	733	208.77	1000 SF GLA	10,595	386	216	170	908	445	463
Free-Standing Super Store	733	151.91	1000 SF GLA	7,709	281	157	124	661	324	337
General Light Industrial	110	395	1000 SF GLA	2,753	363	320	44	383	46	337
Total				23,673	1,207	815	392	2,222	939	1,284

The existing C-4 zoning generates 23,673 weekday daily trips, with 1,207 trips during the AM peak hour, and 2,222 during the PM peak hour.



Trip Generation – Proposed Use (La Via)

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
General Office Building	710	700	1000 SF GLA	5,761	908	799	109	862	147	715
Shopping Center	820	70	1000 SF GLA	5,386	125	78	47	472	227	245
Supermarket	850	40	1000 SF GLA	4,090	136	84	52	379	193	186
Apartment	220	650	Dwelling Units	4,063	322	64	258	375	244	131
Condominiums/Townhouse	230	188	Dwelling Units	1,114	86	15	71	101	68	33
Hotel	310	180	Rooms	1,471	95	56	39	108	55	53
Total				21,885	1,672	1,096	576	2,297	934	1,363
Internal Capture and Pass-By Reductions					-87	-56	-31	-583	-302	-281
New Trips Generated				21,885	1,585	1,040	545	1,714	632	1,082

The proposed La Via development is anticipated to generate 21,885 weekday daily trips, with 1,585 during the AM peak hour, and 1,714 trips during the PM peak hour.

Trip Generation – C-4 vs. Proposed

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
	Total	Total	In	Out	Total	In	Out
Proposed Mix (C-4 Zoning)	23,673	1,207	815	392	2,222	939	1,284
Proposed Use (La Via)	21,885	1,585	1,040	545	1,714	632	1,082
Difference	-1,788	378	225	153	-508	-307	-202

The proposed La Via development is anticipated to generate significantly less daily trips in comparison to a potential C-4 zoned development.



Year 2022

In 5-years, it is anticipated that the western portion of the La Via development would be built out. This includes the following:

- | | |
|-----------------------|--------------------|
| • 700,000 square feet | Office |
| • 34,200 square feet | Retail/Restaurants |
| • 40,000 square feet | Grocery |
| • 10,000 square feet | Theater |
| • 107 units | Condominiums |
| • 180 units | Hotel |

According to the City of Scottsdale's Demographic Summary, it is estimated that in the year 2040, the population of the City will be approximately 296,300. The City estimates that the 2016 population is 231,200. This results in an approximate annual growth rate of 1%, which is also the same growth rate used for the proposed One Scottsdale development, which is located less than 2 miles to the north of the proposed La Via development. Therefore, a 1% annual growth rate was applied to the existing adjusted and balanced traffic volumes through year 2022.

The trip distribution for the proposed La Via development was based on the distribution of the existing traffic and the trip assignment was generally based on proximity of the specific land use, origin and destination, as well as ease and probability of use.

Year 2022 No Build Improvements

For the following intersections, improvements are recommended based on the existing traffic volumes and capacity analysis, and therefore assumed to be in place prior to Year 2022:

76th Street and Frank Lloyd Wright Boulevard (10)

The south leg currently provides dual left turn lanes and a single right turn lane for the northbound movement. However, there are more right turning vehicles than left turning vehicles. Therefore, it is recommended for the middle lane to be converted from an exclusive left turn lane to a shared left-right turn lane to accommodate the higher number of right turning vehicles. The existing AM and PM peak hour northbound right turn movement currently operates at a LOS D and E, respectively.

Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)

The south leg currently provides a single right turn lane, which currently serves 311 and 489 vehicles during the AM and PM peak hours, respectively. During the PM peak hour the LOS for the northbound right turn lane movement is a LOS F. Therefore, it is recommended for an additional northbound right turn lane be constructed to provide dual northbound right turn lanes. Additionally, implementing a right turn overlap phase northbound, southbound, eastbound and westbound is also recommended. Currently, during the PM peak hour there are 48 eastbound, 489 northbound, 351 westbound, and 531 southbound right turning vehicles.



Year 2022 Build Improvements

The AM and PM peak hour year 2022 capacity analysis were completed for sixteen (16) existing intersections and driveways for the no build scenario, along with four (4) additional site driveways for the build scenario. The following are the recommended year 2022 improvements with the proposed 5-year build out of the La Via development:

Scottsdale Road and Paradise Lane (2) improvement to include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Scottsdale Road and Tierra Buena Lane (3) improvement to include installation of a traffic signal. Striping modifications to the west leg consist of installing signing and pavement marking to provide a dedicated left turn lane and a shared through-right turn lane. Improvements to the east leg include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Greenway Hayden Loop and Paradise Lane (13) improvement to include installation of a traffic signal or roundabout. For a traffic signal no change to the existing lane configuration necessary. For a roundabout, the improvement includes a two-lane roundabout with a single lane approach on the west and east legs, and two lane approaches on the north and south legs. **Table 14** and **Table 15** provide the level of service with the installation of a traffic signal or roundabout, respectively.

Tierra Buena Lane and Driveway A (14) improvement to include build out of the stop-controlled Driveway A. Striping modifications to the two-way left turn lane may be provided to provide an eastbound left turn lane. The east leg improvement consists of adding an exclusive right turn lane. It is recommended for the driveway to be wide enough to provide an exclusive southbound left turn lane, as well as a shared through-right turn lane.

Paradise Lane and Driveway D (17) improvement to include build out of the stop-controlled Driveway D providing full access to and from the site. It is recommended for the driveway to be wide enough to provide an exclusive northbound left turn lane, as well as a shared through-right turn lane. The west leg improvement will consist of adding an exclusive right turn lane. The south leg will may consist of modifying the two-way left turn lane to provide an exclusive left turn lane.

Paradise Lane and Driveway E (18) improvement to include build out of the stop-controlled egress only Driveway E. The south leg will consist of a shared left-right turn lane.

Paradise Lane and Driveway F (19) improvement to include build out of the ingress only Driveway F.

Scottsdale Road and Driveway G (20) improvement to include the build out of the stop-controlled Driveway G providing right-out access from the site.



Scottsdale Road and Driveway H (21) improvement to include the build out of the stop-controlled Driveway H providing right-in, right-out, and left-in access to and from the site. The south leg improvement consists of providing an exclusive right turn lane. It is recommended for the median along Scottsdale Road to be modified to provide an exclusive southbound left turn lane.

Scottsdale Road and Driveway I (22) improvement to include the build out of Driveway I providing right-in only access to the site. A dedicated right turn lane is recommended to be built out for the northbound approach.

The AM and PM peak hour capacity analyses revealed that all movements and the overall intersections under the 2022 build condition either operate at improved levels of service, operate at a LOS D or better, or are maintained at the no build LOS, with the exception of:

- **Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) – AM Peak Hour**
The proposed La Via development contributes to 6.38% of the traffic volumes at this intersection during the AM peak hour.
- **Scottsdale Road and Paradise Lane (2) – PM Peak Hour**
The proposed La Via development contributes to 14.93% of the traffic volumes at this intersection during the PM peak hour.

With the build out of the proposed La Via development along with the improvements listed above, the AM and PM peak hour capacity analyses reveal the following intersections with improved operations when compared to the 2022 no build condition:

- **Scottsdale Road and Tierra Buena Lane (3) – AM & PM Peak Hour**
Under the no build condition, during the PM peak hour, there are three movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of a traffic signal, and additional lanes on the east and west legs - this intersection operates with an overall LOS B during the AM and PM peak hours, and all movements operate at a LOS D or better.
- **Greenway Hayden Loop and Paradise Lane (13) – AM & PM Peak Hour**
Under the no build condition, during both the AM and PM peak hours, there are four movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of either a roundabout or a traffic signal - this intersection operates with an overall LOS B or C during the AM and PM peak hours, with all movements operating at a LOS D.

Exclusive Right Turn Lane

It is recommended for an exclusive right turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Paradise Lane and Driveway D (17) - Eastbound
- Scottsdale Road and Driveway H (21) - Northbound
- Scottsdale Road and Driveway I (22) – Northbound

For all four intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

Exclusive Left Turn Lane

It is recommended for an exclusive left turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Paradise Lane and Driveway D (17) - Westbound
- Scottsdale Road and Driveway H (21) - Southbound

For all three intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

Traffic Signal Warrant

The year 2022 traffic volumes with the build out of the proposed La Via development result in Traffic Signal Warrants 1, 2 and 3 being met for the intersections of Scottsdale Road and Tierra Buena Lane, and Greenway-Hayden Loop and Paradise Lane. Additionally, at the intersection of Scottsdale Road and Tierra Buena Lane, based on the most recent 3-year collision history, there have been eight (8) crashes that would be correctable with the installation of a traffic signal, and at the intersection of Greenway-Hayden Loop and Paradise Lane, based on the most recent 3-year collision history, there have been nine (9) crashes that would be correctable with the installation of a traffic signal. Therefore, it is recommended that a traffic signal be installed at the intersection of Scottsdale Road and Tierra Buena Lane, as well as at the intersection of Greenway-Hayden Loop and Paradise Lane in the year 2022 with the build out of the proposed La Via development.

Year 2027

The year 2027 analysis includes build out of the entire development. Using the same annual growth rate, and trip distribution patterns, the AM and PM peak hour year 2027 capacity analysis were completed for sixteen (16) existing intersections and driveways for the no build scenario, along with six (6) additional site driveways for the build scenario. The following are the recommended year 2027 improvements with the build out of the proposed La Via development:

Dial Boulevard and Monte Cristo Avenue (7) improvement to include build out of the full access stop-controlled site driveway forming the west leg of the intersection with Monte Cristo Avenue. It is recommended for the driveway to be wide enough to provide an exclusive eastbound left turn



lane, as well as a shared through-right turn lane. Striping modifications to the two-way left turn lane is recommended to provide a northbound left turn lane.

Dial Boulevard and Driveway B (15) improvement to include build out of the stop-controlled Driveway B providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

Dial Boulevard and Driveway C (16) improvement to include build out of the stop-controlled Driveway C providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

The AM and PM peak hour capacity analyses revealed that all movements and the overall intersection under the 2027 build condition either operate at improved levels of service, operate at a LOS D or better, or are maintained at the no build LOS, with the exception of:

- **Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) – AM & PM Peak Hour**
The proposed La Via development contributes to 7.51% of the traffic volumes at this intersection during the AM peak hour, and to 7.37% of the traffic volumes at this intersection during the PM peak hour.
- **Scottsdale Road and Paradise Lane (2) – PM Peak Hour**
The proposed La Via development contributes to 15.50% of the traffic volumes at this intersection during the PM peak hour.

With the build out of the proposed La Via development along with the improvements listed above, the AM and PM peak hour capacity analyses reveal the following intersections with improved operations when compared to the 2027 no build condition:

- **Scottsdale Road and Tierra Buena Lane (3) – AM & PM Peak Hour**
Under the no build condition, during the PM peak hour, there are three movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of a traffic signal, and additional lanes on the east and west legs - this intersection operates with an overall LOS B during the AM and PM peak hours, and all movements operate at a LOS D or better.
- **Greenway Hayden Loop and Paradise Lane (13) – AM & PM Peak Hour**
Under the no build condition, during both the AM and PM peak hours, there are four movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of either a roundabout or a traffic signal - this intersection operates with an overall LOS B or C during the AM and PM peak hours, with all movements operating at a LOS D.



Exclusive Left Turn Lane

It is recommended for an exclusive left turn lane be provided at the following intersection:

- Dial Boulevard and Driveway/Monte Cristo Avenue (7) - Northbound

Based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

2. Proposed Development

The study area is located in the City of Scottsdale, Arizona. The site is situated approximately two (2) miles south and two (2) miles west of State Route Loop 101 (SR 101L). State Route 51 (SR 51) is located approximately 4.5 miles to the west of the proposed development. See **Figure 1** for a vicinity map.

The proposed mixed-use development is situated on an approximately 28-acre parcel located on the northeast corner of Scottsdale Road and Tierra Buena Lane. The proposed development is bound by Paradise Lane to the north, Dial Boulevard to the east, Tierra Buena Lane to the south and Scottsdale Road to the west.

The proposed development will be comprised of the following land uses:

- | | |
|-----------------------|--------------------|
| • 700,000 square feet | Office |
| • 60,000 square feet | Retail/Restaurants |
| • 40,000 square feet | Grocery |
| • 10,000 square feet | Theater |
| • 650 units | Apartments |
| • 188 units | Condominiums |
| • 180 rooms | Hotel |

See **Figure 2** and **Appendix A** for the proposed site plan.

There are ten (10) proposed access points to the La Via development, one along Tierra Buena Lane, three (3) along Dial Boulevard, three (3) along Paradise Lane, and three (3) along Scottsdale Road.

Tierra Buena Lane and Driveway A (14) is located approximately 630 feet east of Scottsdale Road. This proposed driveway aligns with an existing private roadway to the south. This will be a full access driveway allowing all movements into and out of the site.

Dial Boulevard and Driveway B (15) is located approximately 380 feet north of Tierra Buena Lane. The proposed driveway will form a t-intersection and will be a full access driveway allowing all movements into and out of the site.

Dial Boulevard and Monte Cristo Avenue/Driveway (7) is located approximately 650 feet north of Tierra Buena Lane. This proposed driveway aligns with Monte Cristo Avenue to the east. This will be a full access driveway allowing all movements into and out of the site.

Dial Boulevard and Driveway C (16) is located approximately 360 feet south of Paradise Lane. The proposed driveway will form a t-intersection and will be a full access driveway allowing all movements into and out of the site.

Paradise Lane and Driveway D (17) is located approximately 580 feet east of Scottsdale Road. This proposed driveway aligns with an existing private driveway to the north. This will be a full access driveway allowing all movements into and out of the site.

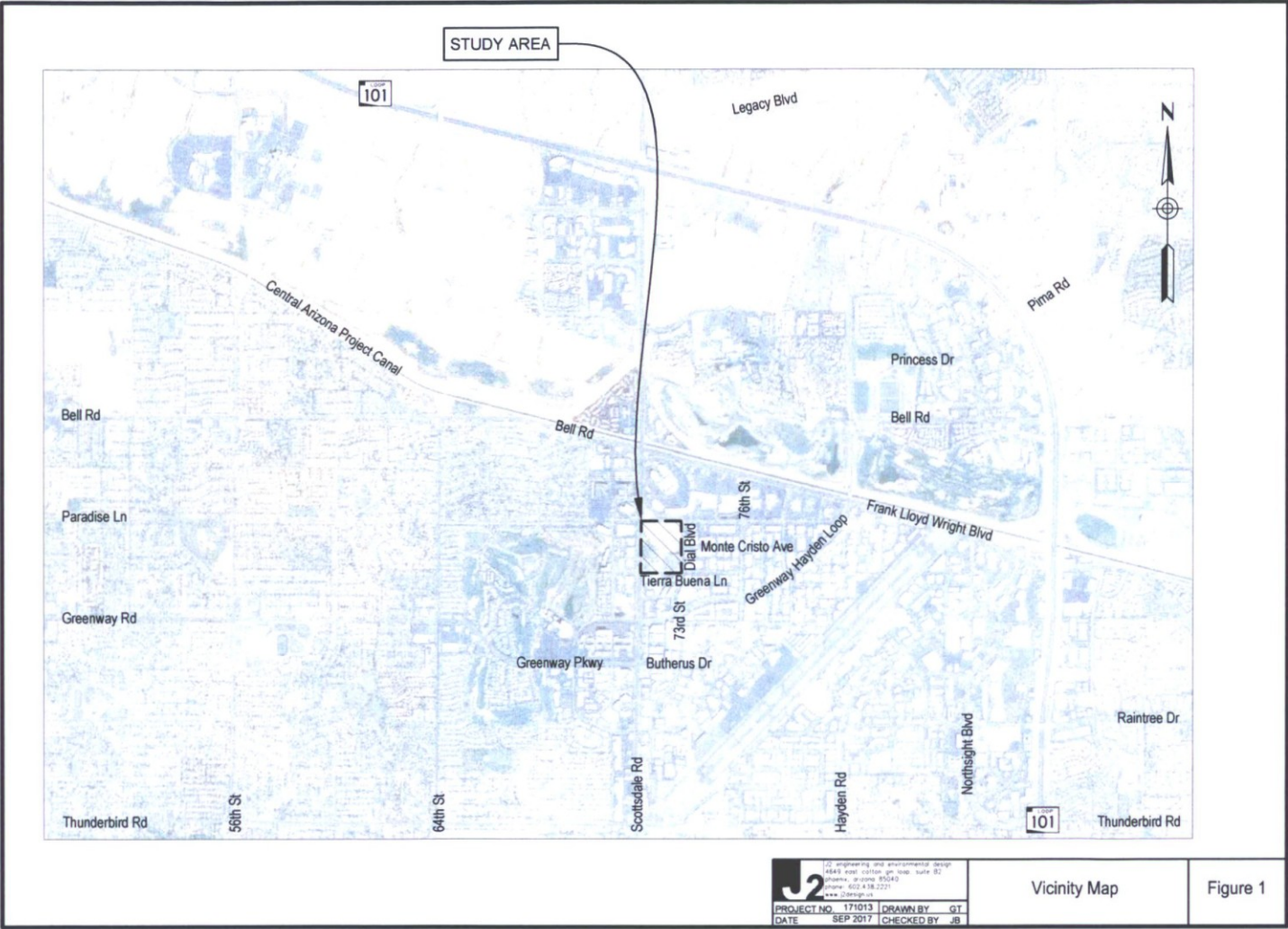
Paradise Lane and Driveway E (18) is located approximately 400 feet east of Scottsdale Road and is a circular driveway with Paradise Lane and Driveway F (19), which allows ingress only. This proposed Driveway E will be limited to egress only allowing left out and right out of the site only.

Paradise Lane and Driveway F (19) is located approximately 300 feet east of Scottsdale Road and is a circular driveway with Paradise Lane and Driveway E (18), which allows egress only. This proposed Driveway F will be limited to ingress only. Due to the existing raised median along Paradise Lane, right in is the only movement that will be allowed.

Scottsdale Road and Driveway G (20) is located approximately 300 feet south of Paradise Lane. Due to the existing raised median along Scottsdale Road, the driveway will be limited to right-out movements.

Scottsdale Road and Driveway H (21) is located approximately 650 feet south of Paradise Lane. This proposed driveway aligns with an existing private driveway to the west. This proposed driveway will be limited to right-in, right-out, and left-in movements, which mirrors the movements allowed for the driveway on the west side of Scottsdale Road. This will require an additional median break to be created along Scottsdale Road.

Scottsdale Road and Driveway I (22) is located approximately 180 feet north of Tierra Buena Lane. Due to the existing raised median along Scottsdale Road, the driveway will be limited to right-in only.





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Site Plan

Figure 2

3. Area Conditions

The proposed development is located on the northeast corner of Scottsdale Road and Tierra Buena Lane in the City of Scottsdale, Arizona.

3.1. Study Area

Sections 3.1 and 3.2 provide detailed descriptions of the study roadway segments and intersections. See **Figure 3** for the proposed study area.

3.1.1. Study Roadway Segments

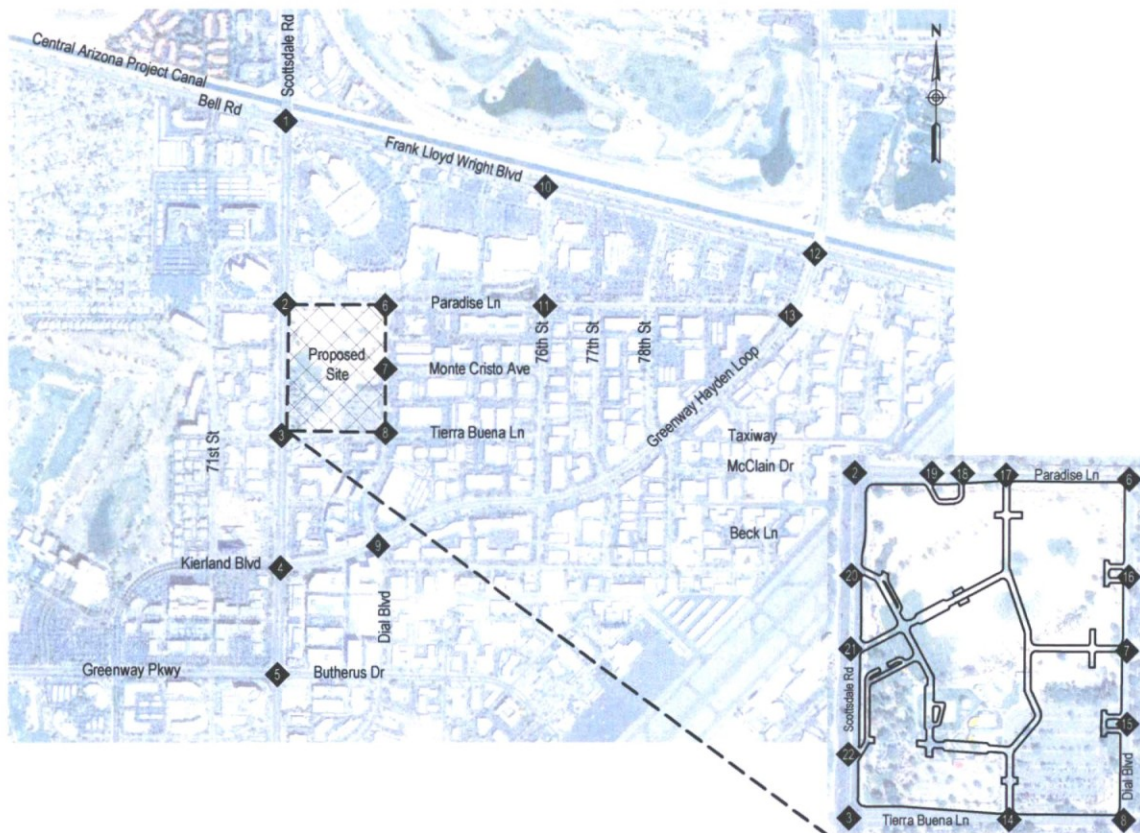
Scottsdale Road runs north-south adjacent to the proposed development and provides three (3) through lanes for each direction of travel with a raised landscaped median. There is a posted speed limit of 45 miles per hour (mph). The City of Scottsdale classifies Scottsdale Road as a major arterial according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016. The City of Scottsdale's 2014 *Average Daily Segment Traffic Volumes* map indicates that 34,100 vehicles per day were recorded along Scottsdale Road between Greenway Hayden Loop and Paradise Lane.

Dial Boulevard runs north-south adjacent to the proposed development and provides one (1) through lane for each direction of travel with a two-way left turn lane. There is a posted speed limit of 30 mph. The City of Scottsdale classifies Dial Boulevard as a minor collector according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016.

76th Street runs north-south in the vicinity of the proposed development and provides one (1) through lane for each direction of travel with a two-way left turn lane. There is a posted speed limit of 30 mph. The City of Scottsdale classifies 76th Street as a minor collector according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016. 76th Street terminates north at Frank Lloyd Wright Boulevard south at Greenway Road.

Frank Lloyd Wright Boulevard, generally runs east-west in the vicinity of the proposed development, and provides three (3) through lanes for each direction of travel with a raised landscaped median. Frank Lloyd Wright Boulevard continues west of Scottsdale Road as Bell Road. There is a posted speed limit of 45 mph. The City of Scottsdale classifies Frank Lloyd Wright Boulevard as a major arterial according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016. The City of Scottsdale's 2014 *Average Daily Segment Traffic Volumes* map indicates that 34,100 vehicles per day were recorded along Frank Lloyd Wright Boulevard between Scottsdale Road and Greenway Hayden Loop.






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Study Area

Figure 3

Paradise Lane runs east west adjacent to the proposed development and provides one (1) through lane for each direction of travel with a two-way left turn lane. There is a posted speed limit of 35 mph. The City of Scottsdale classifies Paradise lane as a minor collector according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016. Paradise Lane terminates to the west approximately 700 feet west at 71st Street and terminates to the east approximately 300 feet east of Greenway Hayden Loop.

Monte Cristo Avenue runs east-west in the vicinity of the proposed development and provides one (1) through lane for each direction of travel. There is an unposted speed limit of 25 mph. Monte Cristo Avenue is approximately 1/3 mile long roadway between Dial Boulevard and 76th Street.

Tierra Buena Lane runs east-west adjacent to the proposed development and provides one (1) through lane for each direction of travel with a two-way left turn lane. There is a posted speed limit of 30 mph. Tierra Buena Lane is approximately 2/3 mile long segment between 71st Street and 76th Street.

Greenway Hayden Loop, generally runs east-west and provides three (3) through lanes for each direction of travel with a raised median west of Dial Boulevard, it provides two (2) through lanes for each direction of travel east of Dial Boulevard. Greenway Hayden Loop is known as Kierland Boulevard west of Scottsdale Road. There is a posted speed limit of 40 mph. The City of Scottsdale classifies Greenway Hayden Loop as a minor arterial according to the *City of Scottsdale Master Transportation Plan*, adopted on July 5, 2016. The City of Scottsdale's 2014 *Average Daily Segment Traffic Volumes* map indicates that 15,200 vehicles per day were recorded along Greenway Hayden Loop between Scottsdale Road and Frank Lloyd Wright Boulevard.

Butherus Drive runs east-west in the vicinity of the proposed development and provides two (2) through lanes for each direction with a raised median east of Scottsdale Road. Butherus Drive continues west of Scottsdale Road as Greenway Parkway and provides three (3) lanes for each direction with a raised median. There is a posted speed limit of 35 mph east and 45 mph west of Scottsdale Road, respectively. The City of Scottsdale classifies Butherus Drive as a minor arterial according to the City of Scottsdale Master Transportation Plan, adopted on July 5, 2016. Butherus Drive terminates at the Scottsdale Municipal Airport approximately ½ mile east of Scottsdale Road.

3.1.2. Study Intersections

Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) currently operates as a signalized intersection. The northbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The southbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) shared through-right turn lane. The eastbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The westbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane.



Scottsdale Road and Paradise Lane (2) currently operates as a signalized intersection. The northbound approach provides one (1) dedicated left turn lane, three (3) through lanes, and one (1) dedicated right turn lane. The southbound approach provides one (1) dedicated left turn lane, three (3) through lanes, and one (1) dedicated right turn lane. The eastbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The westbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane.

Scottsdale Road and Tierra Buena Lane (3) currently operates as a two-way stop controlled intersection, with stop control on the eastbound and westbound approaches. The northbound approach provides one (1) dedicated left turn lane, three (3) through lanes, and one (1) dedicated right turn lane. The southbound approach provides one (1) dedicated left turn lane, three (3) through lanes, and one (1) dedicated right turn lane. The eastbound approach currently has no pavement markings with 50 feet of pavement and has sufficient width for one (1) left lane and one (1) shared through-right turn lane along the eastbound approach. The westbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane.

Scottsdale Road and Kierland Boulevard/Greenway Hayden Loop (4) currently operates as a signalized intersection. The northbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The southbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The eastbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) dedicated-right turn lane. The westbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) shared through-right turn lane.

Scottsdale Road and Greenway Parkway/Butherus Drive (5) currently operates as a signalized intersection. The northbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) channelized right turn lane. The southbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The eastbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) dedicated right turn lane. The westbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) dedicated right turn lane.

Dial Boulevard and Paradise Lane (6) is a T-intersection that currently operates as a one-way stop controlled intersection, with stop control on the northbound approach. The northbound approach provides one (1) dedicated left turn lane, and one (1) dedicated right turn lane. The eastbound approach provides one (1) shared through-right turn lane. The westbound approach provides a two-way left turn lane and one (1) through lane.

Dial Boulevard and Monte Cristo Avenue (7) is a T-intersection that currently operates as a one-way stop controlled intersection, with stop control on the westbound approach. The northbound approach provides one (1) shared through-right turn lane. The southbound approach provides a



two-way left turn lane and one (1) through lane. The westbound approach provides one (1) dedicated left turn lane and one (1) dedicated right turn lane.

Dial Boulevard and Tierra Buena Lane (8) currently operates as a four-way stop controlled intersection. The northbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The southbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The eastbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The westbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane.

Dial Boulevard/73rd Street and Greenway Hayden Loop (9) currently operates as a signalized intersection. The northbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The southbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The eastbound approach provides one (1) dedicated left turn lane, two (2) through lanes, and one (1) shared through-right turn lane. The westbound approach provides one (1) dedicated left turn lane, two (2) through lanes, and one (1) dedicated right turn lane.

76th Street and Frank Lloyd Wright Boulevard (10) is a T-intersection that currently operates as a signalized intersection. The northbound approach provides two (2) dedicated left turn lanes, and one (1) dedicated right turn lane. The eastbound approach provides three (3) through lanes, and one (1) dedicated right turn lane. The westbound approach provides one (1) dedicated left turn lane, and three (3) through lanes.

76th Street and Paradise Lane (11) currently operates as a four-way stop controlled intersection. The northbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The southbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The eastbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane. The westbound approach provides one (1) dedicated left turn lane, and one (1) shared through-right turn lane.

Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12) currently operates as a signalized intersection. The northbound approach provides one (1) dedicated left turn lane, two (2) through lanes, and one (1) dedicated right turn lane. The southbound approach provides two (2) dedicated left turn lanes, two (2) through lanes, and one (1) dedicated right turn lane. The eastbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane. The westbound approach provides two (2) dedicated left turn lanes, three (3) through lanes, and one (1) dedicated right turn lane.

Greenway Hayden Loop and Paradise Lane (13) currently operates as a two-way stop controlled intersection, with stop control on the eastbound and westbound approaches. The northbound approach provides one (1) dedicated left turn lane, two (2) through lanes, and one (1) dedicated right turn lane. The southbound approach provides one (1) dedicated left turn lane, two (2) through lanes, and one (1) dedicated right turn lane. The eastbound approach provides one (1)



dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane. The westbound approach provides one (1) dedicated left turn lane, one (1) through lane, and one (1) dedicated right turn lane.

Tierra Buena Lane and Driveway A (14) will be a full access two-way stop controlled intersection, with stop control on the northbound (existing driveway) and southbound approaches.

Dial Boulevard and Driveway B (15) will be a full access one-way stop controlled T-intersection, with stop control on the eastbound direction.

Dial Boulevard and Driveway C (16) will be a full access one-way stop controlled T-intersection, with stop control on the eastbound approach.

Paradise Lane and Driveway D (17) will be a full access two-way stop controlled intersection, with stop control on the northbound and southbound (existing driveway) approaches.

Paradise Lane and Driveway E (18) will be a circular driveway with Paradise Lane and Driveway F (19), which allows egress only. This proposed Driveway E will be designated one-way stop controlled T-intersection with stop control on the northbound approach allowing left and right turns out of the driveway.

Paradise Lane and Driveway F (19) will be a circular driveway with Paradise Lane and Driveway E (18), which allows ingress only. This proposed Driveway F will be designated for eastbound right turns into the driveway only.

Scottsdale Road and Driveway G (20) will be a one-way stop controlled T-intersection, with stop control on the westbound approach. The driveway will be limited to right-out movements only.

Scottsdale Road and Driveway H (21) will be a two-way stop controlled intersection, with stop control on the westbound (existing driveway) and eastbound approaches. The proposed driveway will be limited to right-in, right-out, and left-in movements, which mirrors the movements allowed for the driveway on the west side of Scottsdale Road.

Scottsdale Road and Driveway I (22) will be designated for ingress only and due to the existing raised median along Scottsdale Road will be limited to right-in only.

3.2. Study Area Land Use

The surrounding area includes a mix of residential, office, hotel, restaurant, retail, and airport land uses. Scottsdale Quarter and Kierland Commons mixed-use developments are located approximately 1/4 mile to the south and include residential, office, retail, movie theater and restaurant land uses. La Via development is located approximately 1/2 mile southwest of The Westin Kierland Resort and Spa, approximately 1/2 mile southeast of the Scottsdale Municipal Airport, and approximately 1 mile northeast of TPC Scottsdale Golf Course. Retail land uses are



located immediately to the west, east and north (Promenade Shopping Center) of the proposed development. A gas station with a car wash and a hotel are located immediately to the south.

3.3. Site Accessibility

3.3.1. Roadway System

The study area is located in the City of Scottsdale, Arizona approximately two (2) miles south and two (2) miles west of SR 101L. Scottsdale's street network is generally built as a one-mile grid system and within the near vicinity of the proposed site, there is a well-developed roadway network. Although the roadways within the study area somewhat deviate from the grid, north-south and east-west arterial roadway connections are maintained and provide a convenient access to SR 101L freeway interchanges.

3.3.2. Bicycle Facilities and Shared-Use Paths

According to the *Scottsdale Master Transportation Plan*, dated July 2016 there are no existing bicycle facilities and shared-use paths adjacent to the proposed La Via development. There are existing bike lanes on Scottsdale Road and Greenway Hayden Loop north of Frank Lloyd Wright Boulevard. Additionally, according to *Maricopa Association of Governments Regional Bike Map*, Paradise Lane and 73rd Street are identified as bike routes.

The *Scottsdale Master Transportation Plan* identifies 76th Street from Frank Lloyd Wright Boulevard to Greenway Hayden Loop, and Dial Boulevard from Paradise Lane to Thunderbird Road as a high priority future shared-use path.

3.3.3. Trails

According to the *Scottsdale Master Transportation Plan*, dated July 2016 there are no trails in the near vicinity of the proposed La Via development. The *Scottsdale Master Transportation Plan* identifies the Central Arizona Project Canal, which runs parallel to Frank Lloyd Wright Boulevard, as a medium priority future unpaved trail.

3.3.4. Transit Facilities

The City of Phoenix operates Route 170, which runs along Bell Road/Frank Lloyd Wright Boulevard. Within the segment of Frank Lloyd Wright between Scottsdale Road and Greenway Hayden Loop Route 170 provides two (2) sheltered bus stops in the westbound direction and three (3) stops in eastbound direction, of which two (2) are sheltered. This transit service typically runs from 4:00 am to 1:00 am on weekdays and 5:00 am to 12:00 am on weekends.

Valley Metro operates Route 72, which runs along Scottsdale Road adjacent to the proposed development. Within the segment of Scottsdale Road between Frank Lloyd Wright Boulevard and Greenway Parkway/Butherus Drive Route 72 provides four (4) sheltered bus stops in the southbound direction and four (4) stops in the northbound direction, of which three (3) are sheltered. This transit service typically runs from 5:00 am to 1:00 am on weekdays and 5:00 am to 12:30 am on weekends.



The closest to the site northbound bus stop is located on Scottsdale Road approximately 240 feet north of Tierra Buena Lane, while the closest southbound bus stop is located on Scottsdale Road approximately 175 feet south of Paradise Lane.

A Park and Ride lot is located on the southeast corner of Scottsdale Road and Thunderbird Road, which is approximately 1 ¼ mile south of the proposed development.

According to the *Scottsdale Master Transportation Plan*, dated July 2016, a future Airpark Trolley Route will be provided to serve the airpark area. Three (3) separate routes will provide access to the neighborhoods in the immediate vicinity of the Scottsdale Municipal Airport. The Airpark Trolley will run north-south along Dial Boulevard between Paradise Lane and the existing Thunderbird Road Park and Ride facility.

3.4. Collision History

3.4.1. Crash Data

The most recent 3-year collision history (June 2014 – June 2017) was obtained from the City of Scottsdale. See **Appendix B** for detailed crash data. The crash data included the following thirteen (13) intersections:

- Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1)
- Scottsdale Road and Paradise Lane (2)
- Scottsdale Road and Tierra Buena Lane (3)
- Scottsdale Road and Kierland Boulevard/Greenway Hayden Loop (4)
- Scottsdale Road and Greenway Parkway/Butherus Drive (5)
- Dial Boulevard and Paradise Lane (6)
- Dial Boulevard and Monte Cristo Avenue (7)
- Dial Boulevard and Tierra Buena Lane (8)
- Dial Boulevard and Greenway Hayden Loop (9)
- 76th Street and Frank Lloyd Wright Boulevard (10)
- 76th Street and Paradise Lane (11)
- Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)
- Greenway Hayden Loop and Paradise Lane (13)

Intersection collisions are collisions that occur at or within 100 feet of a major intersection. There were 266 collisions reported at the studied intersections listed above. 149 collisions were reported along Scottsdale Road, 89 collisions were reported along Greenway Hayden Loop, 2 collisions were reported along Dial Boulevard, and 26 collisions were reported along 76th Street. The intersection of Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard had the highest number of collisions 63.



Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1)

During the three-year period, there were 63 collisions, of which 47 resulted in no injury, 8 resulted in a possible injury, 6 resulted in a non-incapacitating injury, 1 resulted in an incapacitating injury, and 1 other was unknown. There were 43 rear ends, 8 sideswipe same direction, 7 angle, 2 head on, 2 single vehicle, and 1 left turn collision.

Scottsdale Road and Paradise Lane (2)

During the three-year period, there were 12 collisions, of which 9 resulted in no injury, 2 resulted in a non-incapacitating injury, and 1 resulted in a possible injury. There were 4 rear ends, 4 sideswipe same direction, 3 left turn, and 1 angle collision.

Scottsdale Road and Tierra Buena Lane (3)

During the three-year period, there were 11 collisions, of which 8 resulted in no injury, 1 resulted in an incapacitating injury, 1 resulted in a non-incapacitating injury, and 1 resulted in a possible injury. There were 4 angled collisions, 3 left turn, 2 sideswipes, and 2 single vehicle collisions.

Scottsdale Road and Kierland Boulevard/Greenway Hayden Loop (4)

During the three-year period, there were 35 collisions, of which 29 resulted in no injury, 5 resulted in a possible injury, and 1 resulted in a non-incapacitating injury. There were 18 rear ends, 8 angled collisions, 4 left turn, 2 sideswipe same direction, 1 head-on, 1 sideswipe opposite direction, and 1 other collision.

Scottsdale Road and Greenway Parkway/Butherus Drive (5)

During the three-year period, there were 28 collisions, of which 22 resulted in no injury, 3 resulted in a possible injuries, 2 resulted in a non-incapacitating injury, and 1 was not reported. There were a total of 19 rear ends, 4 angle collision, 3 sideswipe same direction, 1 left turn, and 1 other collision.

Dial Boulevard and Paradise Lane (6)

During the three-year period, there was 1 single vehicle collision that resulted in no injury.

Dial Boulevard and Monte Cristo Avenue (7)

During the three-year period, there was 1 left turn crash that resulted in no injury.

Dial Boulevard and Tierra Buena Lane (8)

During the three-year period, there were no reported accidents.

Kierland Boulevard/Greenway Hayden Loop and Dial Boulevard (9)

During the three-year period, there were 3 collisions, of which all 3 resulted in no injury. There was 1 angled collision, 1 sideswipe same direction, and 1 other collision.

76th Street and Frank Lloyd Wright Boulevard (10)

During the three-year period, there were 21 collisions, of which 10 resulted in no injury, 7 resulted in a possible injury, 2 resulted in unknown injuries, 1 resulted in a non-incapacitating injury, and 1



resulted in a fatal injury. There were a total of 13 rear ends, 3 left turns, 2 side swipe same direction, 2 angle, and 1 single vehicle.

The one fatal collision that occurred at the intersection of 76th Street and Frank Lloyd Wright Boulevard (10) on October 6th 2014, at 6:20 am and involved two (2) vehicles. A motorcycle traveling eastbound along Frank Lloyd Wright Boulevard was traveling at a speed too fast for conditions and struck a SUV making a westbound left off Frank Lloyd Wright Boulevard.

76th Street and Paradise Lane (11)

During the three-year period, there were 5 collisions, of which 3 resulted in no injury, 1 resulted in a possible injury, and 1 resulted in a non-incapacitating injury. There were a total of 2 angled collisions, 1 single vehicle, 1 left turn, and 1 rear end.

Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)

During the three-year period, there were 72 collisions, of which 56 resulted in no injury, 9 resulted in a possible injury, 5 resulted in a non-incapacitating injury, 1 resulted in an incapacitating injury, and 1 resulted in an unknown injury. There were a total of 50 rear ends, 10 sideswipe same direction, 8 angled collisions, 1 single vehicle, 1 left turn, 1 rear-to-side, and 1 other collision.

Greenway Hayden Loop and Paradise Lane (13)

During the three-year period, there were 14 collisions, of which 10 resulted in no injury, 1 resulted in a non-incapacitating injury, 1 resulted in an incapacitating injury, 1 resulted in an unknown injury, and 1 resulted in a fatal injury. There were a total of 5 angled collisions, 4 left turn, 2 rear ends, 2 sideswipe same direction, and 1 head-on collision.

The one fatal collision that occurred at the intersection of Greenway Hayden Loop and Paradise Lane (13) on March 3, 2015, at 4:00 pm and involved three (3) vehicles. A motorcycle traveling eastbound along Paradise Lane failed to yield the right-of-way and was struck by a northbound vehicle traveling along Greenway Hayden Loop at a speed listed “too fast for conditions”.

No unusual collision patterns were identified among intersection related collisions.

3.4.2. Collision Rates

The City of Scottsdale’s *2014 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. 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 citywide rankings for the study roadway segments and intersections, respectively, are shown in **Table 1** and **Table 2**.



Table 1 – Collision Rates - Study Roadway Segments

Segment	From	To	Collision Rate	Rank
Scottsdale Road	Paradise Lane	Frank Lloyd Wright Boulevard	2.59	59
Scottsdale Road	Butherus Drive	Greenway Hayden Loop	1.92	82
Frank Lloyd Wright Boulevard	Scottsdale Road	Greenway Hayden Loop	1.53	103
Scottsdale Road	Greenway Hayden Loop	Paradise Lane	0.48	211
2014 City of Scottsdale Average Segment Collision Rate			1.35	

Table 2 – Collision Rates - Study Intersections

Intersection	Collision Rate	Rank
Greenway Hayden Loop and Frank Lloyd Wright Boulevard	0.82	53
Scottsdale Road and Frank Lloyd Wright Boulevard	0.73	69
Scottsdale Road and Greenway Hayden Loop	0.66	84
Scottsdale Road and Greenway Parkway/Butherus Drive	0.25	159
2014 City of Scottsdale Average Intersection Collision Rate	0.57	



4. Existing Conditions

4.1. Existing Land Use

The existing site is currently occupied by CrackerJax amusement park development located at 16001 N. Scottsdale Road. Some of the park amenities include mini-golf, go-karts, volleyball, arcade games, laser tag, bumper boats, and batting cages. The park is open 7 days a week from 10:00 am every day to 10:00 pm Sundays through Thursdays, and until midnight on Fridays and Saturdays.

According to the Maricopa County Assessor's website, the site is currently comprised of 2 parcels consisting of approximately 1,217,197 square feet (27.94 acres). The existing parcels are zoned for C-4 land uses. See **Appendix C** for parcel information.

4.2. Existing Traffic Counts

A local data collection firm, Traffic Research & Analysis, Inc. was utilized to collect traffic counts. On Tuesday, April 4, 2017, and Thursday, April 6, 2017, turning movement counts were obtained from 7:00 to 9:00 am and from 4:00 to 6:00 pm at the following locations:

- Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1)
- Scottsdale Road and Paradise Lane (2)
- Scottsdale Road and Tierra Buena Lane (3)
- Scottsdale Road and Greenway Hayden Loop/Kierland Boulevard (4)
- Scottsdale Road and Greenway Parkway (5)
- Dial Boulevard and Paradise Lane (6)
- Dial Boulevard and Monte Cristo Avenue (7)
- Dial Boulevard and Tierra Buena Lane (8)
- Dial Boulevard/73rd Street and Greenway Hayden Loop (9)
- Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)
- Greenway Hayden Loop and Paradise Lane (13)

On Tuesday, August 22, 2017, and Thursday, August 24, 2017, additional turning movement counts were obtained from 7:00 to 9:00 am and from 4:00 to 6:00 pm at the following locations:

- 76th Street and Frank Lloyd Wright Boulevard (10)
- 76th Street and Paradise Lane (11)
- Tierra Buena Lane and Cracker Jax Entrance (14)
- Paradise Lane and Scottsdale Promenade Driveway (17)
- Scottsdale Road and Median Break Driveway (21)

Additionally, bi-directional tube counts were collected on Monday, April 4, 2017, Tuesday, April 4, 2017 and Thursday, April 6, 2017, for 24-hours in 15-minute intervals at the following locations:



- Scottsdale Road, north of Paradise Lane
- Scottsdale Road, south of Tierra Buena Lane
- Paradise Lane, east of Scottsdale Road
- Tierra Buena Lane, east of Scottsdale Road
- Dial Boulevard, south of Paradise Lane

Additional, bi-directional tube counts were collected on Tuesday, August 22, 2017, for 24-hours in 15-minute intervals at the following locations:

- Paradise Lane, west of Greenway Hayden Loop
- Paradise Lane, east of Greenway Hayden Loop
- Greenway Hayden Loop, south of Paradise Lane
- Greenway Hayden Loop, north of Paradise Lane
- Tierra Buena Lane, west of Scottsdale Road
- Tierra Buena Lane, east of Scottsdale Road
- Scottsdale Road, south of Tierra Buena Lane
- Scottsdale Road, north of Tierra Buena Lane

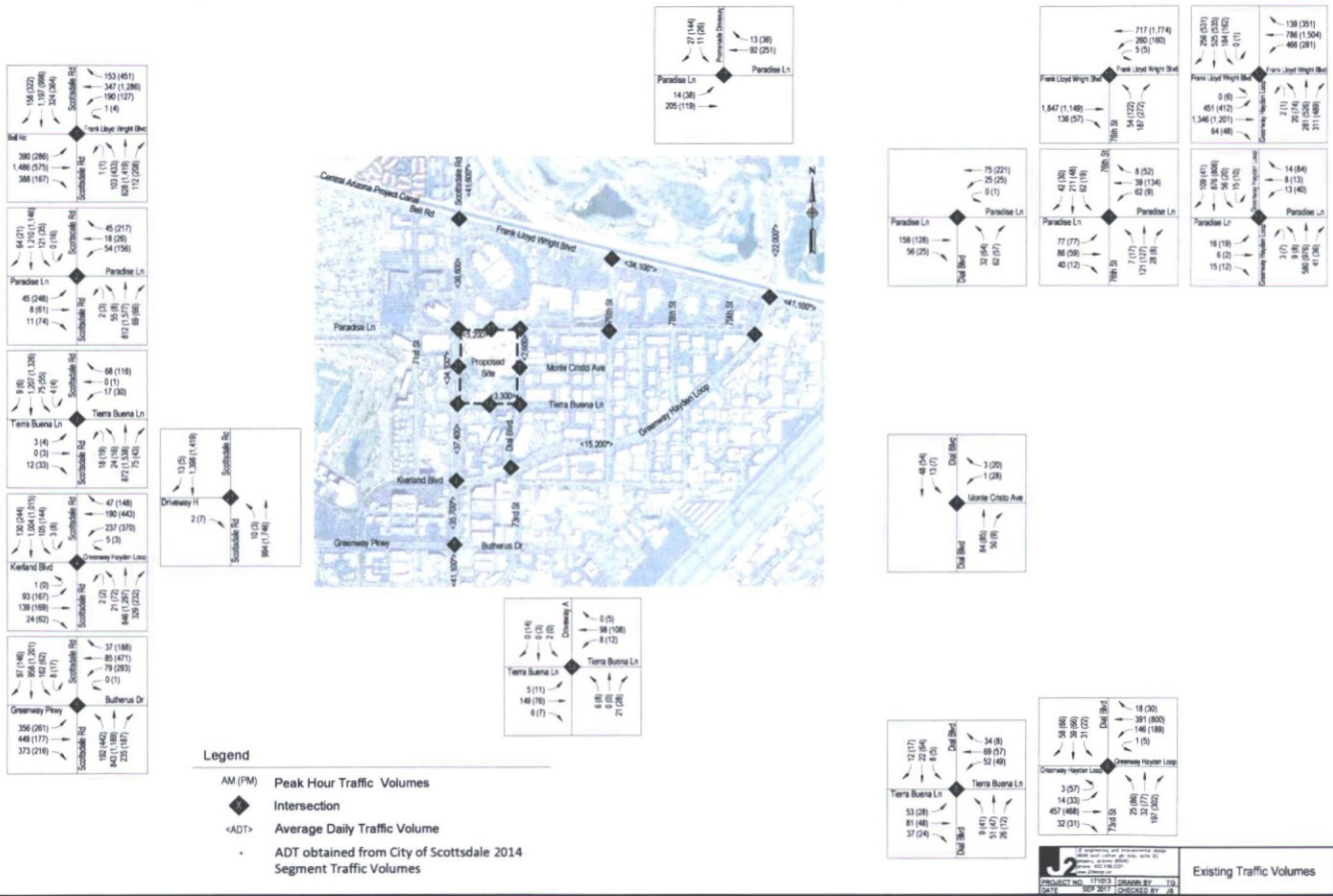
See **Appendix D** for detailed traffic count data.

The turning movement counts were then analyzed for the highest 1-hour within each time period. The following peak hours were analyzed throughout this study.

- AM Peak Hour 7:45 am – 8:45 am
- PM Peak Hour 4:30 pm – 5:30 pm

The City of Scottsdale seasonal adjustment factors were used to adjust the traffic counts. The traffic volumes were adjusted based on the month the counts were taken. See **Figure 4** for the existing adjusted AM and PM peak hour traffic volumes.





Existing Traffic Volumes Figure 4

4.3. Existing Capacity Analysis

The existing conditions capacity analysis was completed for the sixteen (16) existing study intersections listed in Section 4.1. The capacity and level of service for the study area intersections were evaluated using the methodology presented in the *2010 Highway Capacity Manual*. Traffic analysis software, Synchro Version 9.0, was used to perform the analyses using the existing Peak Hour Factor (PHF) from the traffic counts, and the existing signal timing provided by the City of Scottsdale. See **Appendix E** for the existing signal timing.

Table 3 is from the *2010 Highway Capacity Manual* Exhibit 19-1, which lists the Level of Service (LOS) thresholds for two-way stop-controlled intersections. **Table 4** is from the *2010 Highway Capacity Manual* Exhibit 18-4, which lists the LOS thresholds for signalized intersections.

Table 3 – LOS Criteria for Unsignalized Intersections

LOS	Control Delay (s/veh)
A	0 - 10
B	> 10–15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Table 4 – LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10-20
C	> 20-35
D	> 35-55
E	> 55-80
F	> 80

The existing AM and PM peak hour level of service and delay for the unsignalized and signalized intersections are shown in **Table 5** and **Table 6** respectively.

See **Figure 5** for the existing AM and PM peak hour capacity analysis. The detailed capacity analysis sheets can be found in **Appendix F**.



Table 5 – Existing Level of Service and Delay for Unsignalized Intersections

Intersection	Existing Conditions			
	AM PEAK		PM PEAK	
Unsignalized Intersections	LOS	DELAY	LOS	DELAY
Scottsdale Road and Tierra Buena Lane (3)				
Eastbound Shared Left-Through-Right	B	13.3	E	42.5
Westbound Left	C	16.8	F	71.7
Westbound Through	A	0	F	262.4
Westbound Right	B	10.6	B	13.1
Northbound Left	A	9.6	A	9.9
Southbound Left	A	9.4	B	10.5
Dial Boulevard and Paradise Lane (6)				
Westbound Left	A	7.8	A	7.7
Northbound Left	B	10.6	B	12.3
Northbound Right	A	9.5	A	9.3
Dial Boulevard and Monte Cristo Avenue (7)				
Westbound Left	A	9.9	A	9.8
Westbound Right	A	9.1	A	8.9
Southbound Left	A	7.6	A	7.5
Dial Boulevard and Tierra Buena Lane (8)				
Eastbound Left	A	9.5	A	8.9
Eastbound Shared Through-Right	A	9.7	A	8.6
Westbound Left	A	9.5	A	9.2
Westbound Shared Through-Right	A	9.4	A	8.7
Northbound Left	A	9.3	A	9.2
Northbound Shared Through-Right	A	9.7	A	8.6
Southbound Left	A	9.4	A	8.7
Southbound Shared Through-Right	A	9	A	8.9
76th Street and Paradise Lane (11)				
Eastbound Left	B	13.2	B	10.1
Eastbound Shared Through-Right	B	14.1	A	9.2
Westbound Left	B	13.1	A	9
Westbound Shared Through-Right	B	11.5	B	11.0
Northbound Left	B	10.6	A	9.3
Northbound Shared Through-Right	C	15.4	B	10.6
Southbound Left	B	11.7	A	9.5
Southbound Shared Through-Right	C	24.7	A	9.4
Greenway Hayden Loop and Paradise Lane (13)				
Eastbound Left	F	66.9	F	128.5
Eastbound Through	F	57.5	F	80.3
Eastbound Right	B	11.9	B	11.6
Westbound Left	E	46.4	F	148.6
Westbound Through	F	59.2	F	103.6
Westbound Right	B	10.4	B	14.1
Northbound Left	B	10.1	A	9.8
Southbound Left	A	9.1	B	10.9
Tierra Buena Lane and Driveway A (14)				
Eastbound Left	A	7.4	A	7.5
Westbound Left	A	7.6	A	7.4
Northbound Shared Left-Through-Right	A	9.5	A	9.3
Southbound Shared Left-Through-Right	B	10.7	A	9.3
Paradise Lane and Promenade Driveway (17)				
Eastbound Left	A	7.5	A	8
Southbound Left	A	9.5	B	11.8
Scottsdale Road and Driveway H (21)				
Eastbound Right	C	16.3	C	18.9
Northbound Left	C	20.5	C	24.9



Table 6 – Existing Level of Service and Delay for Signalized Intersections

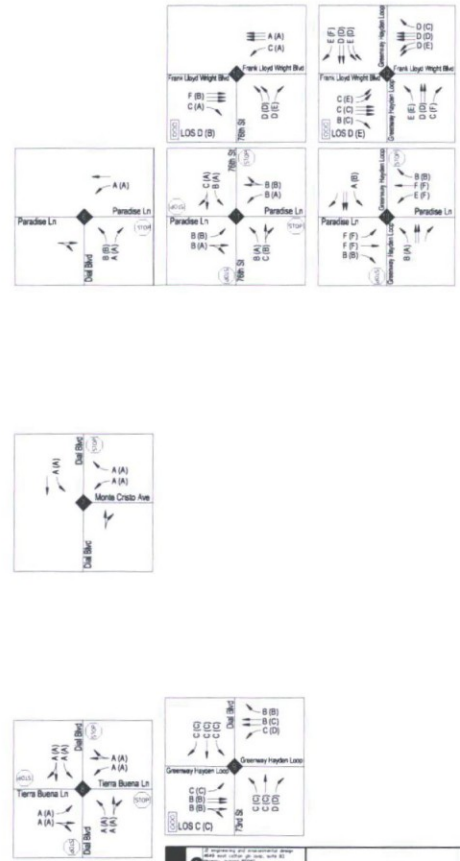
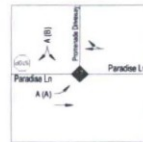
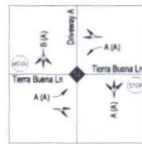
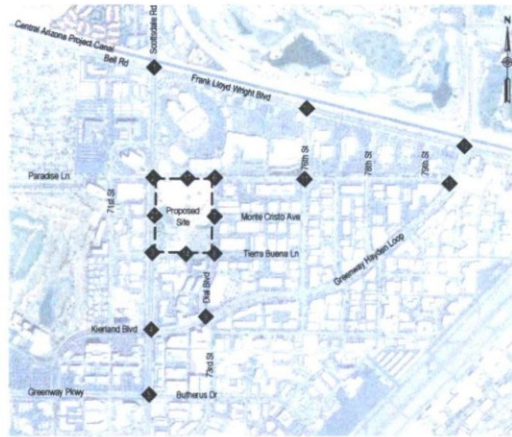
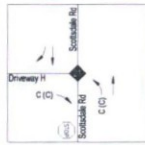
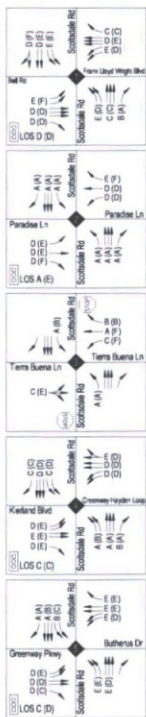
Intersection	Existing Conditions			
	AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY
Scottsdale Road and Frank Lloyd Wright Boulevard (1)				
Overall Intersection	D	45.7	D	50.8
Eastbound Left	E	56.8	F	87.8
Eastbound Through	D	54.3	D	51.1
Eastbound Right	D	45.7	D	51.8
Westbound Left	E	69.1	D	37.3
Westbound Through	D	35.3	E	55.9
Westbound Right	C	25.9	C	34.5
Northbound Left	E	75.6	D	45.3
Northbound Through	C	21.7	C	29.6
Northbound Right	B	12.6	A	6.6
Southbound Left	E	67.1	E	65.3
Southbound Through	D	39.6	E	68.0
Southbound Right	D	44.0	F	80.7
Scottsdale Road and Paradise Lane (2)				
Overall Intersection	A	4.5	E	61.1
Eastbound Left	D	52.7	E	72.9
Eastbound Through	D	53.7	E	63.8
Eastbound Right	D	54	F	117.6
Westbound Left	D	52.3	D	49.8
Westbound Through	D	54.2	D	54.1
Westbound Right	E	57.4	F	829.8
Northbound Left	A	4.6	A	7.9
Northbound Through	A	0.4	A	1.4
Northbound Right	A	0.2	A	0.2
Southbound Left	A	4.9	A	9.8
Southbound Through	A	0.4	A	0.3
Southbound Right	A	0.1	A	0
Scottsdale Road and Greenway Hayden Loop/ Kierland Boulevard (4)				
Overall Intersection	C	30.9	C	29.5
Eastbound Left	D	52.5	E	56.8
Eastbound Through	E	56.8	E	56
Eastbound Right	D	54.2	E	55.8
Westbound Left	D	54.8	D	52
Westbound Through	D	55	D	49.5
Westbound Shared Through-Right	E	56.7	D	53
Northbound Left	A	6.3	B	12.2
Northbound Through	A	7.5	A	0.5
Northbound Right	B	10.1	A	0.7
Southbound Left	C	24.3	D	38.3
Southbound Through	D	41.3	D	42.1
Southbound Right	C	28.4	C	28.5



Table 6 – Existing Level of Service and Delay for Signalized Intersections – Continued

Intersection	Existing Conditions			
	AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY
Scottsdale Road and Greenway Parkway/Butherus Drive (5)				
Overall Intersection	C	34	D	40.2
Eastbound Left	D	39	E	60.9
Eastbound Through	D	38	D	45.5
Eastbound Right	D	39.5	C	34.2
Westbound Left	E	58.7	D	54.4
Westbound Through	E	55.2	E	58.7
Westbound Right	E	55.9	E	57
Northbound Left	E	57.7	E	63.2
Northbound Through	E	55.2	D	49.5
Northbound Right	A	0.0	A	0
Southbound Left	B	18	C	21.2
Southbound Through	A	6.2	B	10.7
Southbound Right	A	0.6	A	2.4
Dial Boulevard/73rd St and Greenway Hayden Loop (9)				
Overall Intersection	C	23.5	C	28.3
Eastbound Left	C	25.5	C	32.2
Eastbound Through	B	17.6	B	17.7
Eastbound Right	B	18.1	B	18.1
Westbound Left	C	28.1	D	46.4
Westbound Through	B	18.1	C	22.8
Westbound Right	B	15.6	B	15.8
Northbound Left	C	31.5	C	29
Northbound Through	C	29.9	C	25.8
Northbound Right	D	38.5	D	49.9
Southbound Left	C	31.6	C	27.7
Southbound Through	C	30.1	C	25.6
Southbound Right	C	30.7	C	25.8
76th Street and Frank Lloyd Wright Boulevard (10)				
Overall Intersection	D	53.9	B	15.7
Eastbound Through	F	78.8	B	11.5
Eastbound Right	C	26.1	A	9
Westbound Left	C	30.4	A	8.9
Westbound Through	A	4.3	A	8.2
Northbound Left	D	44	D	40.4
Northbound Right	D	54.1	E	76.3
Frank Lloyd Wright Boulevard and Greenway Hayden Loop (12)				
Overall Intersection	D	39.8	E	58.6
Eastbound Left	C	25.1	E	56.7
Eastbound Through	C	26.7	C	26.4
Eastbound Right	B	13.2	C	21.5
Westbound Left	D	52.5	E	56.9
Westbound Through	D	49.5	D	37.3
Westbound Right	D	44.6	C	34.3
Northbound Left	E	57.3	E	55.7
Northbound Through	D	45.6	D	43.9
Northbound Right	C	20.3	F	66.3
Southbound Left	E	65.9	D	53.8
Southbound Through	D	49.4	D	42.5
Southbound Right	E	62.2	F	239.7





Legend
 AM (PM) Peak Hour Capacity Analysis
 Intersection
 Lane Configuration

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Existing Capacity Analysis Figure 5

5. Projected Traffic

5.1. Trip Generation

TRIP GENERATION (EXISTING DEVELOPMENT)

The trip generation for the existing multipurpose recreational development was calculated using the Institute of Transportation Engineers (ITE) publication *Trip Generation, 9th Edition*. The ITE rates are based on studies that measured 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.

According to the Maricopa County Assessor's website, the site is currently comprised of 2 parcels consisting of approximately 1,217,197 square feet (27.94 acres). The existing parcels are zoned for C-4 land uses. Utilizing the ITE Land Use 435 Multipurpose Recreational Facility, the total trip generation for the site was calculated and is shown in **Table 7** below. See **Appendix G** for detailed trip generation calculations.

ITE Land Use 435 - Multipurpose Recreational Facility

Multipurpose recreational facilities contain two or more of the following land uses combined at one site: miniature golf, batting cages, video arcade, bumper boats, go-carts, and golf driving ranges. Refreshments areas may also be provided.

Table 7 – Trip Generation – Existing CrackerJax Use

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Multipurpose Recreational Facility	435	27.94	Acres	2,525	54	38	16	161	56	105

TRIP GENERATION (CURRENT ZONING)

Currently the proposed site is comprised of two (2) parcels zoned for C-4 land uses with a maximum floor area ratio (FAR) of 0.8 for commercial uses. The following land uses were assumed for build out under the current C-4 zoning:

- 27,700 square feet Automobile Sales
- 44,720 square feet Automobile Care Center
- 130,370 square feet Furniture Store
- 208,770 square feet Free-Standing Store
- 151,910 square feet Free-Standing Store
- 395,000 square feet General Light Industrial

The assumptions above fall slightly below the 0.8 maximum FAR. The total trip generation for the existing C-4 zoning is shown in **Table 8** below. See **Appendix G** for detailed trip generation calculations.



Table 8 – Trip Generation - Current C-4 Zoning

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
Automobile Sales	841	27.70	1000 SF GLA	895	53	40	13	73	29	44
Automobile Care Center	942	44.72	1000 SF GLA	1,061	101	66	34	139	67	72
Furniture Store	890	130.37	1000 SF GLA	660	22	15	7	59	28	31
Free-Standing Super Store	733	208.77	1000 SF GLA	10,595	386	216	170	908	445	463
Free-Standing Super Store	733	151.91	1000 SF GLA	7,709	281	157	124	661	324	337
General Light Industrial	110	395	1000 SF GLA	2,753	363	320	44	383	46	337
Total				23,673	1,207	815	392	2,222	939	1,284

TRIP GENERATION (PROPOSED DEVELOPMENT)

The proposed La Via development include the following land uses:

- 700,000 square feet Office
- 60,000 square feet Retail/Restaurants
- 40,000 square feet Grocery
- 10,000 square feet Theater
- 650 units Apartments
- 188 units Condominiums
- 180 units Hotel

According to *The ITE Trip Generation Manual*, Land Use 820 – Shopping Center, typically includes trips generated by retail stores, movie theaters and restaurants, therefore trips generated by a 10,000 square feet theater and 60,000 square feet of retail/restaurants were calculated using Shopping Center Land Use.

Internal Capture

Given the mixed-use nature of the proposed development, which includes retail, office, restaurant, hotel and residential 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 Estimation of Mixed-Use Developments, the internal capture rates for trip origins and trip destinations within a multi-use development were applied for AM and PM hours. Additionally, daily internal capture rates for trip origins within a multi-use development were obtained from the *Trip Generation Handbook, 3rd Edition* and were applied to the daily traffic volumes.



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 traffic passing the site on an adjacent roadway that offers direct access to the generator. These trips are not considered new trips generated by the proposed site. Pass-by rates were applied to the AM and PM peak hours where available. These rates are based on data provided in the *Trip Generation Handbook, 3rd Edition*.

5.1.1. Year 2022 Trip Generation

The 5-year (Year 2022) trip generation includes the build out of the following land uses:

- 700,000 square feet Office
- 34,200 square feet Retail/Restaurants
- 40,000 square feet Grocery
- 10,000 square feet Theater
- 107 units Condominiums
- 180 units Hotel

Table 9 below shows the Year 2022 trip generation calculation, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Appendix G**.

Table 9 – Year 2022 Trip Generation

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
General Office Building	710	700	1000 SF GLA	5,761	908	799	109	862	147	715
Shopping Center	820	44.2	1000 SF GLA	3,994	95	59	36	347	167	180
Supermarket	850	40	1000 SF GLA	4,090	136	84	52	379	193	186
Condominiums/Townhouse	230	107	Dwelling Units	682	55	9	46	64	43	21
Hotel	310	180	Rooms	1,471	95	56	39	108	55	53
Total				15,998	1,289	1,007	282	1,760	605	1,155
Internal Capture and Pass-By Reductions					-68	-43	-25	-394	-189	-205
New Trips Generated				15,998	1,221	964	257	1,366	416	950



5.1.2. Year 2027 Trip Generation

The trip generation for the build out of the proposed La Via development includes the following land uses:

- 700,000 square feet Office
- 60,000 square feet Retail/Restaurants
- 40,000 square feet Grocery
- 10,000 square feet Theater
- 650 units Apartments
- 188 units Condominiums
- 180 units Hotel

Table 10 below shows the Year 2022 trip generation calculation, which incorporates both internal capture and pass-by trips. Detailed trip generation calculations can be found in **Appendix G**.

Table 10 – Build out Trip Generation

Land Use	ITE Code	Qty	Unit	Weekday	AM Peak Hour			PM Peak Hour		
				Total	Total	In	Out	Total	In	Out
General Office Building	710	700	1000 SF GLA	5,761	908	799	109	862	147	715
Shopping Center	820	70	1000 SF GLA	5,386	125	78	47	472	227	245
Supermarket	850	40	1000 SF GLA	4,090	136	84	52	379	193	186
Apartment	220	650	Dwelling Units	4,063	322	64	258	375	244	131
Condominiums/Townhouse	230	188	Dwelling Units	1,114	86	15	71	101	68	33
Hotel	310	180	Rooms	1,471	95	56	39	108	55	53
Total				21,885	1,672	1,096	576	2,297	934	1,363
Internal Capture and Pass-By Reductions					-87	-56	-31	-583	-302	-281
New Trips Generated				21,885	1,585	1,040	545	1,714	632	1,082

5.2. Trip Generation Comparison

A comparison between the trips generated by the existing C-4 zoning and the proposed La Via development is shown in **Table 11**.

Table 11 – Trip Generation Comparison (C-4 Zoning vs. Proposed)

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
	Total	Total	In	Out	Total	In	Out
Proposed Mix (C-4 Zoning)	23,673	1,207	815	392	2,222	939	1,284
Proposed Use (La Via)	21,885	1,585	1,040	545	1,714	632	1,082
Difference	-1,788	378	225	153	-508	-307	-202

The above comparison shows that the proposed mixed-use La Via development will produce significantly less trips in comparison to a potential C-4 zoned development. Only the AM peak hour trips to and from the proposed development could increase.

5.3. Trip Distribution and Assignment

The trip distribution procedure determines the general pattern of travel for vehicles entering and leaving the proposed development. The trip distribution for the existing CrackerJax site as well as the proposed La Via development is based on the distribution of the existing traffic. The site trip distribution is expected to remain the same for the five (5) and ten (10) year analyses. The site trip distribution percentages are shown in **Figure 6**.

The trip assignment was generally based on proximity of the specific land use, origin and destination, as well as ease and probability of use.

Existing CrackerJax site traffic volumes are shown in **Figure 7**.

Year 2022 site traffic volumes and pass-by traffic volumes are shown in **Figure 8** and **Figure 9**, respectively.

Year 2027 site traffic volumes and pass-by traffic volumes are shown in **Figure 10** and **Figure 11**, respectively.




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Trip Distribution

Figure 6

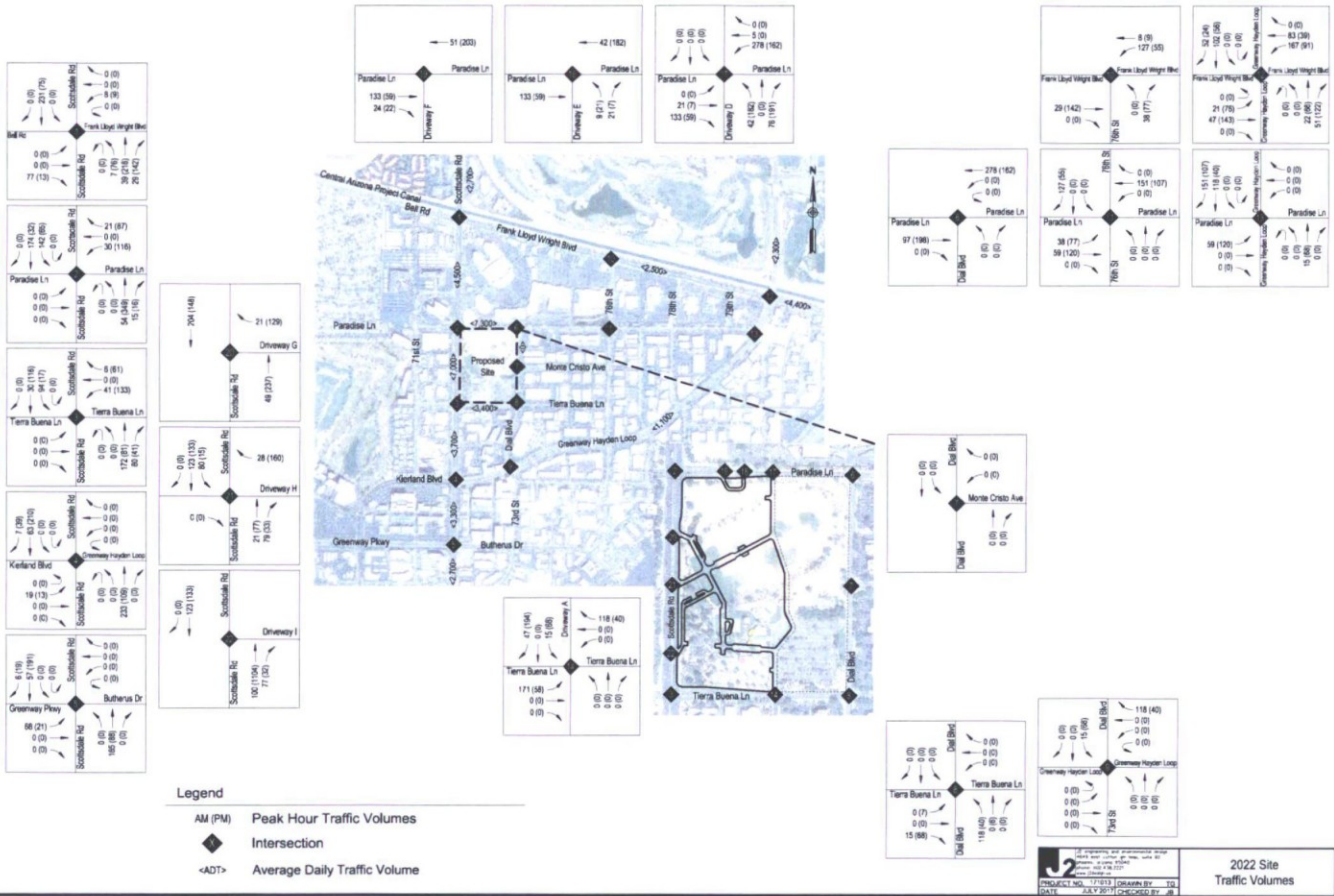
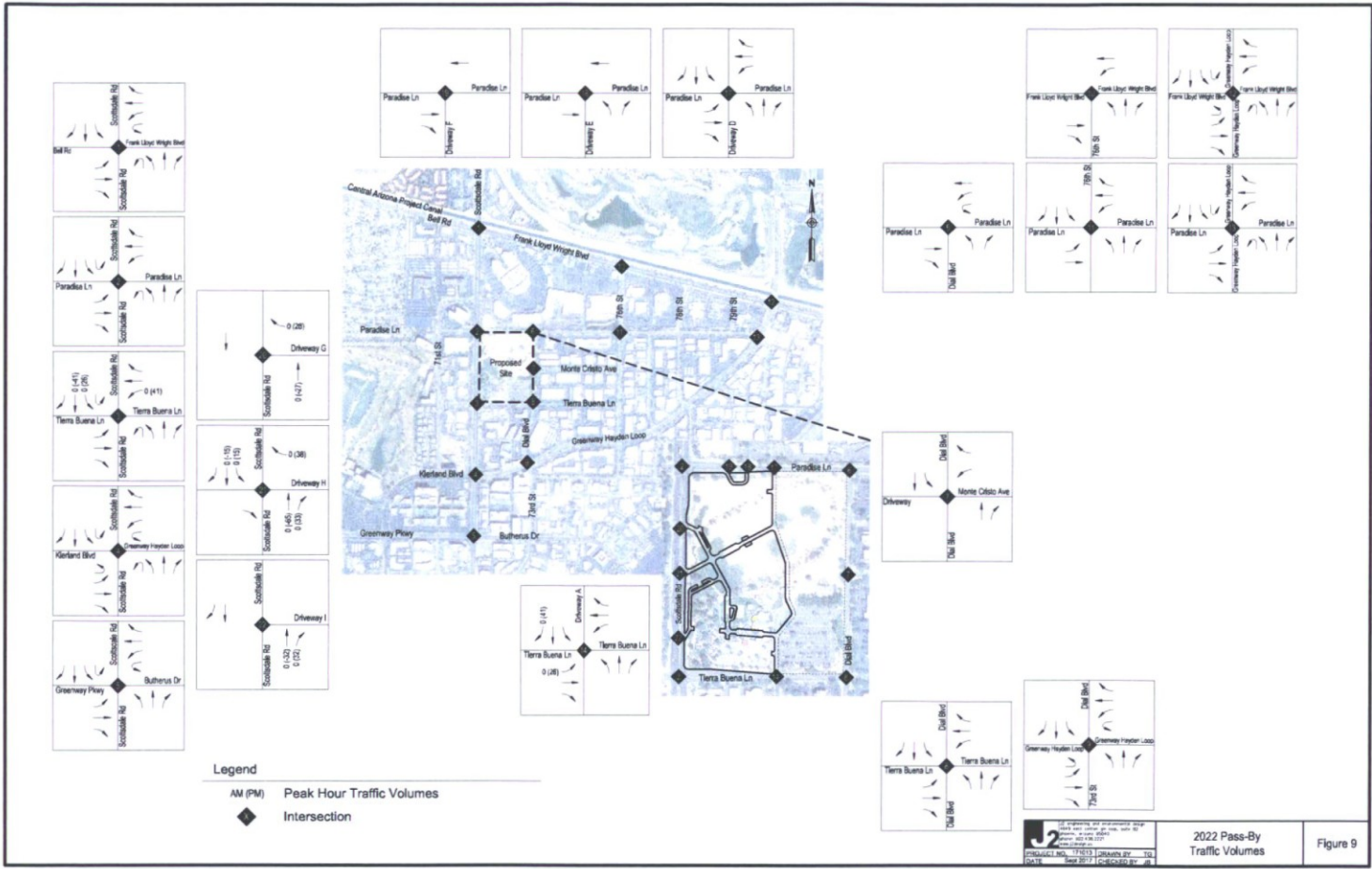
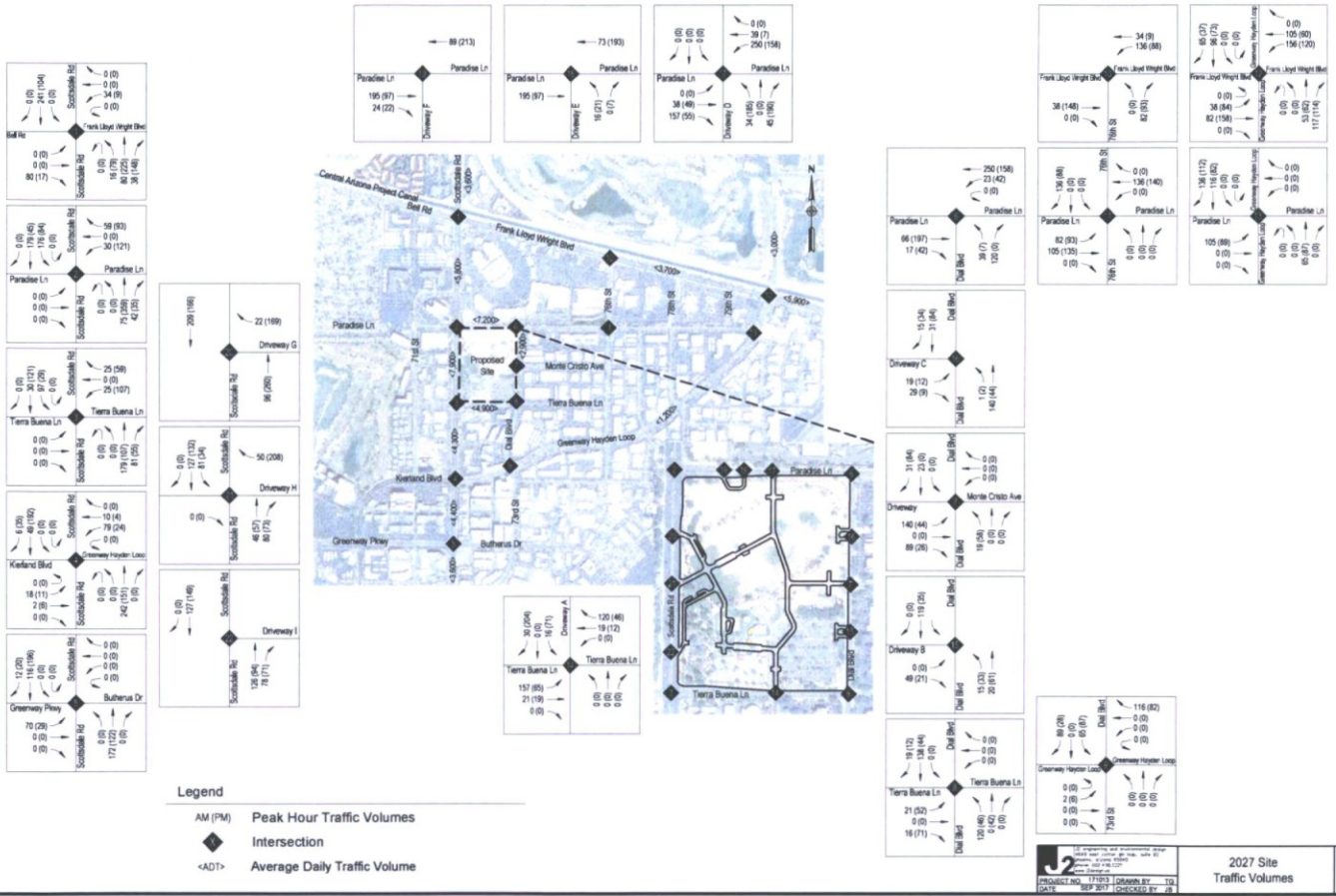
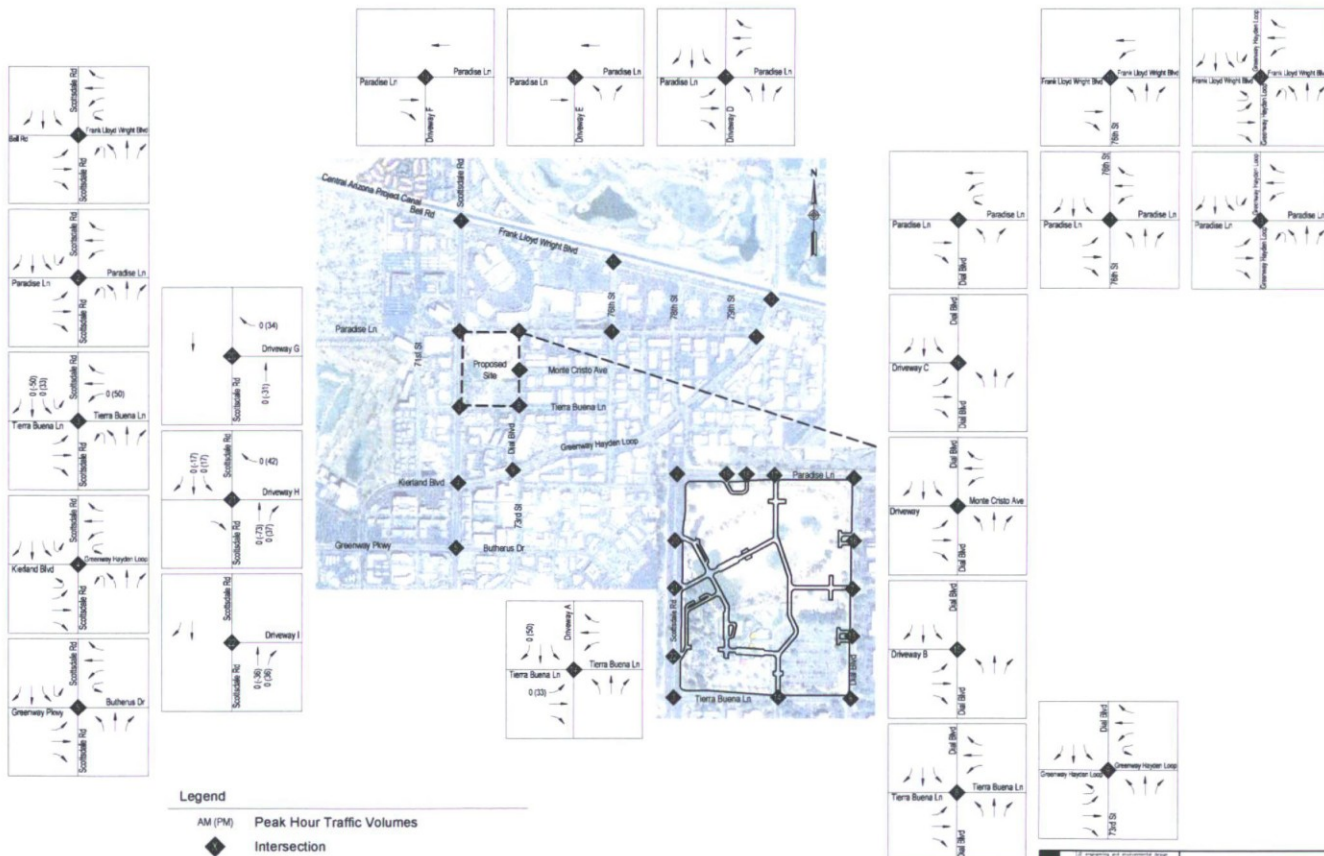


Figure 8







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2027 Pass-By
 Traffic Volumes

Figure 11

6. Year 2022 Future Conditions

The proposed La Via development is anticipated to be built out in year 2027 (10 year). Two future conditions analysis were completed, an interim year 2022 (5 year) analysis, and a full build year 2027 (10 year) analysis.

6.1. Year 2022 Background Growth

According to the City of Scottsdale's Demographic Summary, it is estimated that in the year 2040, the population of the City will be approximately 296,300. The City estimates that the 2016 population is 231,200. This results in an approximate annual growth rate of 1%, which is also the growth rate that used for the proposed One Scottsdale Traffic Impact & Mitigation Analysis, dated May 27, 2016. The proposed One Scottsdale development is located less than 2 miles to the north of the proposed La Via development.

6.2. Year 2022 Traffic Volumes

6.2.1. Year 2022 No Build Traffic Volumes

The 1% annual growth rate was applied to the existing traffic volumes through the year 2022. This represents the traffic volumes without the build out of the proposed development. The 2022 background traffic volumes are shown in **Figure 12**.

6.2.2. Year 2022 Build Traffic Volumes

To determine the year 2022 build traffic volumes, first the existing site traffic volumes are subtracted (**Figure 7**) from the 2022 background traffic volumes (**Figure 12**), the proposed year 2022 site and pass-by traffic (**Figure 8** and **Figure 9**) are then added, and the result is the 2022 build traffic volumes. See **Figure 13**.

6.3. Year 2022 Capacity Analysis

6.3.1. Year 2022 No Build Capacity Analysis

The capacity and level of service for the study area intersections were evaluated for the year 2022 no build traffic volumes. See **Figure 14**. The detailed capacity analysis sheets can be found in **Appendix H**. The signal timing splits were optimized and adjusted for the future traffic volumes, and a PHF of 0.92 was used.

The results of the 2022 no build capacity analysis level of service and delay for each movement of the unsignalized and signalized intersections are shown in **Table 12** and **Table 13**, respectively.

6.3.2. Year 2022 Build Capacity Analysis

The capacity and level of service for the study area intersections were evaluated for the year 2022 build traffic volumes. See **Figure 15**. The detailed capacity analysis sheets can be found in



Appendix I. The signal timing splits were optimized and adjusted for the future traffic volumes, and a PHF of 0.92 was used.

The results of the 2022 build capacity analysis level of service and delay for each movement of the unsignalized and signalized intersections are shown in **Table 12** and **Table 13**, respectively.

6.4. Year 2022 Improvements and Considerations

Year 2022 No Build Improvements

For the following intersections, improvements are recommended based on the existing traffic volumes and capacity analysis, and therefore assumed to be in place prior to Year 2022:

76th Street and Frank Lloyd Wright Boulevard (10)

The south leg currently provides dual left turn lanes and a single right turn lane for the northbound movement. However, there are more right turning vehicles than left turning vehicles. Therefore, it is recommended for the middle lane to be converted from an exclusive left turn lane to a shared left-right turn lane to accommodate the higher number of right turning vehicles. The existing AM and PM peak hour northbound right turn movement currently operates at a LOS D and E, respectively.

Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)

The south leg currently provides a single right turn lane, which currently serves 311 and 489 vehicles during the AM and PM peak hours, respectively. During the PM peak hour the LOS for the northbound right turn lane movement is a LOS F. Therefore, it is recommended for an additional northbound right turn lane be constructed to provide dual northbound right turn lanes. Additionally, implementing a right turn overlap phase northbound, southbound, eastbound and westbound is also recommended. Currently, during the PM peak hour there are 48 eastbound, 489 northbound, 351 westbound, and 531 southbound right turning vehicles.

Year 2022 Build Improvements

The following are the recommended year 2022 improvements with the proposed 5-year build out of the La Via development:

Scottsdale Road and Paradise Lane (2) improvement to include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Scottsdale Road and Tierra Buena Lane (3) improvement to include installation of a traffic signal. Striping modifications to the west leg consist of installing signing and pavement marking to provide a dedicated left turn lane and a shared through-right turn lane. Improvements to the east leg include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Greenway Hayden Loop and Paradise Lane (13) improvement to include installation of a traffic signal or roundabout. For a traffic signal no change to the existing lane configuration necessary.



For a roundabout, the improvement includes a two-lane roundabout with a single lane approach on the west and east legs, and two lane approaches on the north and south legs. **Table 14** and **Table 15** provide the level of service with the installation of a traffic signal or roundabout, respectively.

Tierra Buena Lane and Driveway A (14) improvement to include build out of the stop-controlled Driveway A. Striping modifications to the two-way left turn lane may be provided to provide an eastbound left turn lane. The east leg improvement consists of adding an exclusive right turn lane. It is recommended for the driveway to be wide enough to provide an exclusive southbound left turn lane, as well as a shared through-right turn lane.

Paradise Lane and Driveway D (17) improvement to include build out of the stop-controlled Driveway D providing full access to and from the site. It is recommended for the driveway to be wide enough to provide an exclusive northbound left turn lane, as well as a shared through-right turn lane. The west leg improvement will consist of adding an exclusive right turn lane. The south leg will may consist of modifying the two-way left turn lane to provide an exclusive left turn lane.

Paradise Lane and Driveway E (18) improvement to include build out of the stop-controlled egress only Driveway E. The south leg will consist of a shared left-right turn lane.

Paradise Lane and Driveway F (19) improvement to include build out of the ingress only Driveway F.

Scottsdale Road and Driveway G (20) improvement to include the build out of the stop-controlled Driveway G providing right-out access from the site.

Scottsdale Road and Driveway H (21) improvement to include the build out of the stop-controlled Driveway H providing right-in, right-out, and left-in access to and from the site. The south leg improvement consists of providing an exclusive right turn lane. It is recommended for the median along Scottsdale Road to be modified to provide an exclusive southbound left turn lane.

Scottsdale Road and Driveway I (22) improvement to include the build out of Driveway I providing right-in only access to the site. A dedicated right turn lane is recommended to be built out for the northbound approach.

The AM and PM peak hour capacity analyses revealed that all movements and the overall intersections under the 2022 build condition either operate at improved levels of service, operate at a LOS D or better, or are maintained at the no build LOS, with the exception of:

- **Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) – AM Peak Hour**
The proposed La Via development contributes to 6.38% of the traffic volumes at this intersection during the AM peak hour.



- **Scottsdale Road and Paradise Lane (2) – PM Peak Hour**

The proposed La Via development contributes to 14.93% of the traffic volumes at this intersection during the PM peak hour.

With the build out of the proposed La Via development along with the improvements listed above, the AM and PM peak hour capacity analyses reveal the following intersections with improved operations when compared to the 2022 no build condition:

- **Scottsdale Road and Tierra Buena Lane (3) – AM & PM Peak Hour**

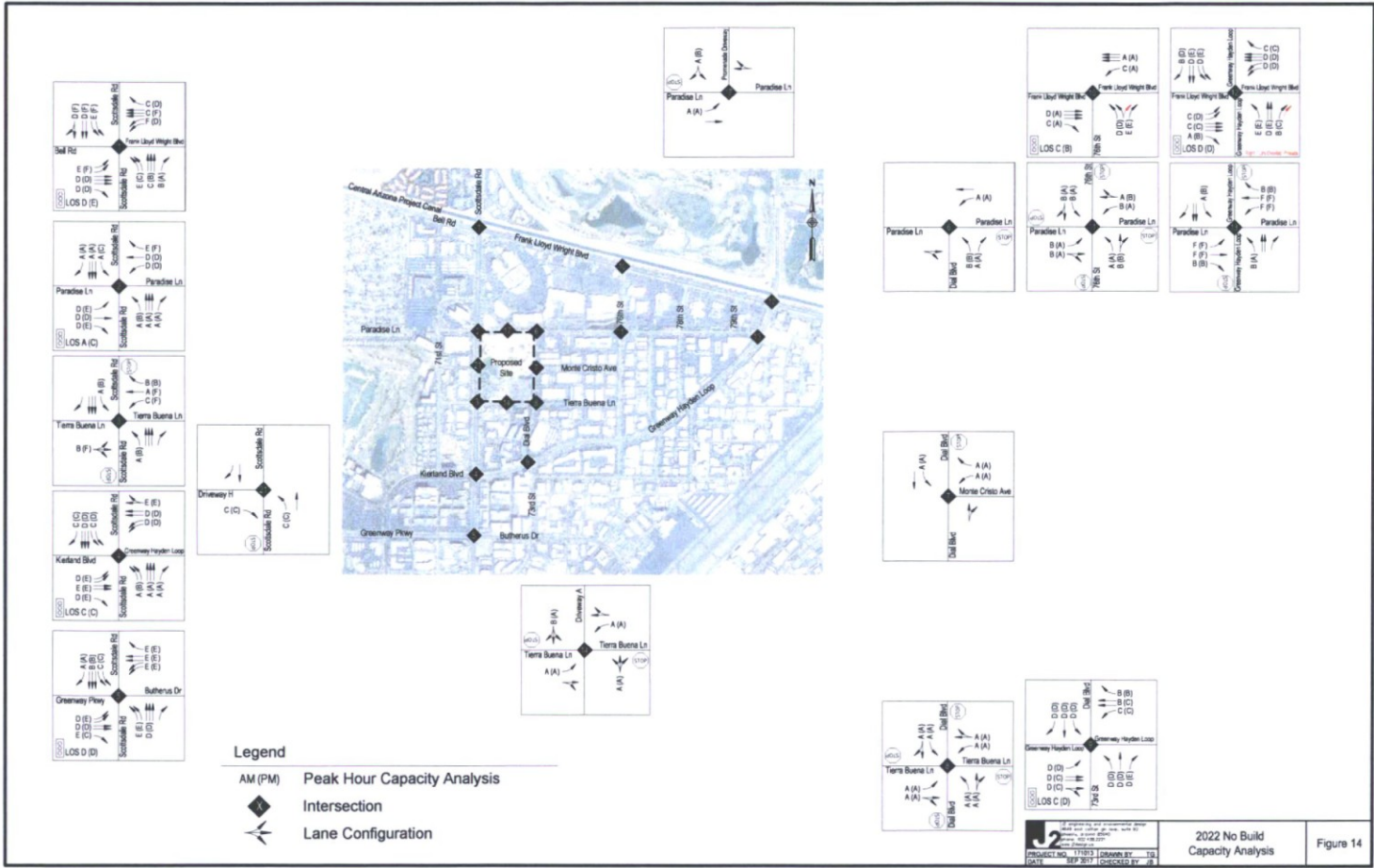
Under the no build condition, during the PM peak hour, there are three movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of a traffic signal, and additional lanes on the east and west legs - this intersection operates with an overall LOS B during the AM and PM peak hours, and all movements operate at a LOS D or better.

- **Greenway Hayden Loop and Paradise Lane (13) – AM & PM Peak Hour**

Under the no build condition, during both the AM and PM peak hours, there are four movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of either a roundabout or a traffic signal - this intersection operates with an overall LOS B or C during the AM and PM peak hours, with all movements operating at a LOS D.







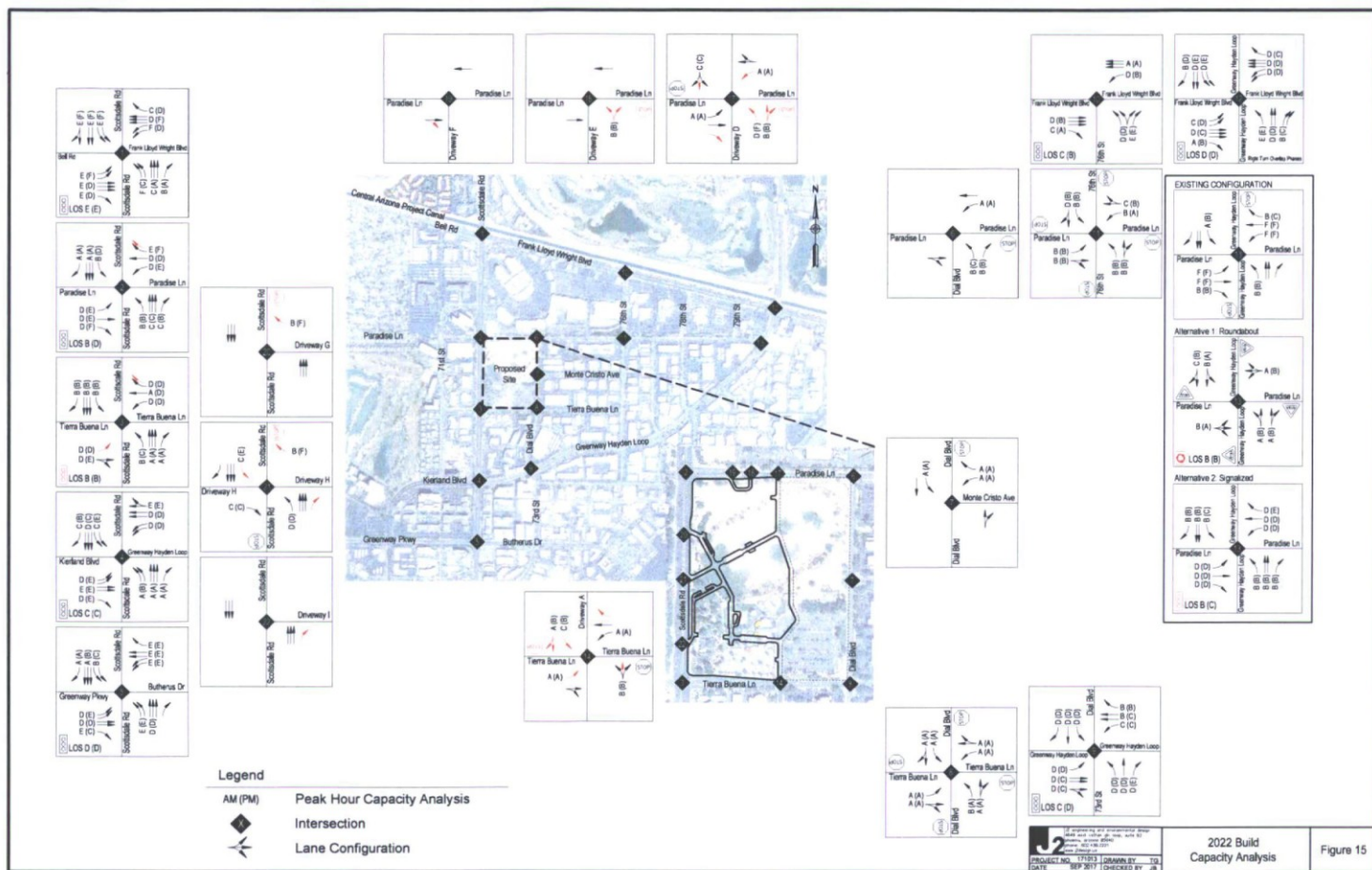


Table 12 – 2022 Level of Service and Delay for Unsignalized Intersections

Intersection	2022 No Build				2022 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Unsignalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Scottsdale Road and Tierra Buena Lane (3)					(Signalized)			
Overall Intersection	-	-	-	-	B	12	B	12.2
Eastbound Shared Left-Through-Right	B	14.3	F	88.4	-	-	-	-
Eastbound Left	-	-	-	-	D	49.8	D	51.5
Eastbound Shared Through-Right	-	-	-	-	D	53.1	D	61.9
Westbound Left	C	19.2	F	216.7	D	50.2	D	53.2
Westbound Through	A	0	F	516.1	A	0	D	43.8
Westbound Right	B	10.6	B	13.7	D	52.1	D	50.4
Northbound Left	A	9.8	B	10.0	B	18.6	C	21
Northbound Through	-	-	-	-	A	2.7	A	1
Northbound Right	-	-	-	-	A	2.6	A	0.1
Southbound Left	A	9.6	B	10.8	B	13.4	A	11.3
Southbound Through	-	-	-	-	B	16	B	15.9
Southbound Right	-	-	-	-	B	11.2	B	10.4
Dial Boulevard and Paradise Lane (6)								
Westbound Left	A	7.7	A	7.6	A	8	A	8.1
Northbound Left	B	10.4	B	11.7	B	12.8	B	14.8
Northbound Right	A	9.3	A	9.1	B	10.4	B	10.5
Dial Boulevard and Monte Cristo Avenue (7)								
Westbound Left	A	9.7	A	9.7	A	9.5	A	9.3
Westbound Right	A	8.9	A	8.9	A	8.8	A	8.5
Southbound Left	A	7.5	A	7.4	A	7.5	A	7.3
Dial Boulevard and Tierra Buena Lane (8)								
Eastbound Left	A	8.9	A	8.8	A	9.4	A	8.9
Eastbound Shared Through-Right	A	8.7	A	8.4	A	9.5	A	9
Westbound Left	A	8.9	A	9	A	9.5	A	9.3
Westbound Shared Through-Right	A	8.5	A	8.5	A	9.2	A	8.7
Northbound Left	A	8.8	A	9	B	10.7	A	9.7
Northbound Shared Through-Right	A	8.8	A	8.4	A	8.9	A	8.6
Southbound Left	A	8.9	A	8.6	A	9.2	A	8.8
Southbound Shared Through-Right	A	8.4	A	8.7	A	8.7	A	9
76th Street and Paradise Lane (11)								
Eastbound Left	B	10.9	A	9.9	B	13.8	B	12.4
Eastbound Shared Through-Right	B	10.7	A	9	B	14.6	B	11.1
Westbound Left	B	10.8	A	8.9	B	12.2	A	9.5
Westbound Shared Through-Right	A	9.8	B	10.5	C	15.4	B	14.7
Northbound Left	A	9.5	A	9.2	B	11	B	10.3
Northbound Shared Through-Right	B	11.2	B	10.2	B	14.2	B	12
Southbound Left	B	10.1	A	9.3	B	11.5	B	10.3
Southbound Shared Through-Right	B	13.4	A	9.2	D	29.8	B	11.2



Table 12 – 2022 Level of Service and Delay for Unsignalized Intersections – Continued

Intersection	2022 No Build				2022 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Unsignalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)								
Eastbound Left	F	81.1	F	166.3	F	411.6	F	1247.4
Eastbound Through	F	66.5	F	89	F	82.2	F	105.4
Eastbound Right	B	12.2	B	11.7	B	13	B	12
Westbound Left	F	53.6	F	193.2	F	64.8	F	268.5
Westbound Through	F	68.8	F	121.4	F	85.8	F	152.6
Westbound Right	B	10.6	B	14.5	B	10.6	C	15.2
Northbound Left	B	10.3	A	10	B	11	B	10.2
Southbound Left	A	9.3	B	11.1	A	9.3	B	11.6
Tierra Buena Lane and Driveway A (14)								
Eastbound Left	A	7.4	A	7.5	A	7.8	A	7.6
Westbound Left	A	7.6	A	7.4	A	7.6	A	7.4
Northbound Shared Left-Through-Right	A	9.6	A	9.3	B	11	B	10.3
Southbound Left	-	-	-	-	C	16.7	B	12.9
Southbound Shared Left-Through-Right	B	11	A	9.3	-	-	-	-
Southbound Shared Through-Right	-	-	-	-	A	9	B	10.2
Paradise Lane and Driveway D (17)								
Eastbound Left	A	7.5	A	8	A	7.5	A	8
Westbound Left	-	-	-	-	A	8.5	A	7.8
Northbound Left	-	-	-	-	D	33.6	F	186
Northbound Shared Through-Right	-	-	-	-	B	10.1	B	10.1
Southbound Shared Left-Right	A	9.6	B	12.1	-	-	-	-
Southbound Shared Left-Through-Right	-	-	-	-	C	16.1	C	17.5
Paradise Lane and Driveway E (18)								
Northbound Shared Left-Right	-	-	-	-	B	0.2	B	13
Scottsdale Road and Driveway G (20)								
Westbound Right	-	-	-	-	B	14.4	F	94.2
Scottsdale Road and Driveway H (21)								
Eastbound Right	C	17.9	C	18.4	C	19.1	C	19.7
Westbound Right	-	-	-	-	B	14.9	F	127.4
Northbound Left	C	24.1	C	23.9	D	27.3	D	26.7
Southbound Left	-	-	-	-	C	19.9	E	44.9



Table 13 – 2022 Level of Service and Delay for Signalized Intersections

Intersection	2022 No Build				2022 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Signalized Intersections								
Scottsdale Road and Frank Lloyd Wright Boulevard (1)								
Overall Intersection	D	47.9	E	57.4	E	56.6	E	60.9
Eastbound Left	E	60.2	F	114.1	E	60.2	F	150.2
Eastbound Through	D	50.9	D	50.2	E	60.5	D	50.2
Eastbound Right	D	43	D	50.8	E	74.9	D	51.9
Westbound Left	F	100.9	D	39.4	F	81.5	D	41.2
Westbound Through	C	34.9	F	89.9	D	35.4	F	103.5
Westbound Right	C	25	D	43.4	C	25.4	D	46.2
Northbound Left	E	73	C	33.3	F	92.6	C	29.9
Northbound Through	C	25.3	B	12.6	C	24.7	A	9.9
Northbound Right	B	15.3	A	4.1	B	15.1	A	4
Southbound Left	E	62.5	F	106.8	E	62.5	F	106.8
Southbound Through	D	46.5	F	70.8	E	61.1	F	83.4
Southbound Shared Through-Right	D	53.5	F	83.2	E	71.6	F	95.6
Scottsdale Road and Paradise Lane (2)								
Overall Intersection	A	4.7	C	20.4	B	15.2	D	48.1
Eastbound Left	D	53.1	E	77.3	D	52.5	E	65.9
Eastbound Through	D	53.7	D	54.6	D	53.7	E	55.8
Eastbound Right	D	54.1	E	58.6	D	54	F	81.4
Westbound Left	D	52.7	D	39.7	D	53.6	E	76.1
Westbound Through	D	54.3	D	42.9	D	54.3	D	51.1
Westbound Right	E	58	F	129.5	E	55.8	F	294
Northbound Left	A	6.3	B	14.3	B	18.2	B	11.6
Northbound Through	A	0.5	A	5.3	C	30.1	C	34.9
Northbound Right	A	0.3	A	1.7	C	24.9	B	15.7
Southbound Left	A	5	C	23	B	10.1	D	47.6
Southbound Through	A	0.4	A	1.9	A	0.2	A	0.2
Southbound Right	A	0.1	A	1.4	A	0	A	0
Scottsdale Road and Greenway Hayden Loop/ Kierland Boulevard (4)								
Overall Intersection	C	30.3	C	29.4	C	28.4	C	29
Eastbound Left	D	52.3	E	56.6	D	52.6	E	60.8
Eastbound Through	E	56.7	E	56.1	E	56.7	E	59
Eastbound Right	D	54.1	E	56	D	54.1	E	56.2
Westbound Left	D	54.6	D	51.8	D	54.5	D	50.9
Westbound Through	D	54.9	D	52.5	D	54.9	D	52.5
Westbound Shared Through-Right	E	56.6	E	59.6	E	56.7	E	59.6
Northbound Left	A	7.3	B	14.8	A	8.4	B	19.5
Northbound Through	A	6.7	A	0.6	A	7.2	A	0.7
Northbound Right	A	9.2	A	0.8	A	9.0	A	0.7
Southbound Left	C	26	D	36.6	C	26.1	E	77.8
Southbound Through	D	40.3	D	39.9	D	37.9	C	34
Southbound Right	C	27.3	C	26.1	C	25.4	B	19.6



Table 13 – 2022 Level of Service and Delay for Signalized Intersections - Continued

Intersection	2022 No Build				2022 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Scottsdale Road and Greenway Parkway/Butherus Drive (5)								
Overall Intersection	D	40.5	D	41.8	D	36.2	D	42
Eastbound Left	D	45.8	E	64.6	D	46.9	E	66.6
Eastbound Through	D	45.9	D	44.8	D	44.4	D	44.5
Eastbound Right	E	65.8	C	32.8	E	59.9	C	32.6
Westbound Left	E	58.6	E	60.8	E	58.6	E	60.8
Westbound Through	E	55.3	E	60.6	E	55.3	E	62.9
Westbound Right	E	56	E	58.3	E	56	E	60.4
Northbound Left	E	56.4	E	64.6	E	56.4	E	65.9
Northbound Through	D	54.3	D	48.2	D	51.5	D	47
Northbound Right	A	0.0	A	0	A	0.0	A	0
Southbound Left	C	23	C	25.3	B	18.1	C	27.9
Southbound Through	B	14.6	B	14.6	A	2.9	B	17.4
Southbound Right	A	1.4	A	3	A	0.4	A	3.1
Dial Boulevard/73rd St and Greenway Hayden Loop (9)								
Overall Intersection	C	33.3	D	35.8	C	32.4	D	35.7
Eastbound Left	D	36.9	D	43.4	D	36.9	D	43.3
Eastbound Through	D	35.7	C	31.5	D	35.7	C	31.5
Eastbound Right	D	36.7	C	32.3	D	36.7	C	32.3
Westbound Left	C	22.9	C	34.4	C	22.9	C	34.3
Westbound Through	B	19.3	C	26.8	B	19.3	C	26.8
Westbound Right	B	16.8	B	19.3	B	18.8	B	20
Northbound Left	D	45.3	D	41.3	D	45.2	D	41.2
Northbound Through	D	43.0	D	36.6	D	43.0	D	36.5
Northbound Right	D	52.7	E	64.3	D	52.6	E	63.5
Southbound Left	D	45.4	D	39.3	D	46.1	D	43.1
Southbound Through	D	43.2	D	36.2	D	43.2	D	36.3
Southbound Right	D	44.1	D	36.5	D	44.1	D	36.6
76th Street and Frank Lloyd Wright Boulevard (10)								
Overall Intersection	C	30.2	B	11.3	C	31.7	B	14
Eastbound Through	D	37.5	A	7.7	D	37.8	B	10.4
Eastbound Right	C	20.5	A	5.9	C	20.2	A	7.6
Westbound Left	C	30	A	6	D	38	B	11.5
Westbound Through	A	2.3	A	4.7	A	2.7	A	5.9
Northbound Left	D	52.9	D	52	D	51.2	D	48.4
Northbound Right	E	66.7	E	55	E	66.2	E	59.3
Frank Lloyd Wright Boulevard and Greenway Hayden Loop (12)								
Overall Intersection	D	36.8	D	38.2	D	39.2	D	41
Eastbound Left	C	25.4	D	48.6	C	33.8	D	52.2
Eastbound Through	C	27.3	C	23.0	D	37.9	C	28.5
Eastbound Right	A	6.7	B	15.4	A	9.2	B	17.2
Westbound Left	D	54.6	D	54.5	D	54.8	D	54.1
Westbound Through	D	49.1	D	36.6	D	40.1	D	13.9
Westbound Right	C	29.7	C	24.2	D	22.6	C	26.8
Northbound Left	E	57.3	E	67.5	E	57.5	E	60.3
Northbound Through	D	51.4	E	55.4	D	50.5	D	54.2
Northbound Right	B	17.3	C	22.2	B	13.4	C	20.2
Southbound Left	D	51	E	66.7	D	48.5	E	66.6
Southbound Through	D	53.1	E	55.9	D	53.7	E	57.5
Southbound Right	B	10.7	D	38.2	B	15	D	35.9



Table 14 – Greenway Hayden Loop and Paradise Lane (13) Signalized

Intersection	Existing Conditions				2022 Build				2022 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)					Existing Geometry				Signalized			
Overall Intersection	-	-	-	-	-	-	-	-	B	16.4	C	20.5
Eastbound Left	F	81.1	F	166.3	F	411.6	F	1247.4	D	50.1	D	48.4
Eastbound Through	F	66.5	F	89	F	82.2	F	105.4	D	49.6	D	46.5
Eastbound Right	B	12.2	B	11.7	B	13	B	12	D	51.1	D	47.5
Westbound Left	F	53.6	F	193.2	F	64.8	F	268.5	D	49.5	D	46.6
Westbound Through	F	68.8	F	121.4	F	85.8	F	152.6	D	51.9	D	49.3
Westbound Right	B	10.6	B	14.5	B	10.6	C	15.2	D	53.5	D	65.4
Northbound Left	B	10.3	A	10	B	11	B	10.2	B	16.3	B	16
Northbound Through	-	-	-	-	-	-	-	-	B	13.7	B	18
Northbound Right	-	-	-	-	-	-	-	-	B	11.1	B	11.5
Southbound Left	A	9.3	B	11.1	A	9.3	B	11.6	B	11.1	C	20.4
Southbound Through	-	-	-	-	-	-	-	-	B	15.5	B	15.5
Southbound Right	-	-	-	-	-	-	-	-	B	12.7	B	12

Table 15 – Greenway Hayden Loop and Paradise Lane (13) Roundabout

Intersection	2022 Build			
	AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)	Roundabout			
Overall Intersection	B	11.8	B	11.6
Eastbound Shared Left-Through-Right	B	10.8	A	9.9
Westbound Shared Left-Through-Right	A	6.2	B	14.7
Northbound Shared Left-Through	A	7.4	B	11.6
Northbound Shared Through-Right	A	8	B	13.5
Southbound Shared Left-Through	B	12.4	A	9.5
Southbound Shared Through-Right	C	15.3	B	10.8

7. Year 2027 Future Conditions

7.1. Year 2027 Background Growth

As described in **Section 6.1**, an annual growth rate of 1% was applied to the existing traffic volumes through the year 2027.

7.2. Year 2027 Traffic Volumes

7.2.1. Year 2027 No Build Traffic Volumes

The 1% annual growth rate was applied to the existing traffic volumes through the year 2027. This represents the traffic volumes without the build out of the proposed development. The 2027 background traffic volumes are shown in **Figure 16**.

7.2.2. Year 2027 Build Traffic Volumes

To determine the year 2027 build traffic volumes, first the existing site traffic volumes are subtracted (**Figure 7**) from the 2027 background traffic volumes (**Figure 16**), the proposed year 2022 site and pass-by traffic (**Table 12** and **Figure 11**) are then added, and the result is the 2027 build traffic volumes. See **Figure 17**.

7.3. Year 2027 Capacity Analysis

7.3.1. Year 2027 No Build Capacity Analysis

The capacity and level of service for the study area intersections were evaluated for the year 2027 no build traffic volumes. See **Figure 18**. The detailed capacity analysis sheets can be found in **Appendix J**. The signal timing splits were optimized and adjusted for the future traffic volumes, and a PHF of 0.92 was used.

The results of the 2027 no build capacity analysis level of service and delay for each movement of the unsignalized and signalized intersections are shown in **Table 16** and **Table 17**, respectively.

7.3.2. Year 2027 Build Capacity Analysis

The capacity and level of service for the study area intersections were evaluated for the year 2022 build traffic volumes. See **Figure 19**. The detailed capacity analysis sheets can be found in **Appendix K**. The signal timing splits were optimized and adjusted for the future traffic volumes, and a PHF of 0.92 was used.

The results of the 2022 build capacity analysis level of service and delay for each movement of the unsignalized and signalized intersections are shown in **Table 16** and **Table 17**, respectively.

7.4. Year 2027 Improvements and Considerations

Dial Boulevard and Monte Cristo Avenue (7) improvement to include build out of the full access stop-controlled site driveway forming the west leg of the intersection with Monte Cristo Avenue. It is recommended for the driveway to be wide enough to provide an exclusive eastbound left turn lane, as well as a shared through-right turn lane. Striping modifications to the two-way left turn lane is recommended to provide a northbound left turn lane.

76th Street and Frank Lloyd Wright Boulevard (10) improvements to include modifications to striping on the south leg of the intersection. With striping, lane configuration will be changed to provide a dedicated left turn lane, a shared left-right turn lane and a dedicated right turn lane.

Dial Boulevard and Driveway B (15) improvement to include build out of the stop-controlled Driveway B providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

Dial Boulevard and Driveway C (16) improvement to include build out of the stop-controlled Driveway C providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

The AM and PM peak hour capacity analyses revealed that all movements and the overall intersection under the 2027 build condition either operate at improved levels of service, operate at a LOS D or better, or are maintained at the no build LOS, with the exception of:

- Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard (1) – AM & PM Peak Hour**
 The proposed La Via development contributes to 7.51% of the traffic volumes at this intersection during the AM peak hour, and to 7.37% of the traffic volumes at this intersection during the PM peak hour.
- Scottsdale Road and Paradise Lane (2) – PM Peak Hour**
 The proposed La Via development contributes to 15.50% of the traffic volumes at this intersection during the PM peak hour.

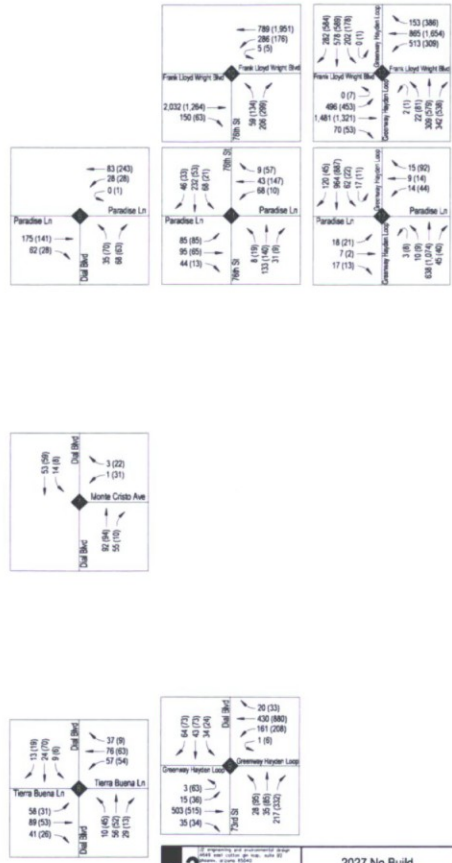
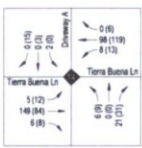
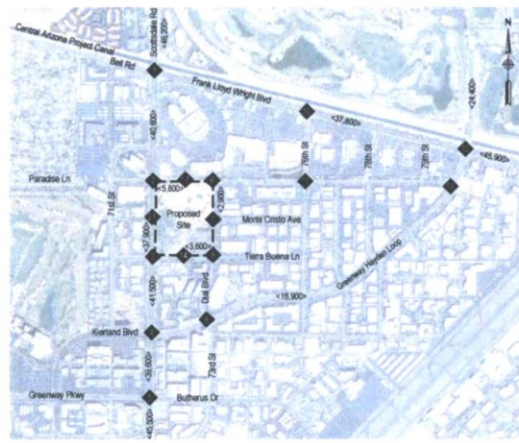
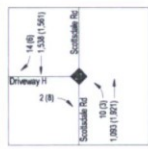
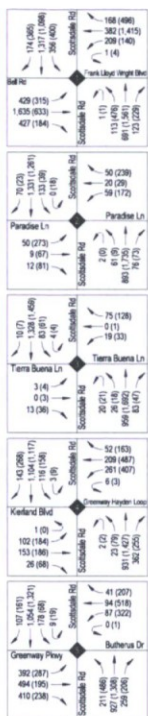
With the build out of the proposed La Via development along with the improvements listed above, the AM and PM peak hour capacity analyses reveal the following intersections with improved operations when compared to the 2027 no build condition:

- Scottsdale Road and Tierra Buena Lane (3) – AM & PM Peak Hour**
 Under the no build condition, during the PM peak hour, there are three movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of a traffic signal, and additional lanes on the

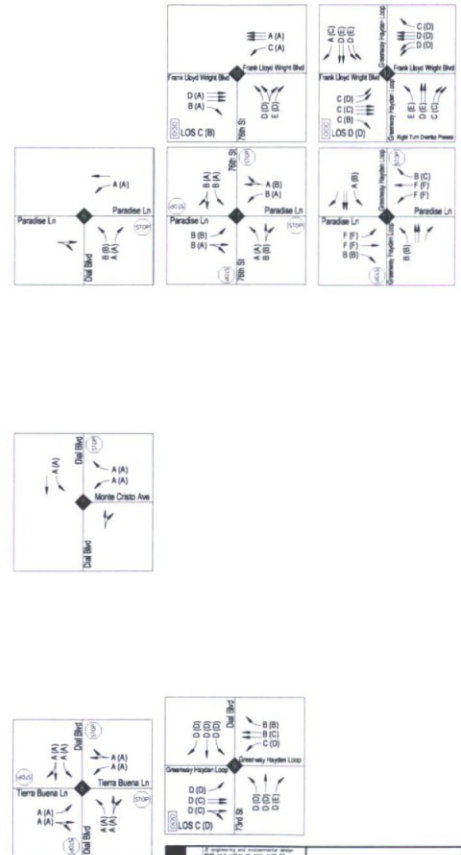
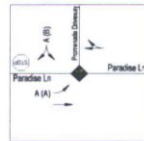
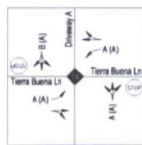
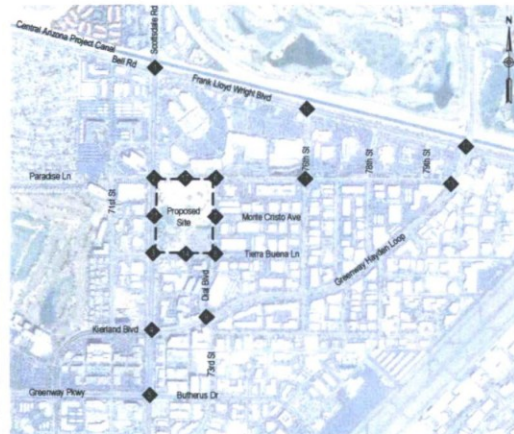
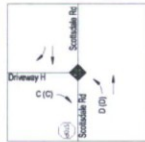
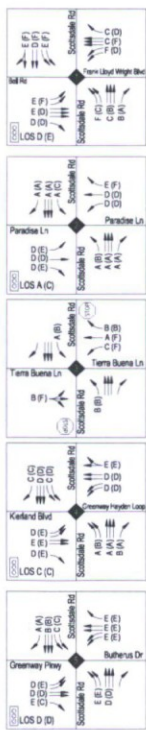
east and west legs - this intersection operates with an overall LOS B during the AM and PM peak hours, and all movements operate at a LOS D or better.

- **Greenway Hayden Loop and Paradise Lane (13) – AM & PM Peak Hour**

Under the no build condition, during both the AM and PM peak hours, there are four movements that operate with a LOS F. However, under the build condition - with the build out of the proposed La Via development, installation of either a roundabout or a traffic signal - this intersection operates with an overall LOS B or C during the AM and PM peak hours, with all movements operating at a LOS D.







Legend

AM (PM) Peak Hour Capacity Analysis

Intersection

Lane Configuration

J2

2027 No Build Capacity Analysis

PROJECT NO. 171013 DRAWN BY: J2
DATE: SEP 2017 CHECKED BY: J2

2027 No Build
Capacity Analysis

Figure 18

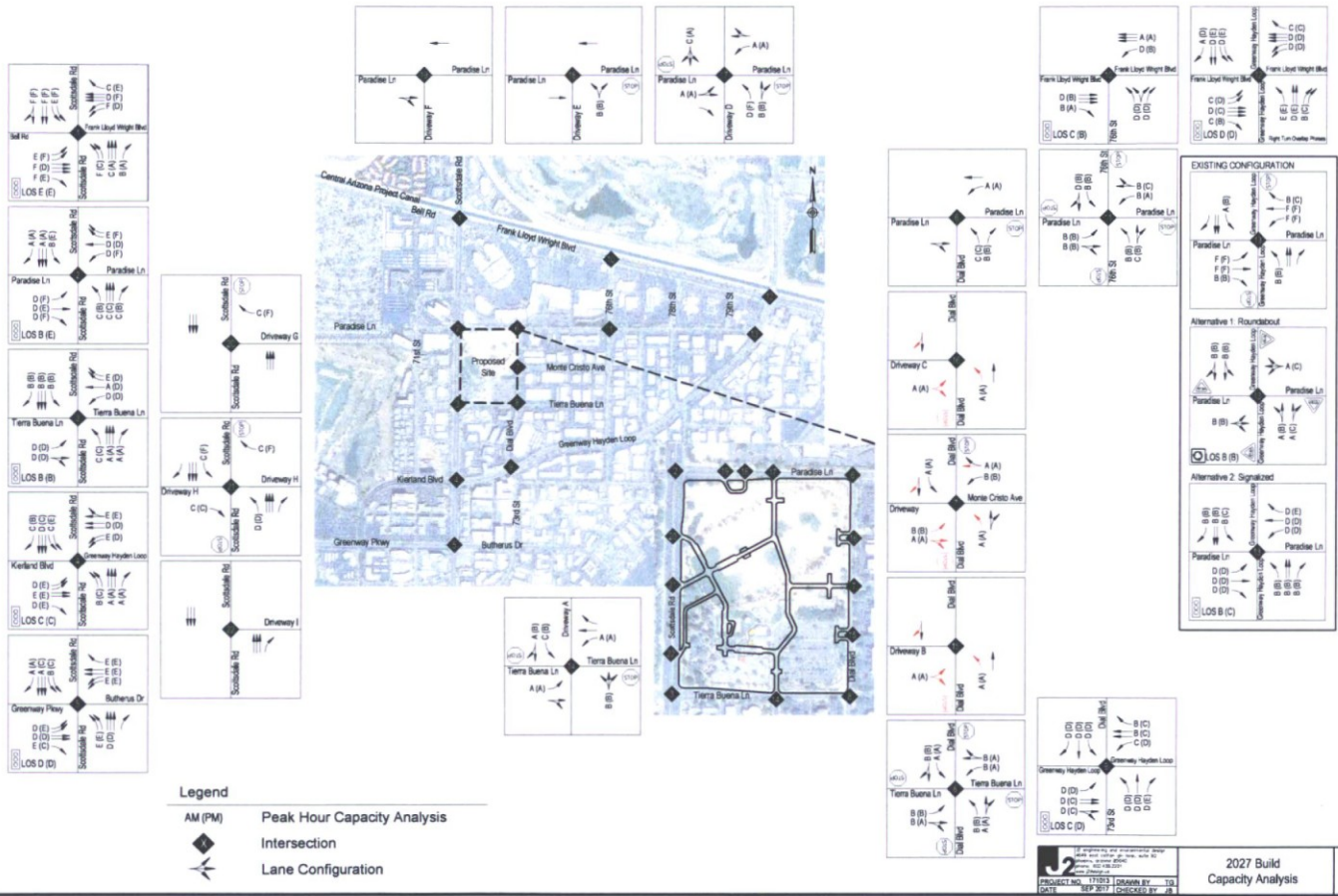


Table 16 – 2027 Level of Service and Delay for Unsignalized Intersections

Intersection	2027 No Build				2027 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Unsignalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Scottsdale Road and Tierra Buena Lane (3)					Signalized			
Overall Intersection	-	-	-	-	B	12.4	B	13
Eastbound Shared Left-Through-Right	C	14.9	F	137.3	-	-	-	-
Eastbound Left	-	-	-	-	D	49.2	D	48.7
Eastbound Shared Through-Right	-	-	-	-	D	53.1	D	54.7
Westbound Left	C	19.8	F	404.9	D	50.1	D	49.8
Westbound Through	A	0	F	708.6	A	0	D	41.3
Westbound Right	B	10.8	B	14.3	E	55.6	D	47.3
Northbound Left	B	10	B	10.2	C	20.6	C	24.8
Northbound Through	-	-	-	-	A	3.5	A	1.2
Northbound Right	-	-	-	-	A	3.3	A	0.2
Southbound Left	A	9.6	B	11.1	B	16	B	16.5
Southbound Through	-	-	-	-	B	15.7	B	18.4
Southbound Right	-	-	-	-	C	10.8	B	11.6
Dial Boulevard and Paradise Lane (6)								
Westbound Left	A	7.8	A	7.6	A	8.1	A	8.5
Northbound Left	B	10.5	B	11.8	B	15.7	C	17.2
Northbound Right	A	9.4	A	9.1	B	11.8	B	11.1
Dial Boulevard and Monte Cristo Avenue (7)								
Eastbound Left	-	-	-	-	B	12.4	B	11.2
Eastbound Shared Through-Right	-	-	-	-	A	9.2	A	8.8
Westbound Left	A	9.7	A	9.8	B	11.8	B	11.1
Westbound Shared Through-Right	-	-	-	-	A	8.9	A	8.6
Westbound Right	A	8.9	A	8.9	-	-	-	-
Northbound Left	-	-	-	-	A	7.5	A	7.6
Southbound Left	A	7.6	A	7.5	A	7.6	A	7.3
Dial Boulevard and Tierra Buena Lane (8)								
Eastbound Left	A	9	A	8.8	B	10.7	B	10.3
Eastbound Shared Through-Right	A	8.8	A	8.5	B	10.7	A	9.8
Westbound Left	A	9	A	9.1	B	10.4	A	10
Westbound Shared Through-Right	A	8.6	A	8.5	B	10.4	A	9.5
Northbound Left	A	8.9	A	9	B	11.7	B	10.5
Northbound Shared Through-Right	A	8.9	A	8.5	A	9.7	A	9.8
Southbound Left	A	9	A	8.6	A	9.5	A	9.3
Southbound Shared Through-Right	A	8.5	A	8.8	B	12.1	B	10.5
76th Street and Paradise Lane (11)								
Eastbound Left	B	11.1	B	10.1	B	12.7	B	14.1
Eastbound Shared Through-Right	B	11.1	A	9.2	B	13.4	B	12.4
Westbound Left	B	11.1	A	9	B	12.2	A	10
Westbound Shared Through-Right	A	9.9	B	10.9	C	15.2	C	19.0
Northbound Left	A	9.6	A	9.3	B	10.8	B	10.8
Northbound Shared Through-Right	B	11.5	B	10.6	B	14	B	13.3
Southbound Left	B	10.2	A	9.5	B	11.3	B	10.8
Southbound Shared Through-Right	B	14.2	A	9.4	D	30.7	B	13



Table 16 – 2027 Level of Service and Delay for Unsignalized Intersections - Continued

Intersection	2027 No Build				2027 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Unsignalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)								
Eastbound Left	F	103	F	241.6	F	1185.3	F	2479.3
Eastbound Through	F	77.7	F	102.7	F	100.6	F	139
Eastbound Right	B	12.5	B	12	B	13.3	B	12.5
Westbound Left	F	62.9	F	272.9	F	82.6	F	434.3
Westbound Through	F	80.8	F	147.3	F	106	F	224.1
Westbound Right	B	10.7	C	15.1	B	11	C	16.1
Northbound Left	B	10.6	B	10.2	B	11.1	B	10.6
Southbound Left	A	9.4	B	11.4	A	9.7	B	12
Tierra Buena Lane and Driveway A (14)								
Eastbound Left	A	7.4	A	7.5	A	7.8	A	7.7
Westbound Left	A	7.6	A	7.4	A	7.7	A	7.5
Northbound Shared Left-Through-Right	A	9.6	A	9.4	B	11.5	B	11.1
Southbound Left	-	-	-	-	C	18	B	14.4
Southbound Shared Through-Right	-	-	-	-	A	9.1	B	10.5
Southbound Shared Left-Through-Right	B	10.8	A	9.4	-	-	-	-
Dial Boulevard and Driveway B (15)								
Eastbound Shared Left-Right	-	-	-	-	A	9.4	A	9
Northbound Left	-	-	-	-	A	0	A	7.5
Dial Boulevard and Driveway C (16)								
Eastbound Left-Right	-	-	-	-	A	9.9	A	9.6
Northbound Left	-	-	-	-	A	7.5	A	7.5
Paradise Lane and Driveway D (17)								
Eastbound Left	A	7.5	A	8.1	A	7.6	A	8.1
Westbound Left	-	-	-	-	A	8.6	A	8
Northbound Left	-	-	-	-	D	32.8	F	305.2
Northbound Shared Through-Right	-	-	-	-	B	10.1	B	10.6
Southbound Shared Left-Right	A	9.6	B	12.4	-	-	-	-
Southbound Shared Left-Through-Right	-	-	-	-	C	15.6	C	21
Paradise Lane and Driveway E (18)								
Northbound Shared Left-Right	-	-	-	-	B	12.2	B	13.7
Scottsdale Road and Driveway G (20)								
Westbound Right	-	-	-	-	C	15.3	F	147.4
Scottsdale Road and Driveway H (21)								
Eastbound Right	C	18.6	C	19.2	C	20.1	C	21
Westbound Right	-	-	-	-	C	16.4	F	189.3
Northbound Left	D	25.9	D	25.6	D	29.8	D	29.4
Southbound Left	-	-	-	-	C	21.9	F	56.8

Table 17 – 2027 Level of Service and Delay for Signalized Intersections

Intersection	2027 No Build				2027 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Signalized Intersections								
Scottsdale Road and Frank Lloyd Wright Boulevard (1)								
Overall Intersection	D	52.6	E	64.8	E	66.8	E	73.8
Eastbound Left	E	59.8	F	170.7	E	59.8	F	226.1
Eastbound Through	E	59.2	D	49.9	F	73.9	D	50.6
Eastbound Right	D	45.8	D	50.4	F	89.4	E	55.9
Westbound Left	F	82.3	D	41	F	118.6	D	43.9
Westbound Through	C	34.5	F	109.6	D	36.1	F	141.7
Westbound Right	C	24.3	D	48.1	C	25.6	E	67.5
Northbound Left	D	90.8	C	30.8	F	120.1	C	28.7
Northbound Through	C	28.4	A	9.5	C	26.4	A	3.4
Northbound Right	B	16.8	A	3.5	B	16.1	A	1.7
Southbound Left	E	61.8	F	122.1	E	61.8	F	194
Southbound Through	D	54.9	F	74.9	F	74.5	F	77.1
Southbound Shared Through-Right	E	64.3	F	87.3	F	85.6	F	89.6
Scottsdale Road and Paradise Lane (2)								
Overall Intersection	A	4.7	C	21.3	B	16.7	E	56.6
Eastbound Left	D	53.3	F	91	D	52.9	F	91.7
Eastbound Through	D	53.7	D	54.5	D	53.7	E	60.9
Eastbound Right	D	54.1	E	58.5	D	54	F	105
Westbound Left	D	52.9	D	40.1	D	53	F	99.8
Westbound Through	D	54.4	D	43.0	D	53.6	D	51.2
Westbound Right	E	58.5	F	146.4	E	57.6	F	364.6
Northbound Left	A	6.5	A	8.6	C	20.1	B	10.8
Northbound Through	A	0.5	A	4.2	C	32.7	C	33.4
Northbound Right	A	0.3	A	0.7	C	27.3	B	14.5
Southbound Left	A	5.2	C	12.7	B	10.9	E	57.3
Southbound Through	A	0.3	A	0.7	A	0.1	A	0.2
Southbound Right	A	0.1	A	0.4	A	0	A	0
Scottsdale Road and Greenway Hayden Loop/ Kierland Boulevard (4)								
Overall Intersection	C	30.5	C	29.2	C	28.2	C	28.7
Eastbound Left	D	52.2	E	60.6	D	49.8	E	59.8
Eastbound Through	E	56.5	E	60.1	E	56.7	E	60.8
Eastbound Right	D	53.9	E	55.9	D	53.9	E	55.5
Westbound Left	D	54.6	D	51	E	55.5	D	54.2
Westbound Through	D	54.5	D	52.0	D	54.5	D	54.9
Westbound Shared Through-Right	E	56.2	E	58.9	E	56.1	E	64.5
Northbound Left	A	8.7	B	17.1	B	12	C	21.7
Northbound Through	A	8.4	A	0.7	A	7.3	A	1.5
Northbound Right	B	11.7	A	0.7	A	9.2	A	0.9
Southbound Left	C	24.6	D	35.7	C	30.2	E	55.9
Southbound Through	D	39.1	D	38.6	D	36.8	C	32.4
Southbound Right	C	25.9	C	24.8	C	24.3	B	18.1



Table 17 – 2027 Level of Service and Delay for Signalized Intersections - Continued

Intersection	2027 No Build				2027 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Scottsdale Road and Greenway Parkway/Butherus Drive (5)								
Overall Intersection	D	40.7	D	42.9	D	37.3	D	44.5
Eastbound Left	D	44.9	E	69	D	49.8	E	69.2
Eastbound Through	D	45.4	D	44.6	D	47	D	44.3
Eastbound Right	E	66.2	C	32.1	E	73.4	C	32
Westbound Left	E	58.5	E	60.2	E	58.5	E	58.7
Westbound Through	E	55.5	E	62.2	E	55.5	E	70
Westbound Right	E	56.2	E	59.9	E	56.2	E	66.4
Northbound Left	E	56.2	E	65.5	E	56.2	E	69.1
Northbound Through	D	53.6	D	47.2	D	50.6	D	45.3
Northbound Right	A	0.0	A	0	A	0.0	A	0
Southbound Left	C	24.9	C	28.2	B	18.9	C	32.3
Southbound Through	B	15.9	B	17.9	A	2.7	C	23.7
Southbound Right	A	1.5	A	3.4	A	0.4	A	3.4
Dial Boulevard/73rd St and Greenway Hayden Loop (9)								
Overall Intersection	C	32.9	D	36.4	C	33.3	D	36
Eastbound Left	D	38.3	D	45.2	D	38.6	D	45.4
Eastbound Through	D	35.0	C	30.9	D	35	C	30.1
Eastbound Shared Through-Right	D	36.1	C	31.7	D	36.1	C	30.9
Westbound Left	C	24.3	D	36.2	C	24.5	D	37.1
Westbound Through	B	18.8	C	26.6	B	18.8	C	26.6
Westbound Right	B	16.3	B	18.7	B	18.2	C	20.2
Northbound Left	D	44.7	D	41.1	D	44.5	D	40.9
Northbound Through	D	42.3	D	36.0	D	42.0	D	35.9
Northbound Right	D	52.3	E	69.1	D	51.6	E	68.3
Southbound Left	D	44.7	D	38.8	D	48.1	D	43.8
Southbound Through	D	42.5	D	35.6	D	42.3	D	35.6
Southbound Right	D	43.5	D	35.9	D	46.8	D	36.7
76th Street and Frank Lloyd Wright Boulevard (10)								
Overall Intersection	C	30	B	11.6	C	32.8	B	15.1
Eastbound Through	D	36.5	A	8.2	D	38.4	B	12.2
Eastbound Right	B	19.2	A	6.1	B	19.3	A	8.6
Westbound Left	C	32.6	A	6.8	D	51.2	B	18.7
Westbound Through	A	2.4	A	5.1	A	3.3	A	6.8
Northbound Left	D	52.6	D	51.6	D	48.7	D	47.2
Northbound Right	E	68.3	D	54.7	D	54.3	D	55
Frank Lloyd Wright Boulevard and Greenway Hayden Loop (12)								
Overall Intersection	D	37.3	D	40.5	D	41.2	D	47.1
Eastbound Left	C	27	D	46.5	C	34.7	D	52.7
Eastbound Through	C	29.9	C	24.9	D	46.3	C	30.9
Eastbound Right	C	20.3	B	16.1	C	26.3	B	18.6
Westbound Left	D	53.1	D	53.7	D	54.5	D	54.6
Westbound Through	D	48.7	D	46.2	D	42.6	D	51.3
Westbound Right	C	29	C	26.7	C	23.8	C	26.7
Northbound Left	E	57.1	E	70.3	E	57.1	E	70.3
Northbound Through	D	50.7	E	58.4	D	49.6	E	74.4
Northbound Right	B	16.4	C	21.7	B	12.8	C	20.8
Southbound Left	D	51	E	62.1	D	49.3	E	62.1
Southbound Through	D	53.8	E	55	D	53.9	E	70.5
Southbound Right	A	4.5	C	33.6	A	6.8	D	45.8



Table 18 – Greenway Hayden Loop and Paradise Lane (13) Signalized

Intersection	Existing Conditions				2027 Build				2027 Build			
	AM PEAK		PM PEAK		AM PEAK		PM PEAK		AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)					Existing Geometry				Signalized			
Overall Intersection	-	-	-	-	-	-	-	-	B	19.6	C	20.7
Eastbound Left	F	103	F	241.6	F	1185.3	F	2479.3	D	50.9	D	46.6
Eastbound Through	F	77.7	F	102.7	F	100.6	F	139	D	46	D	43.9
Eastbound Right	B	12.5	B	12	B	13.3	B	12.5	D	46.9	D	44.7
Westbound Left	F	62.9	F	272.9	F	82.6	F	434.3	D	50.1	D	45.7
Westbound Through	F	80.8	F	147.3	F	106	F	224.1	D	52	D	49.3
Westbound Right	B	10.7	C	15.1	B	11	C	16.1	D	53.5	E	66.9
Northbound Left	B	10.6	B	10.2	B	11.1	B	10.6	B	18.4	B	19.2
Northbound Through	-	-	-	-	-	-	-	-	B	15.3	B	18.1
Northbound Right	-	-	-	-	-	-	-	-	B	12.1	B	11.1
Southbound Left	A	9.4	B	11.4	A	9.7	B	12	B	14.2	C	24.5
Southbound Through	-	-	-	-	-	-	-	-	B	18.6	B	16.2
Southbound Right	-	-	-	-	-	-	-	-	B	13.2	B	12.5

Table 19 – Greenway Hayden Loop and Paradise Lane (13) Roundabout

Intersection	2027 Build			
	AM PEAK		PM PEAK	
Signalized Intersections	LOS	DELAY	LOS	DELAY
Greenway Hayden Loop and Paradise Lane (13)	Roundabout			
Overall Intersection	B	11.4	B	13.1
Eastbound Shared Left-Through-Right	B	14.3	B	11.4
Westbound Shared Left-Through-Right	A	6.9	C	16.6
Northbound Shared Left-Through	A	8.6	B	12.9
Northbound Shared Through-Right	A	9.3	C	15.5
Southbound Shared Left-Through	B	11.4	B	10.7
Southbound Shared Through-Right	B	13.7	B	12.5



8. Turn Lane Analysis

8.1. Right Turn Lane Warrant

A driveway right turn deceleration lane is required when either of the following is met:

- The outside lane has an expected volume ≥ 250 vph and the right turn volume is > 55 vph
- Any three of the below criteria are met:
 1. At least 5,000 vehicle per day are using or are expected to be using the adjacent street
 2. The roadway's posted speed limit is > 35 mph
 3. At least 1,000 vehicles per day are using or are expected to use the driveway
 4. At least 30 vehicles per hour are expected to make right-turns into the driveway

8.1.1. Year 2022 Right Turn Lane Warrants

Turn lanes provide a place for turning vehicles to decelerate and turn. The Maricopa County Department of Transportation (MCDOT) *2017 Roadway Design Manual* Section 7.15 was utilized to determine the need for a right turn deceleration lane at the following driveways:

- Tierra Buena Lane and Driveway A (14)
- Paradise Lane and Driveway D (17)
- Paradise Lane and Driveway F (19)
- Scottsdale Road and Driveway H (21)
- Scottsdale Road and Driveway I (22)

See **Table 20** for the right turn analysis.

Table 20 – Year 2022 Right Turn Lane Warrants

On	At	No. Thru Lanes	Speed Limit	Peak Hour	Right Turn				
					Direction	Right	Through	Warranted	Recommended Storage Length (ft)
Tierra Buena Lane	Driveway A	1	30	AM	WB	118	103	YES	100 ft
				PM		45	113		
Paradise Lane	Driveway D	1	35	AM	EB	133	230	YES	100 ft
				PM		59	126		
	Driveway F	1	35	AM	EB	24	335	NO	N/A
				PM		22	223		
Scottsdale Road	Driveway H	3	45	AM	NB	79	1,064	YES	100 ft
				PM		66	1,861		
	Driveway I	3	45	AM	NB	77	1,082	YES	100 ft
				PM		64	1,796		

The proposed La Via development is providing exclusive right turn lanes at all intersections that meet the warrants as shown in **Table 20**.

8.1.2. Year 2027 Right Turn Lane Warrants

Similarly, a right turn lane analysis was completed for the Year 2027. The following driveways were analyzed:

- Tierra Buena Lane and Driveway A (14)
- Dial Boulevard and Driveway B (15)
- Dial Boulevard and Driveway (7)
- Dial Boulevard and Driveway C (16)
- Paradise Lane and Driveway D (17)
- Paradise Lane and Driveway F (19)
- Scottsdale Road and Driveway H (21)
- Scottsdale Road and Driveway I (22)

See **Table 21** for the analysis of the 2027 right turn lane warrants.

Table 21 – Year 2027 Right Turn Lane Analysis

On	At	No. Thru Lanes	Speed Limit	Peak Hour	Right Turn				
					Direction	Right	Through	Warranted	Recommended Storage Length (ft)
Tierra Buena Lane	Driveway A	1	30	AM	WB	120	127	YES	100 ft
				PM		52	131		
Dial Boulevard	Driveway B	1	30	AM	SB	0	167	NO	N/A
				PM		0	125		
	Monte Cristo Avenue	1	30	AM	SB	31	76	NO	N/A
				PM		84	34		
	Driveway C	1	30	AM	SB	15	114	NO	N/A
				PM		34	105		
Paradise Lane	Driveway D	1	35	AM	EB	157	264	YES	100 ft
				PM		55	180		
	Driveway F	1	35	AM	EB	24	413	NO	N/A
				PM		22	275		
Scottsdale Road	Driveway H	3	45	AM	NB	80	1,139	YES	100 ft
				PM		73	1,973		
	Driveway I	3	45	AM	NB	78	1,156	YES	100 ft
				PM		71	71		

The proposed La Via development is providing exclusive right turn lanes at all intersections that meet the warrants as shown in **Table 21**.

8.1.3. Right Turn Lane Recommendation

It is recommended for an exclusive right turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Paradise Lane and Driveway D (17) - Eastbound
- Scottsdale Road and Driveway H (21) - Northbound
- Scottsdale Road and Driveway I (22) – Northbound

For all four intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.



8.2. Left Turn Lane Warrant

The Maricopa County Department of Transportation (MCDOT) 2017 *Roadway Design Manual* Section 7.15 was also utilized to determine the need for a left turn deceleration lanes. Volume warrants for adding a left turn lane are shown in **Table 22**.

Table 22 – MCDOT Left Turn Lane Table 7.6

TABLE 7.6: VOLUME WARRANTS FOR LEFT-TURN LANES				
Peak Hour Traffic Volume on the Roadway in the Advancing Direction	Minimum Peak Hour Left-turn Traffic Volume			
	# of through lanes per direction			
	1		2	
	< 45 MPH Posted Speed	≥ 45 MPH Posted Speed	< 45 MPH Posted Speed	≥ 45 MPH Posted Speed
≤ 200	30	15	-	-
201-300	12	12	40	30
301-400	12	12	30	25
401-500	12	12	25	18
501-600	12	12	15	12
601-1000	12	12	10	8
1001 +	12	8	10	8

8.2.1. Year 2022 Left Turn Lane Warrants

The need for a left turn deceleration lane at the following driveways were analyzed in this report:

- Tierra Buena Lane and Driveway A (14)
- Paradise Lane and Driveway D (17)
- Scottsdale Road and Driveway H (21)

Table 23 shows the left turn analysis for the proposed development.

Table 23 – Year 2022 Left Turn Analysis

On	At	No. Thru Lanes	Speed Limit	Peak Hour	Left Turn			
					Direction	Through	Left	Recommended Storage Length (ft)
Tierra Buena Lane	Driveway A	1	30	AM	EB	156	163	YES
				PM		54	73	
Paradise Lane	Driveway D	1	35	AM	WB	96	278	YES
				PM		248	161	
Scottsdale Road	Driveway H	3	45	AM	SB	1,585	80	YES
				PM		1,602	30	

The proposed La Via development is providing exclusive left turn lanes at all intersections that meet the warrants as shown in **Table 23**.



8.2.2. Year 2027 Left Turn Lane Warrants

Similarly, a left turn lane analysis was completed for the Year 2027. The following driveways were analyzed:

- Tierra Buena Lane and Driveway A (14)
- Dial Boulevard and Driveway B (15)
- Dial Boulevard and Driveway/Monte Cristo Avenue (7)
- Dial Boulevard and Driveway C (16)
- Paradise Lane and Driveway D (17)
- Scottsdale Road and Driveway H (21)

See **Table 24** for the analysis of the 2027 left turn lane warrants.

Table 24 – Year 2027 Left Turn Lane Analysis

On	At	No. Thru Lanes	Speed Limit	Peak Hour	Left Turn				
					Direction	Through	Left	Warranted	Recommended Storage Length (ft)
Tierra Buena Lane	Driveway A	1	30	AM	EB	185	163	YES	100 ft
				PM		103	77		
Dial Boulevard	Driveway B	1	30	AM	NB	167	0	NO	N/A
				PM		164	33		
	Monte Cristo Avenue	1	30	AM	NB	92	19	YES	100 ft
				PM		34	58		
	Driveway C	1	30	AM	NB	242	1	NO	N/A
				PM		115	2		
Paradise Lane	Driveway D	1	35	AM	WB	140	250	YES	100 ft
				PM		283	158		
Scottsdale Road	Driveway H	3	45	AM	SB	1,665	81	YES	100 ft
				PM		1,693	34		

The proposed La Via development is providing exclusive left turn lanes at all intersections that meet the warrants as shown in **Table 24**.

8.2.3. Left Turn Lane Recommendation

It is recommended for an exclusive left turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Dial Boulevard and Driveway/Monte Cristo Avenue (7) - Northbound
- Paradise Lane and Driveway D (17) - Westbound
- Scottsdale Road and Driveway H (21) - Southbound

For all four intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

9. Traffic Signal Warrant Analysis

A traffic signal warrant study for the intersections of Scottsdale Road and Tierra Buena Lane, and Greenway-Hayden Loop and Paradise Lane was completed. A local data collection firm, Traffic Research & Analysis, Inc was utilized to collect 24-hour approach counts on Tuesday, August 22, 2017. See **Appendix D** for detailed traffic count data.

The warrant analysis is based on the signal warrants defined in the *2009 Manual on Uniform Traffic Control Devices (MUTCD)*.

Warrant 1 is the predominant criteria used and is based on minimum traffic volumes that must be present on both the major and minor streets. There are two conditions established for the 8-hour signal warrant. Condition A requires large intersecting traffic volumes. Condition B requires large major street traffic volumes, which limits the ability of the side street to enter or cross the major street. To satisfy the 8-hour signal warrant, either Condition A, Condition B, or 80% of the volume requirements for BOTH Condition A and Condition B must be met for at least 8 hours of the day.

Warrant 2 is a 4-hour warrant requiring higher traffic volumes than the 8-hour warrant, but requirements only need to be met for 4 hours of the day.

Warrant 3 is a peak hour warrant and applies to an office complex, manufacturing plant, or industrial complex. This warrant does apply to the proposed mixed-use site.

Warrant 4, 5 and 6 are associated with high pedestrian areas, school crossing areas and coordinated signal systems. This warrant is not applicable to the proposed mixed-use development.

Warrant 7 is a crash experience warrant and is for locations where the severity and frequency of crashes are the principal reasons to consider a traffic signal. This warrant requires five or more crashes in a 12-month period which could be corrected by a traffic signal.

Warrant 8 and 9 are associated with roadway networks and intersections near a grade crossing. These warrants do not apply to the proposed mixed-use development.

9.1.1. Scottsdale Road and Tierra Buena Lane Traffic Signal Warrant Analysis

The application of the above signal warrants at the intersection of Scottsdale Road and Tierra Buena Lane indicate that Warrant 1, Warrant 2, and Warrant 3 are satisfied in the year 2022. See **Table 25** for a summary of the signal warrant analysis.

Table 25 – Scottsdale Road and Tierra Buena Lane Traffic Signal Warrant Summary (2022)

Warrant	Description	Satisfied?
1	Eight-Hour Vehicular Volume	Yes
2	Four-Hour Vehicular Volume	Yes
3	Peak Hour	Yes
4	Pedestrian Volume	N/A
5	School Crossing	N/A
6	Coordinated Signal System	N/A
7	Crash Experience	No
8	Roadway Network	N/A
9	Intersection Near a Grade Crossing	N/A

* Note See Appendix L for detailed signal warrant analysis

70% factor values were applied per MUTCD as speeds on Scottsdale Road exceeds 40mph.

40% right turn volume reduction factor was applied to Tierra Buena volumes

Warrant 4, 5, and 9 are not satisfied due to limited pedestrian volumes and lack of proximity to a school crossing or grade crossing. Warrant 6 and 8 are not applicable because a traffic signal installation is not necessary to provide platooning of vehicles.

The most recent 3-year collision history (June 2014 – June 2017) was used in order to evaluate Warrant 7, Crash Experience Warrant. During this time 12 collisions occurred, of which eight (8) would be susceptible to correction upon implementing a traffic signal. However at no time were there five (5) correctable collisions during a 12-month period. Therefore, this warrant was not satisfied.

9.1.2. Greenway-Hayden Loop and Paradise Lane Traffic Signal Warrant Analysis

Similarly, the application of these signal warrants at the intersection of Greenway-Hayden Loop and Paradise Lane indicate that Warrant 1, Warrant 2, and Warrant 3 are satisfied. See **Table 26** for a summary of the signal warrant analysis.

Table 26 – Greenway-Hayden Loop and Paradise Lane Traffic Signal Warrant Summary (2022)

Warrant	Description	Satisfied?
1	Eight-Hour Vehicular Volume	Yes
2	Four-Hour Vehicular Volume	Yes
3	Peak Hour	Yes
4	Pedestrian Volume	N/A
5	School Crossing	N/A
6	Coordinated Signal System	N/A
7	Crash Experience	Yes
8	Roadway Network	N/A
9	Intersection Near a Grade Crossing	N/A

* Note See Appendix L for detailed signal warrant analysis

70% factor values were applied per MUTCD as speeds on Scottsdale Road exceeds 40mph.

20% right turn volume reduction factor was applied to Paradise Lane volumes

Warrant 4, 5, and 9 are not satisfied due to limited pedestrian volumes and lack of proximity to a school crossing or grade crossing. Warrant 6 and 8 are not applicable because a traffic signal installation is not necessary to provide platooning of vehicles.

The most recent 3-year collision history (June 2014 – June 2017) was used in order to evaluate Warrant 7, Crash Experience Warrant. During this time sixteen (16) collisions occurred at this intersection, of which nine (9) would be susceptible to correction upon implementing a traffic signal. Five (5) of these collisions occurred in the 12-month period. Therefore, this signal warrant is satisfied.

9.1.3. Traffic Signal Warrant Recommendation

The year 2022 traffic volumes with the build out of the proposed La Via development result in Traffic Signal Warrants 1, 2 and 3 being met for the intersections of Scottsdale Road and Tierra Buena Lane, and Greenway-Hayden Loop and Paradise Lane. Additionally, at the intersection of Scottsdale Road and Tierra Buena Lane, based on the most recent 3-year collision history, there have been eight (8) crashes that would be correctable with the installation of a traffic signal, and at the intersection of Greenway-Hayden Loop and Paradise Lane, based on the most recent 3-year collision history, there have been nine (9) crashes that would be correctable with the installation of a traffic signal. Therefore, it is recommended that a traffic signal be installed at the intersection of Scottsdale Road and Tierra Buena Lane, as well as at the intersection of Greenway-Hayden Loop and Paradise Lane in the year 2022 with the build out of the proposed La Via development.

10. Recommendations & Conclusions

The proposed mixed-use development will be located on an approximate 28-acre parcel on the northeast corner of Scottsdale Road and Tierra Buena Lane. The proposed development is bound by Paradise Lane to the north, Dial Boulevard to the east, Tierra Buena Lane to the south and Scottsdale Road to the west.

The proposed development will be comprised of the following land uses:

- 700,000 square feet Office
- 60,000 square feet Retail/Restaurants
- 40,000 square feet Grocery
- 10,000 square feet Theater
- 650 units Apartments
- 188 units Condominiums
- 180 rooms Hotel

Trip Generation Comparison

Currently the proposed site is comprised of two (2) parcels zoned for C-4 land uses with a maximum floor area ratio (FAR) of 0.8 for commercial uses. A comparison was completed for the proposed La Via development and a potential C-4 zoned development. The comparison is shown in **Table 27** below:

Table 27 – Trip Generation Comparison (C-4 Zoning vs. Proposed)

Land Use	Weekday	AM Peak Hour			PM Peak Hour		
	Total	Total	In	Out	Total	In	Out
Proposed Mix (C-4 Zoning)	23,673	1,207	815	392	2,222	939	1,284
Proposed Use (La Via)	21,885	1,585	1,040	545	1,714	632	1,082
Difference	-1,788	378	225	153	-508	-307	-202

As shown in **Table 27** the proposed La Via development will generate significantly less daily trips in comparison to a potential C-4 zoned development.

The existing conditions, along with year 2022 (5-year) and year 2027 (10 year) analyses were completed for twenty-two (22) study intersections and site driveways. Evaluating the capacity analysis, the following are the recommended improvements:

Year 2022

Year 2022 No Build Improvements

For the following intersections, improvements are recommended based on the existing traffic volumes and capacity analysis, and therefore assumed to be in place prior to Year 2022:

76th Street and Frank Lloyd Wright Boulevard (10)

The south leg currently provides dual left turn lanes and a single right turn lane for the northbound movement. However, there are more right turning vehicles than left turning vehicles. Therefore, it is recommended for the middle lane to be converted from an exclusive left turn lane to a shared left-right turn lane to accommodate the higher number of right turning vehicles. The existing AM and PM peak hour northbound right turn movement currently operates at a LOS D and E, respectively.

Greenway Hayden Loop and Frank Lloyd Wright Boulevard (12)

The south leg currently provides a single right turn lane, which currently serves 311 and 489 vehicles during the AM and PM peak hours, respectively. During the PM peak hour the LOS for the northbound right turn lane movement is a LOS F. Therefore, it is recommended for an additional northbound right turn lane be constructed to provide dual northbound right turn lanes. Additionally, implementing a right turn overlap phase northbound, southbound, eastbound and westbound is also recommended. Currently, during the PM peak hour there are 48 eastbound, 489 northbound, 351 westbound, and 531 southbound right turning vehicles.

Year 2022 Build Improvements

The following are the recommended year 2022 improvements with the proposed 5-year build out of the La Via development:

Scottsdale Road and Paradise Lane (2) improvement to include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Scottsdale Road and Tierra Buena Lane (3) improvement to include installation of a traffic signal. Striping modifications to the west leg consist of installing signing and pavement marking to provide a dedicated left turn lane and a shared through-right turn lane. Improvements to the east leg include an additional westbound right turn lane, i.e. dual westbound right turn lanes. This can be accomplished with signing and pavement marking modifications.

Greenway Hayden Loop and Paradise Lane (13) improvement to include installation of a traffic signal or roundabout. For a traffic signal no change to the existing lane configuration necessary. For a roundabout, the improvement includes a two-lane roundabout with a single lane approach



on the west and east legs, and two lane approaches on the north and south legs. **Table 14** and **Table 15** provide the level of service with the installation of a traffic signal or roundabout, respectively.

Tierra Buena Lane and Driveway A (14) improvement to include build out of the stop-controlled Driveway A. Striping modifications to the two-way left turn lane may be provided to provide an eastbound left turn lane. The east leg improvement consists of adding an exclusive right turn lane. It is recommended for the driveway to be wide enough to provide an exclusive southbound left turn lane, as well as a shared through-right turn lane.

Paradise Lane and Driveway D (17) improvement to include build out of the stop-controlled Driveway D providing full access to and from the site. It is recommended for the driveway to be wide enough to provide an exclusive northbound left turn lane, as well as a shared through-right turn lane. The west leg improvement will consist of adding an exclusive right turn lane. The south leg will may consist of modifying the two-way left turn lane to provide an exclusive left turn lane.

Paradise Lane and Driveway E (18) improvement to include build out of the stop-controlled egress only Driveway E. The south leg will consist of a shared left-right turn lane.

Paradise Lane and Driveway F (19) improvement to include build out of the ingress only Driveway F.

Scottsdale Road and Driveway G (20) improvement to include the build out of the stop-controlled Driveway G providing right-out access from the site.

Scottsdale Road and Driveway H (21) improvement to include the build out of the stop-controlled Driveway H providing right-in, right-out, and left-in access to and from the site. The south leg improvement consists of providing an exclusive right turn lane. It is recommended for the median along Scottsdale Road to be modified to provide an exclusive southbound left turn lane.

Scottsdale Road and Driveway I (22) improvement to include the build out of Driveway I providing right-in only access to the site. A dedicated right turn lane is recommended to be built out for the northbound approach.

Exclusive Right Turn Lane

It is recommended for an exclusive right turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Paradise Lane and Driveway D (17) - Eastbound
- Scottsdale Road and Driveway H (21) - Northbound
- Scottsdale Road and Driveway I (22) – Northbound

For all four intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

Exclusive Left Turn Lane

It is recommended for an exclusive left turn lane be provided at the following intersections:

- Tierra Buena Lane and Driveway A (14) - Westbound
- Paradise Lane and Driveway D (17) - Westbound
- Scottsdale Road and Driveway H (21) - Southbound

For all three intersections shown above, based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.

Traffic Signal Warrant

The year 2022 traffic volumes with the build out of the proposed La Via development result in Traffic Signal Warrants 1, 2 and 3 being met for the intersections of Scottsdale Road and Tierra Buena Lane, and Greenway-Hayden Loop and Paradise Lane. Additionally, at the intersection of Scottsdale Road and Tierra Buena Lane, based on the most recent 3-year collision history, there have been eight (8) crashes that would be correctable with the installation of a traffic signal, and at the intersection of Greenway-Hayden Loop and Paradise Lane, based on the most recent 3-year collision history, there have been nine (9) crashes that would be correctable with the installation of a traffic signal. Therefore, it is recommended that a traffic signal be installed at the intersection of Scottsdale Road and Tierra Buena Lane, as well as at the intersection of Greenway-Hayden Loop and Paradise Lane in the year 2022 with the build out of the proposed La Via development.

Year 2027

Dial Boulevard and Monte Cristo Avenue (7) improvement to include build out of the full access stop-controlled site driveway forming the west leg of the intersection with Monte Cristo Avenue. It is recommended for the driveway to be wide enough to provide an exclusive eastbound left turn lane, as well as a shared through-right turn lane. Striping modifications to the two-way left turn lane is recommended to provide a northbound left turn lane.

76th Street and Frank Lloyd Wright Boulevard (10) improvements to include modifications to striping on the south leg of the intersection. With striping, lane configuration will be changed to provide a dedicated left turn lane, a shared left-right turn lane and a dedicated right turn lane.

Dial Boulevard and Driveway B (15) improvement to include build out of the stop-controlled Driveway B providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

Dial Boulevard and Driveway C (16) improvement to include build out of the stop-controlled Driveway C providing full access to and from the site. The west leg will consist of a shared left-right turn lane. With striping, the two-way left turn lane may be modified to provide a northbound exclusive left turn lane.

Exclusive Left Turn Lane

It is recommended for an exclusive left turn lane be provided at the following intersection:

- Dial Boulevard and Driveway/Monte Cristo Avenue (7) - Northbound

Based on the 95th percentile queue, the recommended storage length is 100 feet, which is the City of Scottsdale's minimum required storage length.