
NWC La Canada/Naranja

Traffic Impact Study

Permit #2400614

OV #2302577

Prepared for submittal to:

Oro Valley, AZ

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Engineering, LLC

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June 21, 2021

Updated July 12, 2022

Updated September 9, 2022 (Draft)

December 12, 2022

APPROVED

Engineering: chuelle 7/7/2023

The issuance of a permit shall not be construed to be a permit or approval of any violation of the codes or ordinances of the Town of Oro Valley

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Prepared for:

Oro Valley, Arizona

Prepared by:

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Project No. 2021.15

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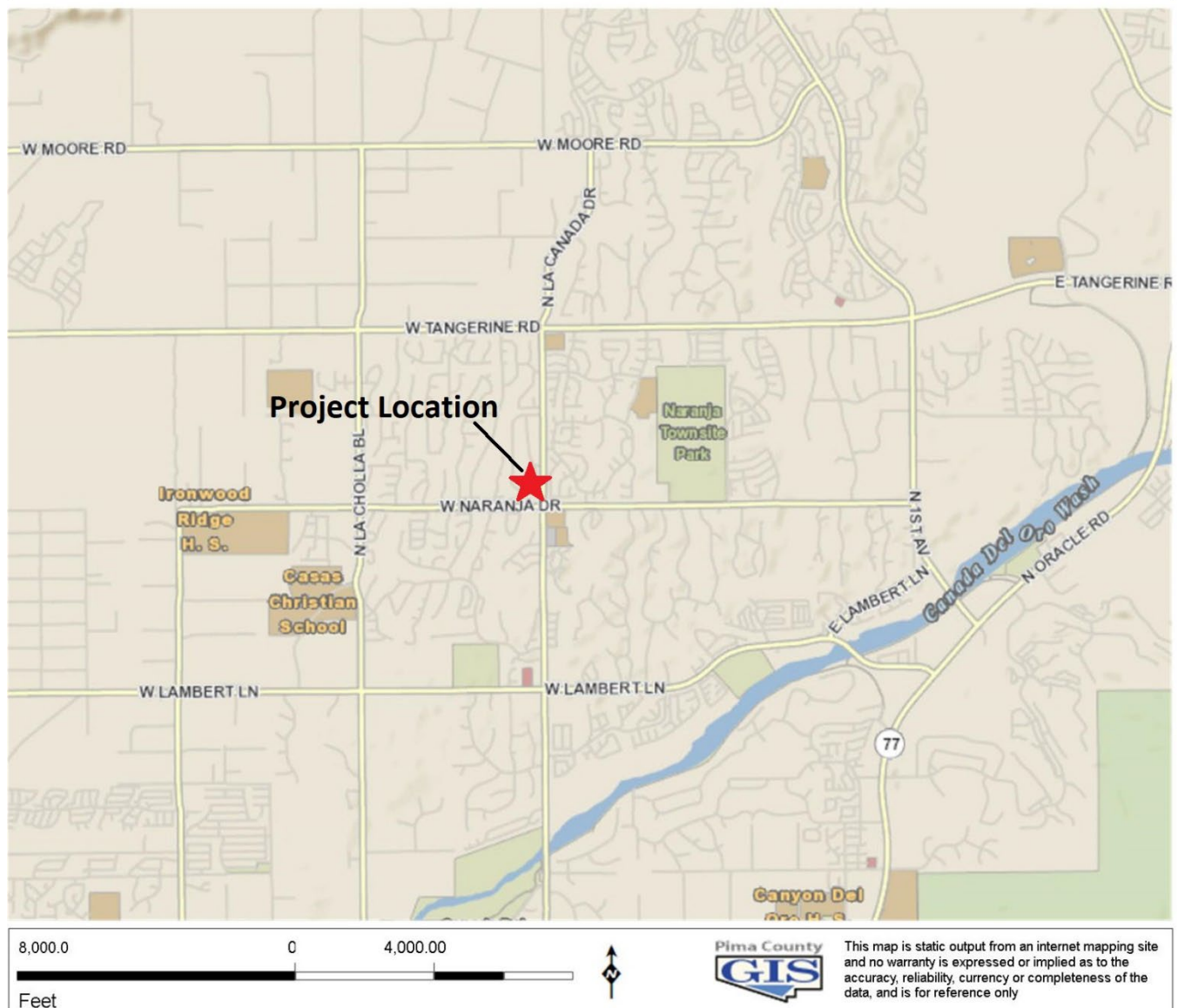
1. Introduction and Summary

Purpose of Report and Study Objectives

This traffic impact study (TIS) addresses traffic operations and roadway design for a proposed mixed-use development, west of La Canada Drive, and north of Naranja Drive in Oro Valley. The current zoning is El Conquistador Country Club Planned Area Development (PAD). The project location is shown in Exhibit 1.

Exhibit 1 Site Location

PimaMaps Print



The project includes four buildings within the project site. The areas of the buildings have changed since the previous TIA. The new sizes of these buildings are:

- Building #1 – Medical Office Building, 7,195 square feet
- Building #2 – Medical Office Building, 5,428 square feet
- Building #3 – Medical Office Building, 5,428 square feet
- Building #4 – Restaurant with Drive-Through Lane, 2,550 square feet

The restaurant is expected to be a coffee shop with a drive through lane.

The project will have two access points, one on La Canada Drive and one on Naranja Drive. The access on La Canada will be limited to right-in, right-out only movements because of the raised median on La Canada that is opposite the proposed driveway location. The access on Naranja Drive has been analyzed as a full access driveway – all turns are allowed. Exhibit 2 shows the conceptual site plan.

The objectives of this study are to determine the traffic impacts of the proposed development on the adjacent roadway system and to recommend any needed improvements to maintain efficient and safe traffic operations. The specific study objectives are as follows:

- Evaluate the intersections of La Canada/Naranja, La Canada/Crystal Vision, Naranja/Scioto and the project access intersections with and without the project and recommend any needed improvements.
- Evaluate the roadways La Canada Drive and Naranja Drive adjacent to the project and recommend any needed improvements.
- Evaluate the appropriateness of the proposed driveway locations and any access restrictions.

The project will generate an estimated 2,720 daily trips with 277 AM peak hour trips and 173 PM peak hour trips. Because most of the coffee shop trips will be “pass-by” trips, the total number of new trips generated by the project is expected to be 858 daily new trips, 75 AM peak hour new trips and 75 PM peak hour new trips.

Based on the projected total trip generation, this report includes the required analysis for a Category 1 Traffic Impact Study. This report analyzes existing, future “without project” and future “with project” conditions at the site access drives and at adjacent signalized intersections and/or major unsignalized street intersections. The analysis for the future year conditions estimates the impacts in 2022 and 2025.

Executive Summary

Development Description

The site plan of the proposed development includes three buildings comprising 18,051 square feet of medical offices and one 2,550 square foot coffee shop with a drive through lane. Access to the site is proposed from one driveway on Naranja Drive and one on La Canada Drive.

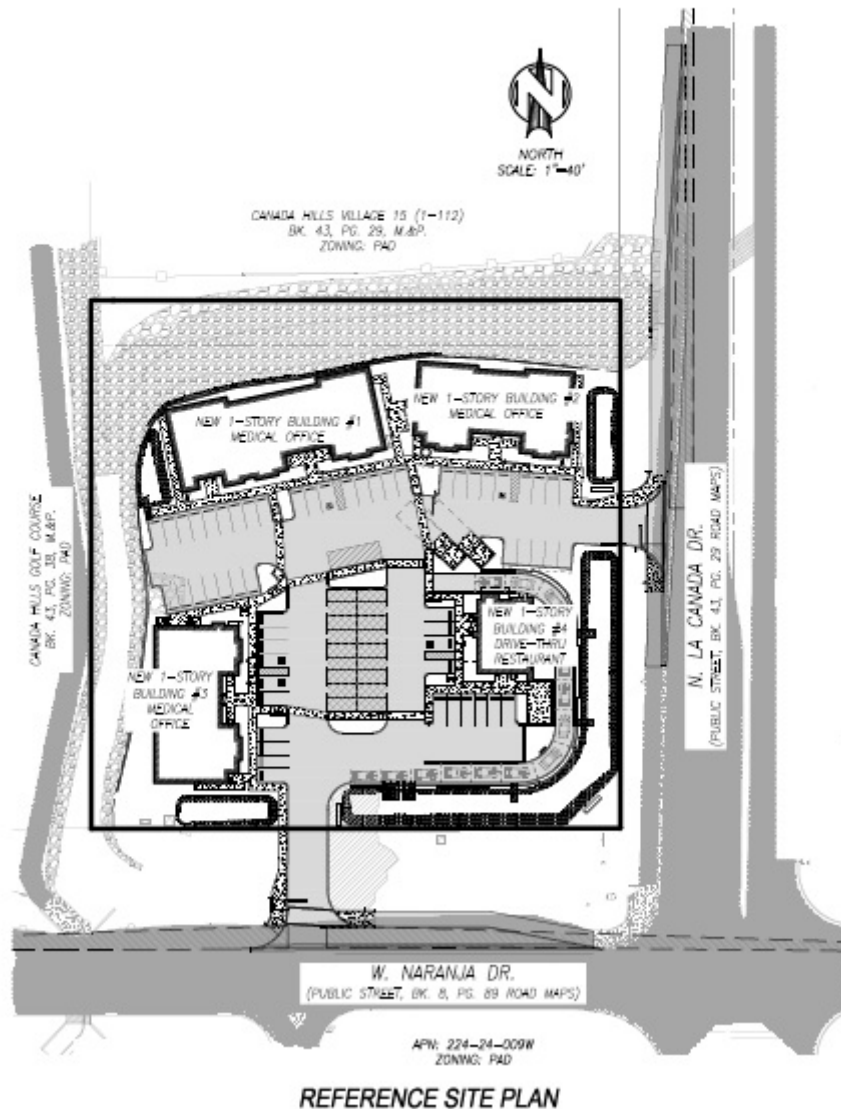
The driveway on Naranja Drive would be located opposite the existing driveway to the La Canada Retail development and has been analyzed with full access. It is 230 feet west of the La Canada/Naranja intersection. The driveway on La Canada Drive would intersect a section of the existing taper for the

southbound right turn lane at the La Canada Drive/Naranja Drive signalized intersection. This driveway is limited to right-in, right-out movements because of the raised median on La Canada Drive.

Based on trip rates for medical offices and coffee shops with drive-through lanes from the Institute of Transportation Engineering (ITE) Trip Generation document, the project will add approximately 858 new daily trips to the roadway system.

Exhibit 2 Site Plan

CONCEPTUAL SITE PLAN FOR
NWC LA CANADA / NARANJA
2101733



Source: Grenier Engineering

Summary of Conclusions and Recommendations

The following is a summary of conclusions and recommendations for the roadways within and surrounding the project site.

Conclusions

1. Although the project will generate an estimated 2,720 daily trips with 277 AM peak hour trips and 173 PM peak hour trips, most of the coffee shop trips will be “pass-by” trips. Therefore, the total number of new trips generated by the project is expected to be 858 daily new trips, 75 AM peak hour new trips and 75 PM peak hour new trips.
2. The signalized intersection of La Canada Drive/Naranja Drive has turning movements that currently operate at LOS E or F during the AM and PM peak hours. In addition, the existing AM peak hour left turn queue of 192 feet on the northbound approach exceeds the available storage (150 feet). By the year 2025, the calculated queue will be 200 feet long without the project and 267 feet long with the project with the existing intersection lane configurations.
3. The other study area roadways and intersections currently operate at acceptable levels of service (LOS D or better).
4. Because of the existing raised median on La Canada Drive, the project driveway on La Canada Drive will be limited to right in, right out movements only. The project driveway on Naranja Drive will be a full access driveway with one left turn lane and one right turn lane on the driveway. An eastbound left turn lane and a right turn lane are warranted on Naranja Drive for access into the driveway.
5. There do not appear to be any sight distance constraints for intersections or proposed driveways near the project.
6. Right turn lanes are warranted on La Canada Drive and Naranja Drive at the project driveways.

Recommendations

1. Based on input from Town staff on May 26th, 2021, the driveway on Naranja Drive should be a full access driveway. The capacity analysis at this intersection found that all movements will operate at LOS D or better during both peak hours. The driveway was analyzed with a southbound left turn lane and a southbound right turn lane. The pavement markings on La Canada Drive should be revised to provide a 150-foot left turn lane for the eastbound left turn lane for turns into the project driveway. This turn lane will not encroach into the existing eastbound left turn lane at the La Canada/Naranja Drive intersection. With the existing intersection lane configurations at the La Canada/Naranja intersection, the highest peak hour queue at the La Canada/Naranja intersection for the eastbound movements is calculated to be 374 feet for the through movements during the AM peak hour. This may create delays for drivers exiting the driveway who wish to continue west on Naranja Drive or south on La Canada Drive and is not unusual for drivers entering arterials during peak hours. However, if a right turn lane is constructed for the eastbound movement at the La Canada Drive/Naranja Drive intersection (see Recommendation 5), the eastbound queue lengths at this intersection will be much less.
2. Construct a westbound right turn lane for access into the driveway on Naranja Drive. The right turn lane should be 150 feet long based on Pima County turn lane design standards for a right turn lane on a 45-mph roadway. Because the driveway will be 230 feet from La Canada, the taper should begin immediately after the curb return at the intersection. Because the taper length will not meet Pima County standards for turn

lane design, the Town Engineer has required that a 100-foot full width lane be constructed with the remaining 50 feet $\pm$ for the taper.

3. Provide a "Right Turn Only" sign with the stop sign at the project driveway egress on La Canada Drive. A "One-Way (R)" sign should be placed on the raised median opposite the project driveway.
4. Although a southbound right turn lane is warranted for access into the driveway on La Canada Drive, the construction of a right turn lane at this location may require the extension of the existing storm drain culvert further west, which would require a new headwall, and may also require the re-alignment of other storm drainage infrastructure in the street. Providing a new right turn lane would also require shifting the existing multi-use path west as well. If Oro Valley determines that a turn lane should be constructed, it should be constructed to be integrated into this turn lane to create a continuous right turn lane. The right turn lane should be 150 feet long based on Pima County turn lane design standards for a right turn lane on a 45-mph roadway. Because the driveway will intersect a section of the existing taper of the southbound right turn lane at the La Canada/Naranja intersection, the existing southbound right turn lane should be extended to the north to provide a continuous right turn lane for both this movement and the project driveway. This turn lane should extend 150 feet north of the project driveway. The Town's Public Works Director indicated that it would be acceptable to provide a ten-foot-wide turn lane within the new section and transitioning it to its existing width after the culvert structure.¹ Based on this ten-lane section, the taper length should be constructed to be 15 feet times 10 feet, or 150 feet.
5. The intersection of La Canada Drive and Naranja Drive has existing conditions that should be mitigated, even without the project. The northbound left turn queue (200 feet) under existing conditions exceeds the available storage (150 feet). In addition, there are three movements that operate at LOS E or F conditions during the AM peak hour: the eastbound through/right lane, and the westbound and northbound turn lane movements. The Town should consider constructing an eastbound right turn lane at the intersection. This would improve the eastbound approach so each movement would operate at LOS D or better. The 95th percentile queue length for the eastbound through movement would be reduced from 374 feet to 137 feet with this improvement. There would be an indirect reduction in queue length for the northbound left turn lane due to the reallocation of green time for all movements at the intersection. The 95th percentile queue for this movement would be reduced from 267 feet to 200 feet under 2025 With Project conditions with this improvement. The Town Engineer has required that the turn lane should be extended. The developer is responsible for the portion of the additional storage required by the impact of the 2025 with project conditions. As 200 feet is required without the project, the developer would be responsible for the construction and cost of the additional 67 feet needed. The developer may partner with the Town to construct a longer turn lane.
6. Ensure that there is acceptable sight distance to and from the project entrances.
7. Roadway and subdivision design should conform to current Oro Valley standards.
8. All new traffic signs and markings must comply with the current *Manual on Uniform Traffic Control Devices* and local requirements.
9. The Town has required that a Traffic Control Plan be prepared to manage traffic during the construction of the sewer line from the northbound lanes on La Canada to the site. The Town requires one lane of traffic to be maintained in each direction with 11-foot lanes. The Traffic Control Plan is a requirement of the right-of-way permit application. The application is submitted by the construction contractor. The permit will include the condition that one lane of traffic be maintained in each direction with minimum 11-foot lanes.

¹ E-mail from Paul Keesler to Robert Swartz on September 24, 2021.

2. Proposed Development

Site Location

The project is in the Town of Oro Valley with access to Naranja Drive on the south and La Canada Drive to the east. The site is currently vacant.

Land Use and Intensity

There are 18,051 square feet of medical offices within three buildings and a 2,550 square foot coffee shop with a drive through lane proposed on this site.

Site Plan

The site plan of the proposed development shows access to the four buildings from one right-in, right-out driveway on La Canada Drive and one driveway on Naranja Drive. The proposed development with the tentative locations of the project driveways is shown in Exhibit 2.

Access Geometrics

The driveways should be constructed to Oro Valley standards. It is recommended that the driveways provide one entering lane and one exiting lane and that the driveway legs be controlled by a stop sign.

Development Phasing and Timing

For the purpose of this study, we have assumed buildout by the year 2022.

3. Study Area Conditions

Study Area

The study area includes Naranja Drive and La Canada Drive. A Category I TIS is required for this project, and the study area for a Category I TIS includes site access driveways and adjacent signalized intersections and/or major unsignalized street intersections within ¼ mile. For this project, the intersections within this area are La Canada Drive/Naranja Drive, Naranja Drive/Scioto Drive and La Canada Drive/Crystal Vision Street and Naranja Drive/Retail Shops at La Canada driveway. There are two project driveways: one on La Canada Drive and one on Naranja Drive. These project driveways will be analyzed in the “With Project” analysis.

Area of Significant Traffic Impact

The significant impact from the project will be along Naranja Drive and La Canada Drive.

Influence Area

The influence area includes the Town of Oro Valley.

Existing Land Use

The study area is predominately residential with residential developments immediately to the west, north and east of the project site. The Retail Shops at La Canada are south of Naranja Drive. The Oro Valley Public Library is on the southeast corner of the Naranja Drive/La Canada Drive intersection. Ironwood Ridge High School is about 1.3 miles west of the project site.

Site Accessibility

Access to the project will be via Naranja Drive and La Canada Drive.

Existing and Future Area Roadway System

La Canada Drive, Naranja Drive and Shannon Road will provide the primary regional access to the project site. The Pima Association of Governments (PAG) FY 2020-2024 Transportation Improvement Program (TIP) lists the following programmed projects within or near the study area:

- Naranja Drive Pedestrian Improvements, Naranja from La Canada to First (Construct a 12-foot multi-use path), Reserve Project

Site Circulation

The site plan shows the internal circulation to be open with no restrictions between buildings. The coffee shop drive through will be from west to east to north with exiting vehicles having the option to exit via the closest access (La Canada Drive) or driving through the site to exit at the Naranja Drive access.

4. Analysis of Existing Conditions

Physical Characteristics

Roadway Characteristics

Exhibit 3 is an inventory of the physical features of the project area roads. The following describes the roadway features of the study area roads.

La Canada Drive is an eleven mile north/south paved roadway from its northern paved terminus north of Moore Road in the Somerset Canyon neighborhood to the Rillito River where it becomes Flowing Wells Road. It is a four-lane arterial road with a posted speed limit of 45 mph in the vicinity of the project. Its function is as a major arterial through mostly residential neighborhoods in Oro Valley.

Naranja Drive is a two-lane east/west undivided paved roadway with unpaved shoulders from Shannon Road to its eastern terminus at 1st Avenue. Its speed limit is 45 mph. There are separate shared-use paths on the south side of Naranja Drive east of La Canada Drive, and on the north side of Naranja Drive west of La Canada Drive. Ironwood Ridge High School is located on the south side of Naranja Drive, approximately 1.3 miles west of the project site. It is designated as a bike route in the Tucson Bike Map. There is a sidewalk on the south side of the road along the frontage of the Retail Shops of La Canada center.

Existing Intersections

This study analyses conditions at the existing intersections of La Canada Drive/Naranja Drive, Naranja Drive/Scioto Drive, La Canada Drive/Crystal Vision Street and the project driveway intersections.

La Canada Drive/Naranja Drive is a four-leg signalized intersection. There is a lagging left turn phase on each approach with protected left turn phases on the north/south approaches and permitted/protected left turn phases on the east/west approaches. The north and south approaches have a left turn lane, two through lanes and a right turn lane. The eastbound approach has a left turn lane and a shared through/right turn lane. The westbound approach has a left turn lane, a through lane and a right turn lane. There are crosswalks on each leg of the intersection.

Naranja Drive/Scioto Avenue is a three-leg unsignalized intersection with stop control on Scioto Avenue. Scioto Avenue provides access to the Canada Hills Village subdivision.

La Canada Drive/Crystal Vision Street is a three-leg unsignalized intersection with stop control on Crystal Vision Street. Crystal Vision Street also provides access to the Canada Hills Village subdivision. There is a median opening on La Canada Drive at this location providing full access at this intersection.

There is a driveway to the Retail Shops at La Canada on the south side of Naranja Drive that is opposite of the project driveway. The driveway to the Retail Shops at La Canada has a physical barrier, a “pork chop”, that limits access at this driveway to rights in and out only.

Exhibits 4-7 are aerial photographs of the project area intersections.

Exhibit 3 Roadway Inventory

	<i>Jurisdiction</i>	<i>Weekday Daily Volume</i>	<i>Data Year</i>	<i>Source</i>	<i>No. Lanes</i>	<i>Speed Limit</i>	<i>Sidewalks</i>	<i>Bike Route</i>
La Canada Drive								
North of Naranja Drive	Oro Valley	16,384	2020	PAG	4	45	Yes, East Side, Multi-Use Path, West Side	Bike Route with Striped Shoulder
South of Naranja Drive	Oro Valley	22,531	2020	PAG	4	45	Yes	Bike Route with Striped Shoulder
Naranja Drive								
West of La Canada Drive	Oro Valley	10,885	2020	PAG	2	45	Yes, South Side, Multi-Use Path, North Side	Bike Route with Striped Shoulder
East of La Canada Drive	Oro Valley	7,789	2020	PAG	2	45	Multi-Use Path, South Side	Bike Route with Striped Shoulder

Transit Service

Sun Tran has an express transit service routes and a Sun Shuttle route in Oro Valley, although the closest transit stop to the project is at Lambert/La Canada, one mile south from the project site. Oro Valley Dial-a-Ride provides transportation service to the general public from their home address to any location within Oro Valley. Oro Valley Dial-a-Ride also provides service to the elderly and those eligible for American with Disabilities Act (ACT) riders to areas designated within the greater Tucson area.

Pedestrian/Bicycle Facilities

According to the Oro Valley Bikeways Map 2016 there are bike paths along Naranja Drive and La Canada Drive (see Exhibit 8), which are classified as follows:

- Naranja Drive (paved shared use path, signed bike route w/ on-street bike lane, paved shoulder)
- La Canada Drive (shared use path and signed bike route w/ on-street bike lane)

Traffic Volumes

Daily traffic volumes for La Canada Drive north and south of Naranja Drive, and Naranja Drive east and west of La Canada Drive are available on the Pima Association of Governments (PAG) website. Morning and afternoon peak hour intersection turning movement volumes are available on the PAG website. Field Data Services of Arizona collected peak period turning movement counts at the intersections of Naranja Drive/Scioto Avenue, La Canada Drive/Crystal Vision Street and the Naranja Drive/Retail Shops of La Canada driveway in April 2021.

The PAG intersection turning movement count at La Canada/Naranja was from 2019. PAG daily volumes for the year 2020 were globally reduced by 8% from the 2019 estimates presumably to estimate the traffic volume impacts associated with COVID-19. For this reason, we conservatively assumed that 2021 volumes are the same as the 2019 volumes, and thus we used the 2019 volumes as the 2021 (existing) volumes.

The study area intersection year 2021 estimated volumes are provided in Exhibit 9.

Exhibit 4 La Canada/Naranja



Exhibit 5 La Canada/Crystal Vision



Exhibit 6 Naranja/Scioto

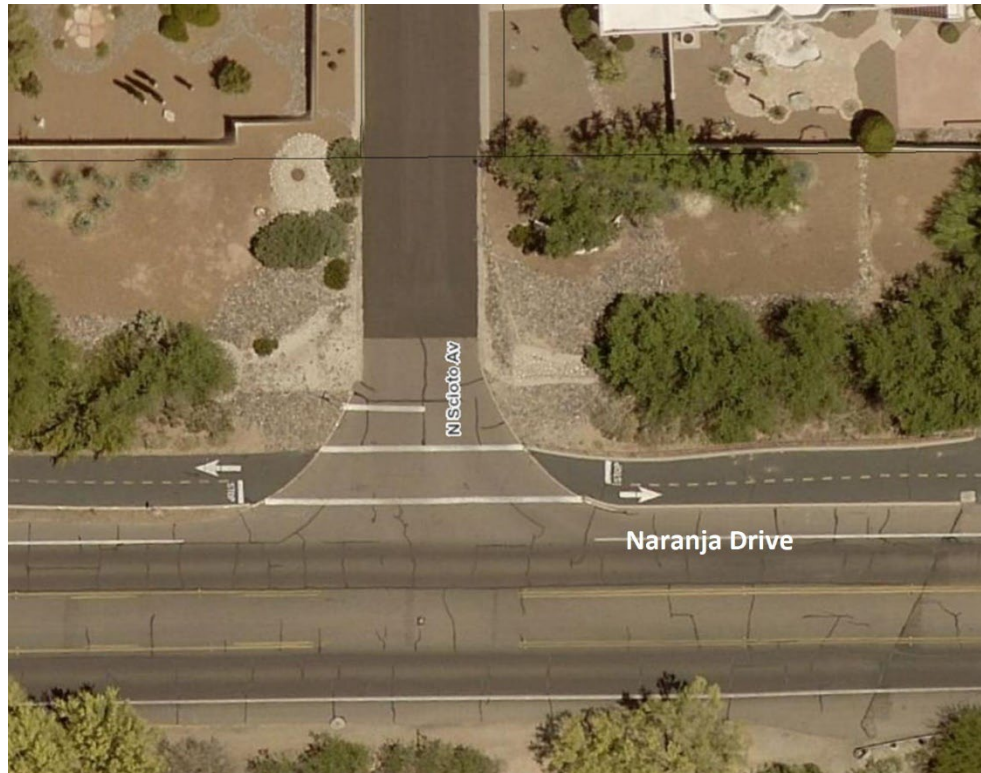


Exhibit 7 Naranja/Driveway for Retail Shops at La Canada



Exhibit 8 Oro Valley Bike Map – Project Roadways

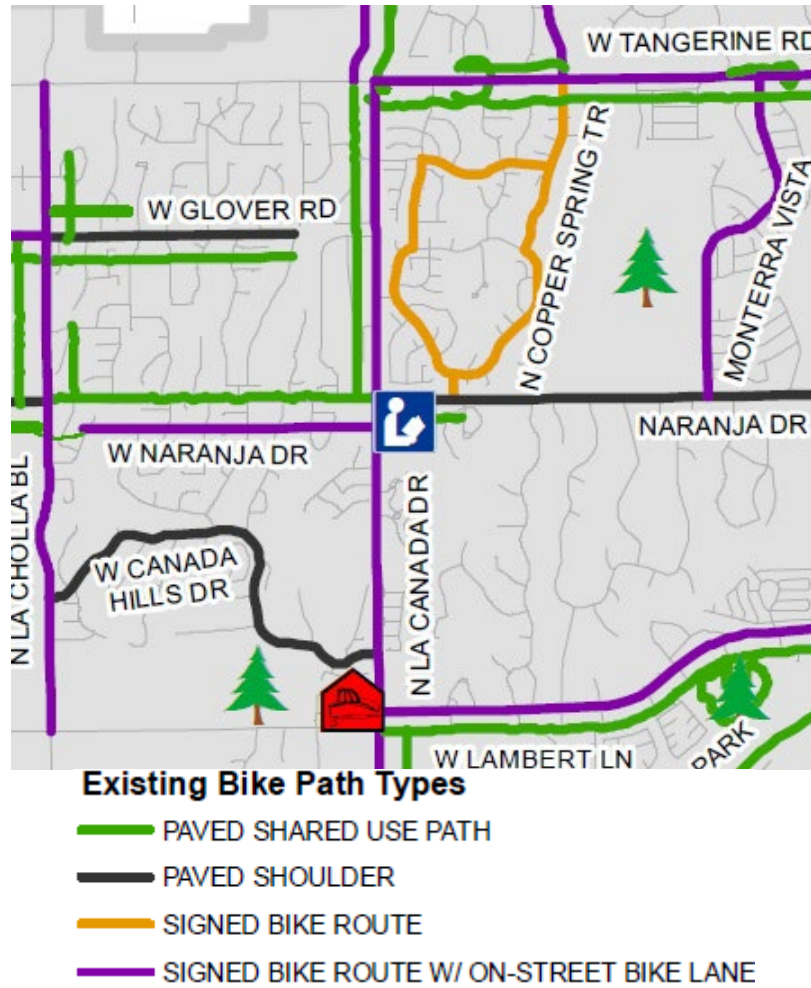
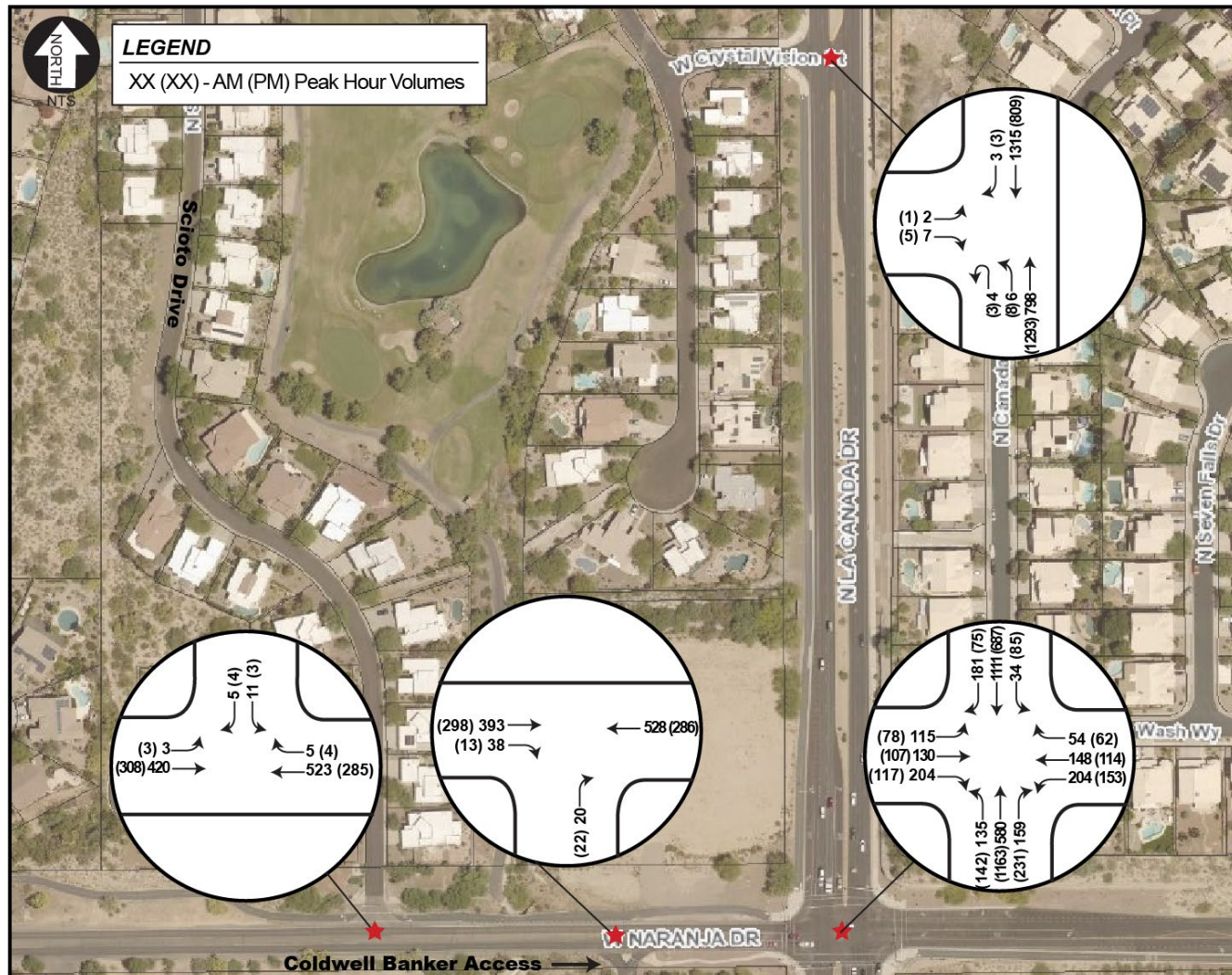


Exhibit 9 Year 2021 Estimated Intersection Peak Hour Volumes



Level of Service

Level of service is a qualitative description of how well a roadway or intersection operates under prevailing traffic conditions based on traffic volumes and capacity. A grading system of A through F, similar to academic grades, is utilized. LOS A is free-flowing traffic, whereas LOS F is forced flow and extreme congestion. LOS D is generally accepted as the standard in urbanized areas although LOS E is sometimes accepted in more congested areas. Segment performance has been estimated using the planning methods contained in the Florida Department of Transportation (FDOT) Level of Service Handbook. Current performance of the intersections was analyzed using the Synchro analysis software.

Roadway Performance

Naranja Drive, a two-lane road with a 45-mph speed limit has a LOS D daily volume threshold of approximately 16,730 vehicles per day (vpd). La Canada Drive, a four-lane divided roadway with a 45-mph speed limit has a LOS D daily volume threshold of approximately 35,820 vpd. These thresholds are from the *Florida Department of Transportation's Generalized Annual Average Daily Volumes for Florida's Urbanized Areas*, a general source for estimating roadway operations based on daily volumes. Based on the recorded traffic volumes shown in Exhibit 3, all roadways operate well below the LOS D daily volume threshold.

Intersection Performance

The project area intersections were analyzed for both the AM and PM peak hour condition and the results are provided in Exhibit 10. The exhibit shows that the La Canada/Naranja intersection has movements that currently operate at LOS E or F. Other study area intersections all operate at LOS D or better.

Safety Related Deficiencies

Collision data for the project intersections and adjacent roadway segments were provided by the Arizona Department of Transportation. Recorded collision data from January 1, 2015, through December 31, 2019, are shown in a summary in Exhibits 11a (Roadway Segments) and 11b (Intersections). Exhibit 11a only includes intersection crashes where there were five or more crashes during the five-year period.

Crash rates over 1.0 crash per million entering-vehicles (MEV) for intersections, or per million vehicle-miles (MVM) for roadways usually indicate a need to review mitigating measures to reduce the rate.

The La Canada Drive/Naranja Drive intersection has a five-year crash rate of 0.81 crashes per MEV, with forty-six crashes. The most common crash types were rear-end (14), left-turn (10) and angle (9). Nine of the crashes were injury crashes. Most crashes involved vehicles travelling eastbound (twenty vehicles) and southbound (twenty-two vehicles). The highest number of crashes involving turning movements were eastbound left turns (eight vehicles involved) and northbound left turns (seven vehicles involved). All other intersections experienced crash rates under 0.35 crashes per MEV.

The section of Naranja Drive west of La Canada Drive experienced a five-year crash rate of 1.21 crashes per million vehicle-miles with thirteen total crashes during the five-year period. Almost half (6) of the crashes occurred during one year. Nine of the thirteen crashes were rear-end crashes. Other roadway segments experienced crash rates of 0.24 MVM or less during the five-year period. The summary crash data provided by ADOT does not include information on the ages of the drivers involved in the recorded crashes, but based on the time of day, and days of the week that the crashes occurred, we expect that many of the crashes involved young high-school age drivers. Interestingly, all of the crashes were of the type "rear-end", which are more commonly associated with intersection-related crashes, not segment related crashes.

Exhibit 10 Year 2021 Intersection Performance

La Canada/Naranja

	2021 Existing			
	AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound				
Left	30.4	C	27	C
Through/Right	124.9	F	42.2	D
Approach	100.7	F	38.3	D
Westbound				
Left	73.4	E	52.8	D
Through	43.2	D	36.8	D
Right	36.5	D	33.6	C
Approach	57.5	E	43.6	D
Northbound				
Left	76.4	E	39.7	D
Through	19.8	B	31.3	C
Right	18.4	B	15.6	B
Approach	28.3	C	29.7	C
Southbound				
Left	41.3	D	50	D
Through	36.5	D	22.1	C
Right	20.9	C	16.7	B
Approach	34.5	C	23.5	C
Intersection	45.8	D	30.4	C

Naranja/Scioto

	2021 Existing			
	AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound				
Left	9.2	A	8	A
Southbound				
Left/Right	16.1	C	11.1	B

Naranja/Caldwell Banker Dwy

	2021 Existing			
	AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Northbound				
Right	11.2	B	10.4	B

La Canada/Crystal Vision

	2021 Existing			
	AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Northbound				
Left	18.5	C	10.8	B
Eastbound				
Left/Right	26.7	D	16	C

Exhibit 11a Crash History – Roadway Segments

La Canada, 1/2 Mile North of Naranja to Naranja

Crash Type	2015	2016	2017	2018	2019	Total	%
Rear End			2		1	3	75%
Other		1				1	25%
Total	0	1	2	0	1	4	
Crash Rate (per MVE)	0.00	0.31	0.62	0.00	0.31	0.25	

Severity						Total	%
Bodily Injury		1			1	2	50%
Property Damage			2			2	50%

Note: MVM = Million Vehicle Miles

La Canada, Naranja to 1/2 Mile South of Naranja

Crash Type	2015	2016	2017	2018	2019	Total	%
Single Vehicle			1	1		2	40%
Angle				1		1	20%
Rear End	1					1	20%
Sideswipe				1		1	20%
Total	1	0	1	3	0	5	
Crash Rate (per MVE)	0.22	0.00	0.22	0.67	0.00	0.22	

Severity						Total	%
Bodily Injury	1					1	20%
Property Damage			1	3		4	80%

Note: MVM = Million Vehicle Miles

Naranja, 1/2 Mile West of La Canada to La Canada

Crash Type	2015	2016	2017	2018	2019	Total	%
Single Vehicle				1	1	2	15%
Angle			1			1	8%
Rear End	1		5	2	1	9	69%
Other					1	1	8%
Total	1	0	6	3	3	13	
Crash Rate (per MVE)	0.46	0.00	2.78	1.39	1.39	1.21	

Severity						Total	%
Bodily Injury					1	1	8%
Property Damage	1		6	3	2	12	92%

Note: MVM = Million Vehicle Miles

Naranja, La Canada to 1/2 Mile East of La Canada

Crash Type	2015	2016	2017	2018	2019	Total	%
Left Turn				1		1	50%
Rear End				1		1	50%
Total	0	0	0	2	0	2	
Crash Rate (per MVE)	0.00	0.00	0.00	1.30	0.00	0.26	

Severity						Total	%
Bodily Injury				1		1	50%
Property Damage				1		1	50%

Note: MVM = Million Vehicle Miles

Exhibit 11b Crash History - Intersections

La Canada/Naranja

Crash Type	2015	2016	2017	2018	2019	Total	%
Single Vehicle	1		3	1		5	11%
Angle	2		1	4	2	9	20%
Left Turn	1	5	2	1	1	10	22%
Rear End		4	5	2	3	14	30%
Head On		1				1	2%
Sideswipe			1	1	3	5	11%
U-Turn				1		1	2%
Other				1		1	2%
Total	4	10	12	11	9	46	
Crash Rate (per MVE)	0.35	0.88	1.05	0.96	0.79	0.81	

Severity						Total	%
Bodily Injury		2	3		4	9	20%
Property Damage	4	8	9	11	5	37	80%

Note: MVE = Million Vehicles Entering the intersection

Naranja/Desert Flower

Crash Type	Total	%
Angle	1	13%
Rear End	7	88%
Total	8	
Crash Rate (per MVE)	0.34	

Severity	Total	%
Bodily Injury	5	63%
Property Damage	3	38%

Note: MVE = Million Vehicles Entering the intersection

Naranja/Scioto

Crash Type	Total	%
Rear End	5	100%
Total	5	
Crash Rate (per MVE)	0.21	

Severity	Total	%
Bodily Injury	5	100%
Property Damage	0	0%

Note: MVE = Million Vehicles Entering the intersection

La Canada/Foxfire

Crash Type	Total	%
Angle	1	20%
Left Turn	2	40%
Rear End	2	40%
Total	5	
Crash Rate (per MVE)	0.14	

Severity	Total	%
Bodily Injury	3	60%
Property Damage	2	40%

Note: MVE = Million Vehicles Entering the intersection

5. Projected Traffic

Site Traffic Forecasting

The future traffic from the project is estimated using the trip rates contained in the Institute of Traffic Engineers' *Trip Generation, 10th Edition* for the two land uses. Trip generation is the mathematical product of land use intensity (building square footage, number of units, etc.) and the trip generation rate. The result is the total number of one-way trips expected to be generated by the project. These trips represent the number of vehicles estimated to enter and leave the project site.

Trip Generation

Exhibit 12 provides the ITE trip rates for the proposed use during the average weekday. Exhibit 13 shows the number of trips generated by the project for the three time periods (weekday, weekday am peak hour, and weekday pm peak hour) at build out of the project.

Exhibit 12 Trip Generation Rates

Proposed Use	Unit	No. Units	ITE Categ.	Trip Generation Rates					
				Weekday AM		Weekday PM		Avg Weekday	
				In	Out	In	Out	In	Out
Medical-Dental Office Building	1000 SF GFA	18.051	720	2.78	3.46			34.8	
				78%	22%	28%	72%	50%	50%
Coffee/Donut Shop with Drive Through Window	1000 SF GFA	2.550	937	88.99	43.38			820.38	
				51%	49%	50%	50%	50%	50%

Exhibit 13 Project Trip Generation

Proposed Use	Unit	No. Units	Trip Generation					
			Weekday AM		Weekday PM		Avg Weekday	
			In	Out	In	Out	In	Out
Medical-Dental Office Building	1000 SF GFA	18.051	39	50	17	62	314	628
			11	11	45	45	314	314
Coffee/Donut Shop with Drive Through Window	1000 SF GFA	2.6	227	111	111	55	2,092	1,046
			116	111	55	55	1,046	1,046
Totals			277	173	100	100	2,720	1,360
			155	122	73	100	1,360	1,360

Mode Split

All trips were assumed to be via motor vehicle. No trips were assigned to bike, pedestrian, or transit modes.

Pass-By Traffic

Pass-by trips associated with the coffee shop land use "Coffee/Donut Shop with Drive Through Window and no Indoor Seating" were calculated based on pass-by trip rates for this land use in the *ITE Trip Generation Handbook, 3rd Edition*, and are shown in Exhibit 14. These pass-by rates for this land use were applied as being the closest land use in description to the project coffee shop land use which does not have published pass-by trip rates. It is reasonable to expect that project's coffee shop land use would have a similarly proportional number of pass-by trips. The total net new trips (total trips minus pass-by trips) are shown in Exhibit 15.

Exhibit 14 Pass-By Trips

Pass-by Trips	ITE Categ.	Pass-by Rate*		Weekday AM In Out	Weekday PM In Out	Avg Weekday* In Out
Coffee/Donut Shop with Drive Through Window	937	89%		202 101 101	98 49 49	1,862 931 931

Note: Although the Trip Generation Handbook does not have pass-by rates for this land use, we applied the rate for the land use "Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (Land Use 938)" Also, we adjusted the AM in and out vols to be equal (101 in, 101 out).

Exhibit 15 Total New Trips

Weekday AM In Out	Weekday PM In Out	Avg Weekday In Out
75 54 21	75 24 51	858 429 429

Trip Distribution and Assignment

Trips generated by this project have been distributed to the surrounding roadway network. The distribution is based on the current distribution of traffic through the project area intersections. The distribution percentages were 25% north, 40% south on La Canada Drive and 20% west, 15% west on Naranja Drive. Non-Pass By Site Trips are shown in Exhibit 16 and Pass-By Site Trips are shown in Exhibit 17.

Non-Site Traffic Forecasting

According to traffic data available on the PAG website, traffic volumes have decreased in the vicinity of the project over the last few years. However, we assumed that there would be a moderate increase in traffic after traffic pattern impacts from the COVID pandemic are reduced. Therefore, we applied a 1% growth rate applied to develop the background, or "no-project" traffic volumes at the project roadways and intersections. Background intersection volumes for the year 2022 and 2025 are shown in Exhibits 18 and 19.

Total Traffic

The total traffic volumes that are the site (non-pass by and pass by) traffic added to the projected traffic volumes for the year 2022 and 2025 are shown in Exhibits 20 and 21.

Exhibit 16 Non-Pass By Site Trips

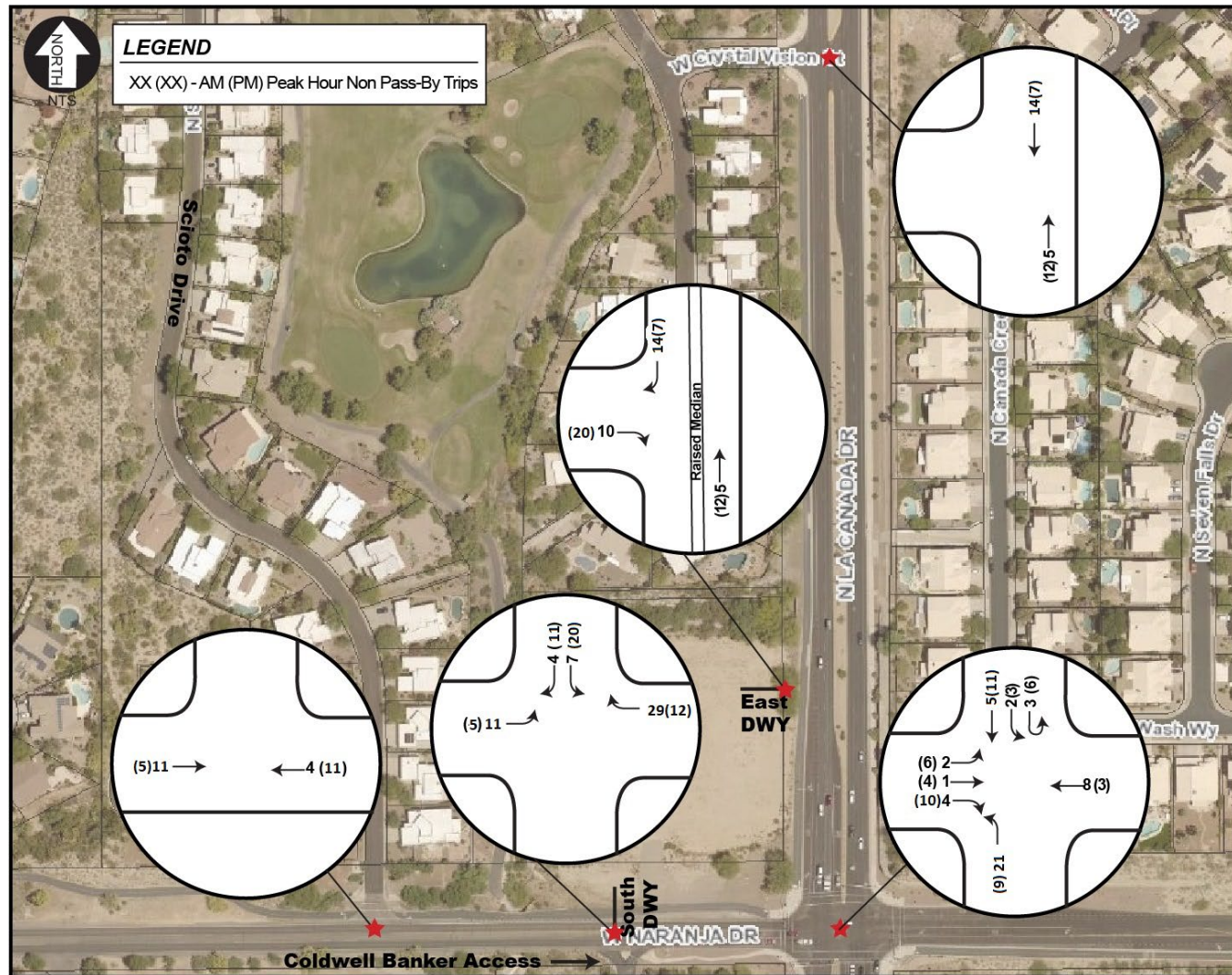


Exhibit 17 Pass By Site Trips

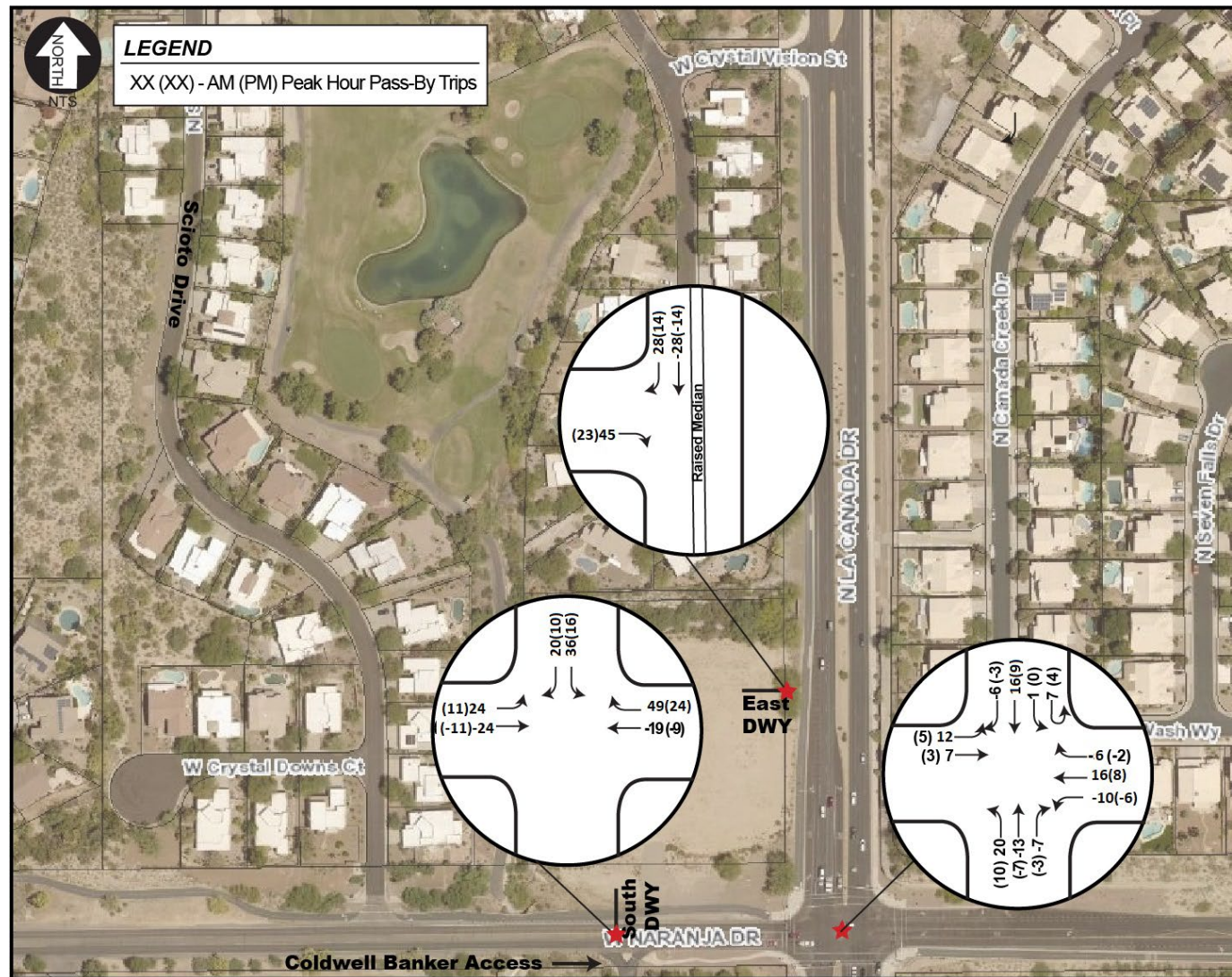


Exhibit 18 Peak Hour Background Traffic in 2022

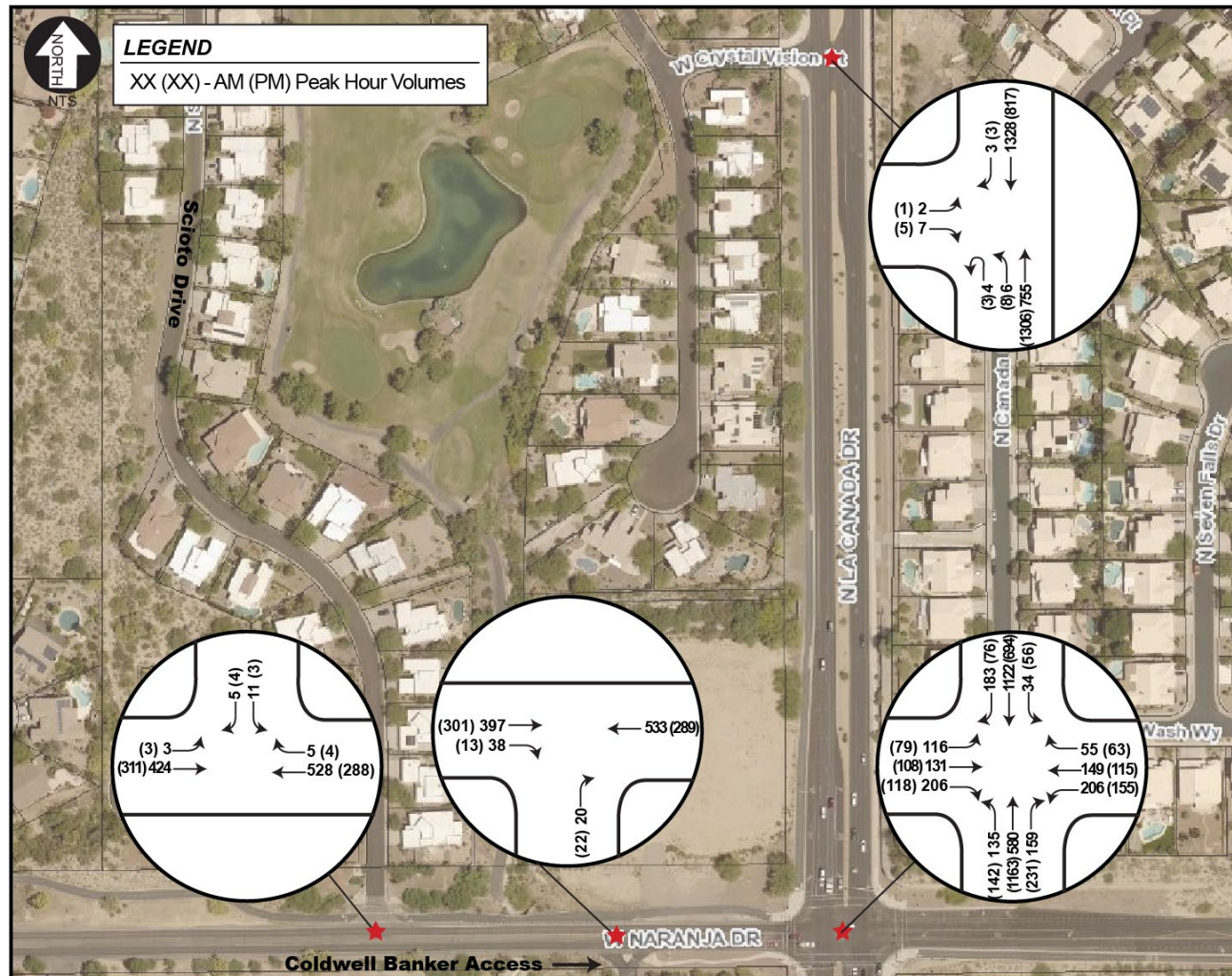


Exhibit 19 Peak Hour Background Traffic in 2025

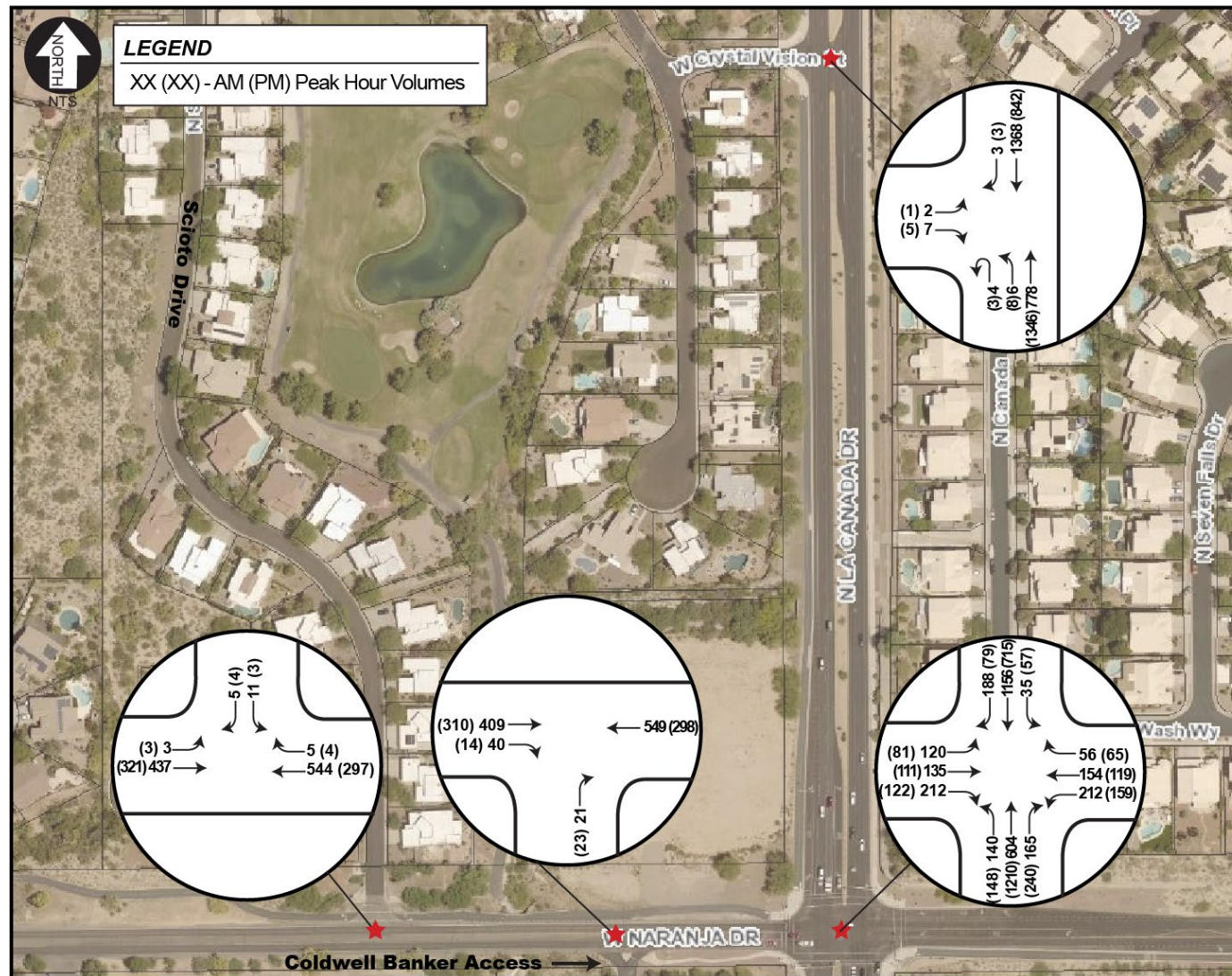


Exhibit 20 Total Traffic in 2022

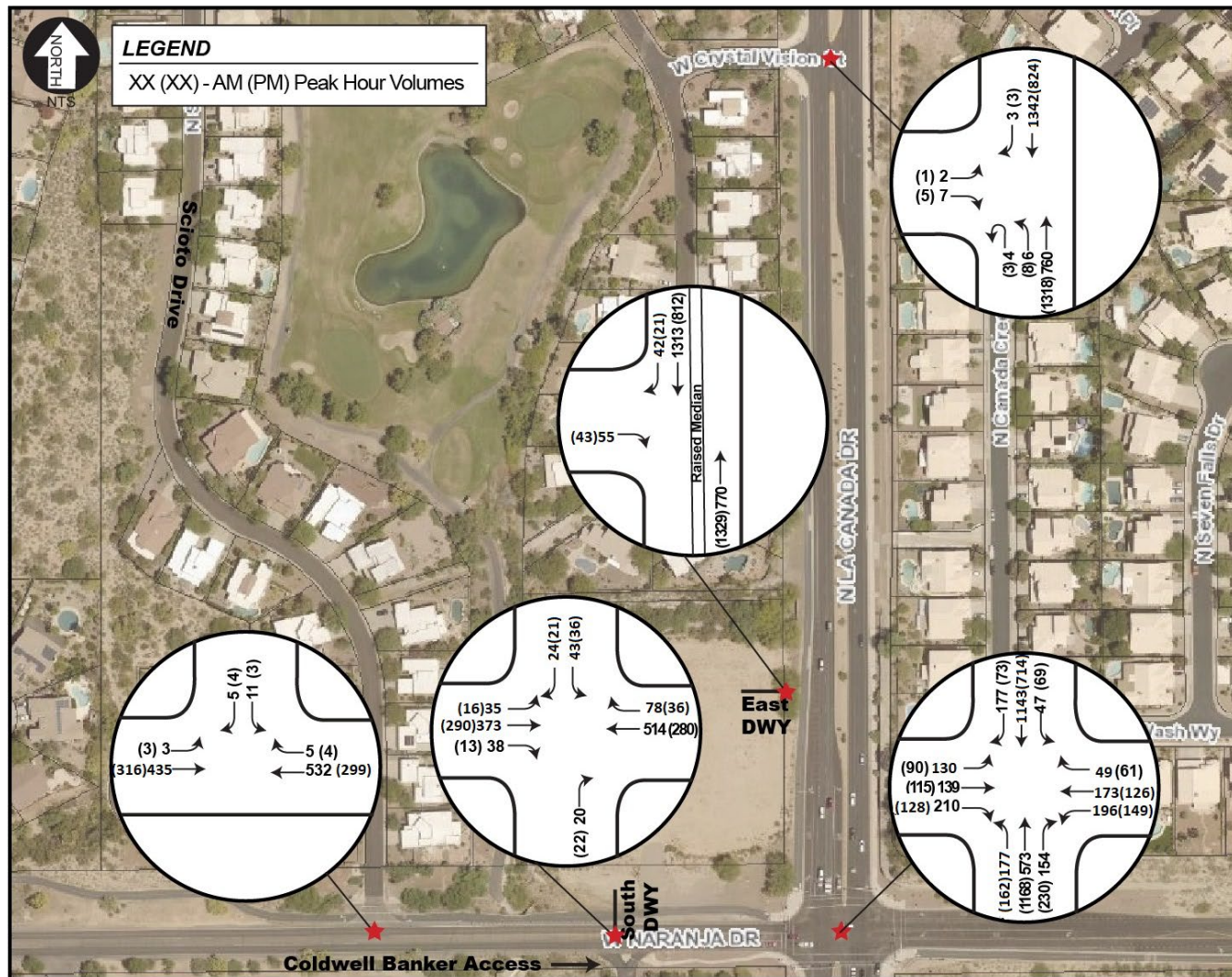
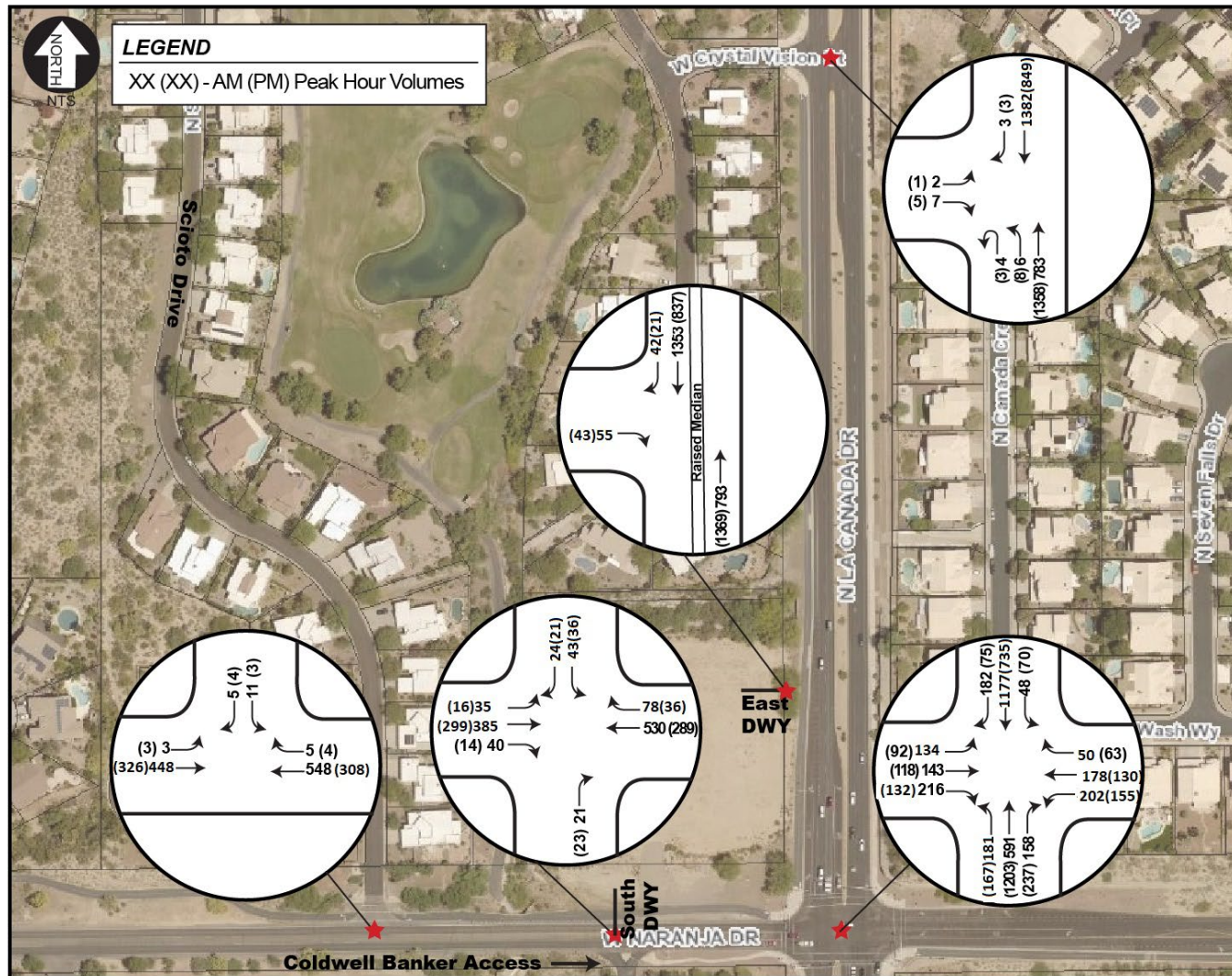


Exhibit 21 Total Traffic in 2025



6. Traffic and Improvement Analysis

Site Access

Access to the subject property will be from La Canada Drive and Naranja Drive. The access on La Canada Drive is shown to be approximately 250 feet north of the La Canada/Naranja intersection. This access will have only right-in, right-out access due to the raised median on La Canada Drive.

Members of the project team met with Town of Oro Valley staff² to discuss access at the Naranja driveway. Town staff indicated that a full access driveway would be acceptable at the Naranja Driveway, and this driveway was analyzed with full access in this study.

The connection on Naranja Drive will be aligned with an existing curb cut located at the Retail Shops of La Canada, approximately 230 feet west of La Canada Drive.

Level of Service Analysis

By the year 2025, the operational impact of the project on the project intersections of La Canada Drive/Naranja Drive and the other study area intersections are projected to be minor.

Roadway Performance

The regional growth estimate of 1% per year was applied to the existing roadway segment volumes along with the estimated site traffic to analyze future segment performance in 2022 and 2025 using the FDOT generalized tables. This analysis is provided to show the impact from the proposed project.

Exhibit 22 summarizes the new ADT and LOS of the roadway segments with and without the project in 2022 and 2025. All roadway segments are projected to operate at LOS D or better with or without the project in the year 2025.

Exhibit 22 Future Roadway Performance in 2022 and 2025

	2022 ADT Without Project	2025 ADT Without Project	Daily Site Trips	2022 ADT With Project	2025 ADT With Project	Capacity at LOS D (vpd)
La Canada Drive						
North of Naranja Drive	16,713	17,220	215	16,928	17,434	35,820
South of Naranja Drive	22,984	23,680	343	23,327	24,024	35,820
Naranja Drive						
West of La Canada Drive	11,104	11,440	172	11,275	11,612	16,727
East of La Canada Drive	7,946	8,186	129	8,074	8,315	16,727

*Based on Growth Factor of 1%/Year

² Meeting with David Laws, Jose Rodriguez on May 26, 2021.

Intersection Performance

The project intersections were analyzed without and with the project site trips for the years 2022 and 2025 with their existing lane configurations. Results for the “without project” are shown in Exhibits 23 and 24, and “with project” scenarios are shown in Exhibits 25 and 26. We analyzed the project driveways only under the “with project” scenario.

All movements are projected to operate at LOS D or better with the project through 2025 except for La Canada/Naranja which will continue to operate at LOS E or F as it does under existing conditions.

Exhibit 23 Peak Hour LOS Results – Signalized Intersection, Year 2022

La Canada/Naranja

	2022 No Project				2022 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound								
Left	30.5	C	27	C	32	C	27.5	C
Through/Right	130.2	F	42.7	D	143.7	F	46.6	D
Approach	104.7	F	38.6	D	113.5	F	41.5	D
Westbound								
Left	75	E	53.9	D	65.3	E	54.6	D
Through	43.2	D	36.9	D	42.6	D	37.7	D
Right	36.5	D	33.7	C	34.7	C	33.7	C
Approach	58.3	E	44.2	D	52.3	D	44.5	D
Northbound								
Left	77.6	E	40.4	D	155.3	F	47.3	D
Through	19.9	B	33.3	C	19.8	B	37.3	D
Right	18.4	B	15.8	B	18.2	B	16.8	B
Approach	28.5	C	31.3	C	46	D	35.3	D
Southbound								
Left	41.3	D	51.3	D	42.6	D	61.7	E
Through	37.5	D	22.3	C	39.5	D	24	C
Right	20.9	C	16.8	B	20.8	C	17.7	B
Approach	35.3	D	23.8	C	37.2	D	26.5	C
Intersection	46.9	D	31.4	C	53.3	D	34.6	C

Exhibit 24 Peak Hour LOS Results – Signalized Intersection, Year 2025

La Canada/Naranja

	2025 No Project				2025 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound								
Left	30.8	C	27	C	32.4	C	27.6	C
Through/Right	142.3	F	44	D	156.3	F	48.3	D
Approach	113.6	F	39.6	D	122.6	F	42.7	D
Westbound								
Left	82.1	F	57.5	E	71	E	58.6	E
Through	43	D	37.1	D	42.9	D	38	D
Right	36.3	D	33.8	C	34.4	C	33.9	C
Approach	61.8	E	45.9	D	55.1	E	46.4	D
Northbound								
Left	84.1	F	42.9	D	165.4	F	51.2	D
Through	20.1	C	40.1	D	20	B	46.2	D
Right	18.5	B	16.3	B	18.3	B	17.4	B
Approach	29.7	C	36.7	D	48	D	42.5	D
Southbound								
Left	41.4	D	53.1	D	42.7	D	62.7	E
Through	41	D	23.1	C	43.7	D	25	C
Right	21.1	C	17.2	B	20.9	C	18	B
Approach	38.3	D	24.6	C	40.7	D	27.4	C
Intersection	50.3	D	34.8	C	57.2	E	38.9	D

Exhibit 25 Peak Hour LOS Results – Unsignalized Intersections, Year 2022

Naranja/Scioto

	2022 No Project				2022 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound								
Left	9.2	A	8	A	9.3	A	8	A
Southbound								
Left/Right	16.2	C	11.1	B	16.4	C	11.2	B

Naranja/South Project Dwy/Caldwell Banker Dwy

	2022 No Project				2022 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound								
Left					9.7	A	8.1	A
Northbound								
Right	11.3	B	10.5	B	11	B	10.4	B
Southbound								
Left					22.7	C	14.3	B
Right					14.7	B	10.4	B

La Canada/Crystal Vision

	2022 No Project				2022 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Northbound								
Left	18.8	C	10.8	B	19.1	C	10.8	B
Eastbound								
Left/Right	27.2	D	16.2	C	27.7	D	16.4	C

La Canada/East Driveway

	2022 No Project				2022 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound								
Right					16.9	C	12.1	B

Exhibit 26 Peak Hour LOS Results – Unsignalized Intersections, Year 2025

Naranja/Scioto

	2025 No Project				2025 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound Left	9.3	A	8	A	9.4	A	8	A
Southbound Left/Right	16.6	C	11.2	B	16.7	C	11.3	B

Naranja/South Project Dwy/Caldwell Banker Dwy

	2025 No Project				2025 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound Left	11.4	B	10.6	B	9.8	A	8.1	A
Northbound Right	11.4	B	10.6	B	11.2	B	10.5	B
Southbound Left					23.5	C	14.5	B
Southbound Right					15.0	C	10.4	B

La Canada/Crystal Vision

	2025 No Project				2025 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Northbound Left	19.6	C	11	B	19.9	C	11	B
Eastbound Left/Right	28.5	D	16.8	C	29.3	D	16.9	C

La Canada/East Driveway

	2025 No Project				2025 With Project			
	AM		PM		AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound Right					17.4	C	12.3	B

Intersection Performance with EB Right Turn Lane at La Canada/Naranja

The La Canada/Naranja intersection was analyzed with a 150-foot eastbound right turn lane. The results are shown in Exhibit 27. Several of the movements would improve from LOS E/F conditions to LOS D or better conditions due to the reallocation of green time to optimize operational conditions based on adding the new lane.

Exhibit 27 Peak Hour LOS Results – La Canada/Naranja with Eastbound Right Turn Lane, Year 2025

La Canada/Naranja

2025 With Project				
	AM		PM	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound				
Left	36.1	D	33.6	C
Through	32.5	C	34.5	C
Right	52	D	38.9	D
Approach	42	D	36.0	D
Westbound				
Left	74.4	E	46	D
Through	43.3	D	39.2	D
Right	32.8	C	34.9	C
Approach	56.7	E	41.4	D
Northbound				
Left	46.9	D	44.1	D
Through	14	B	21.6	C
Right	12.9	B	12.8	B
Approach	20.2	C	22.6	C
Southbound				
Left	52.5	D	49	D
Through	40	D	19	B
Right	19.6	B	14.3	B
Approach	37.8	D	21	C
Intersection	36.2	D	25.5	C

Note: Analyzed with exclusive eastbound right turn lane.

Traffic Safety

Turn Lane Warrants

The Town of Oro Valley does not include turn lane warrants in their subdivision street standards. Pima County does include these warrants in the *Pima County Subdivision and Development Street Standards*, and they are based on the daily volume of the street where a potential turn lane may be and the peak hour turning volumes. The warrant for left turn lanes also considers the posted speed limit on the street from which the turn would originate.

The Pima County turn lane warrant criteria are shown in Exhibits 28 and 29 for right turns warrants for two and four lane roads.

Exhibit 30 shows the turn lane criteria for left turn lanes.

Exhibit 28 Pima County Right Turn Warrants on Two-Lane Roads

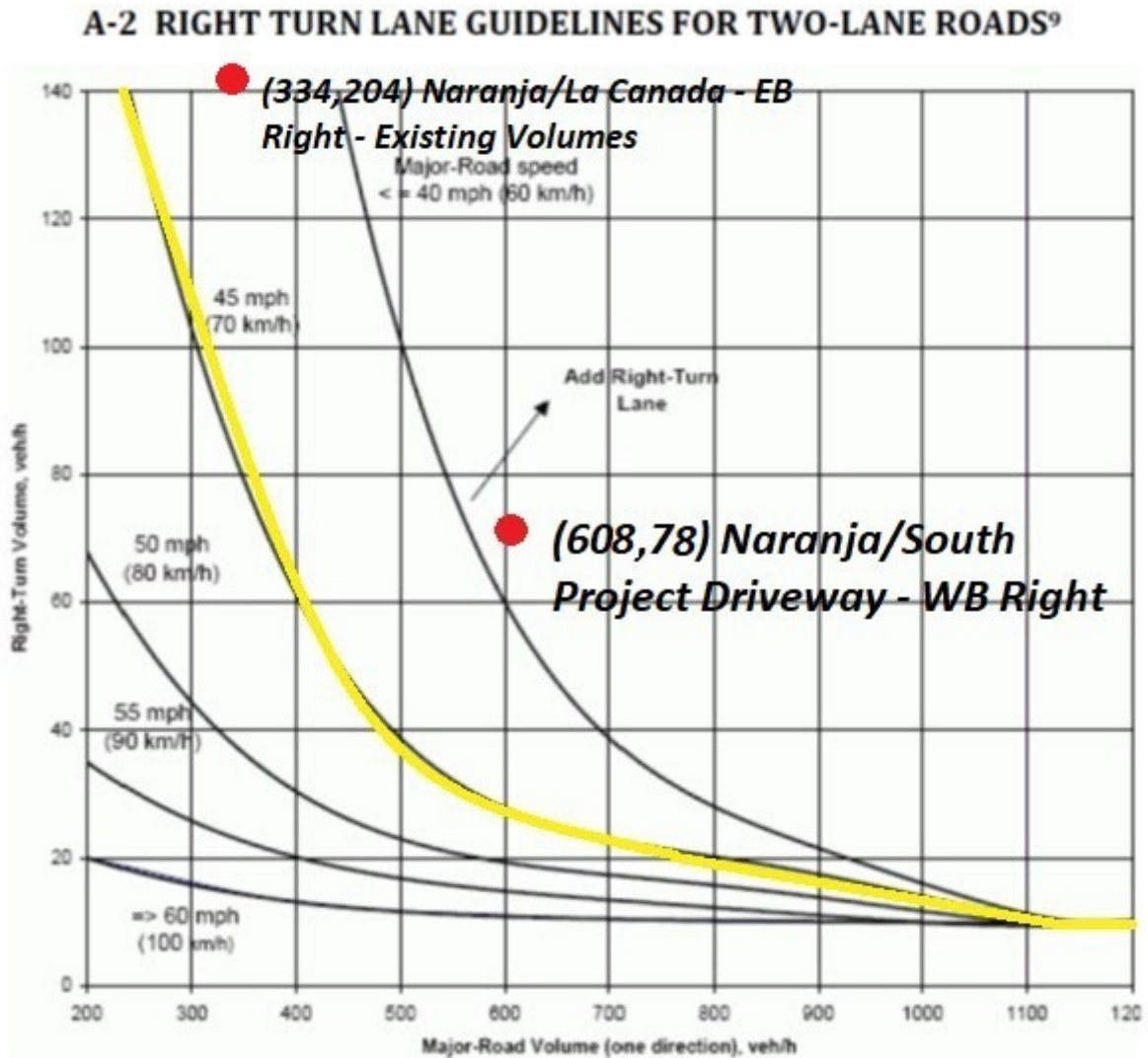
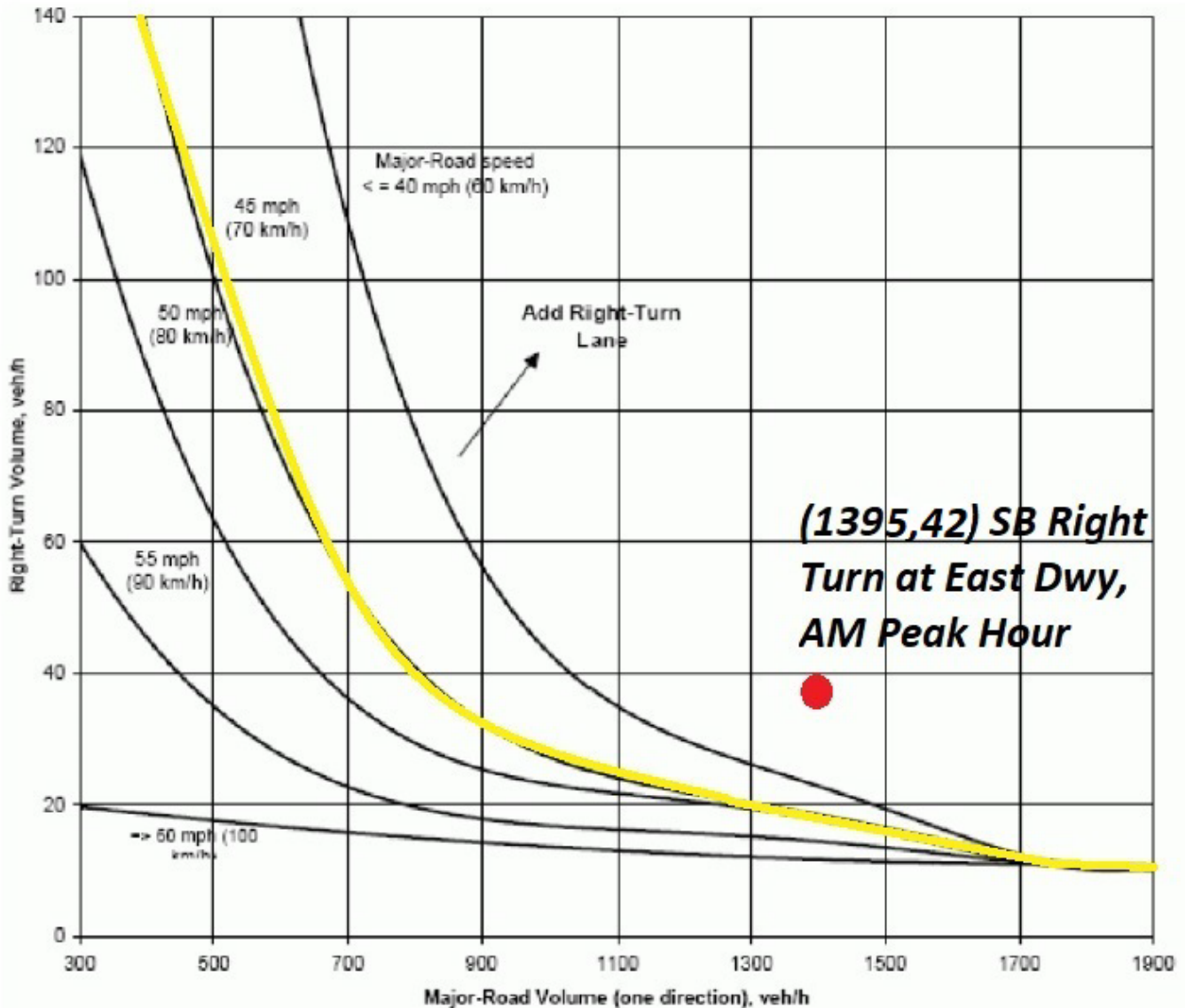


Exhibit 29 Pima County Right Turn Warrants on Four-Lane Roads

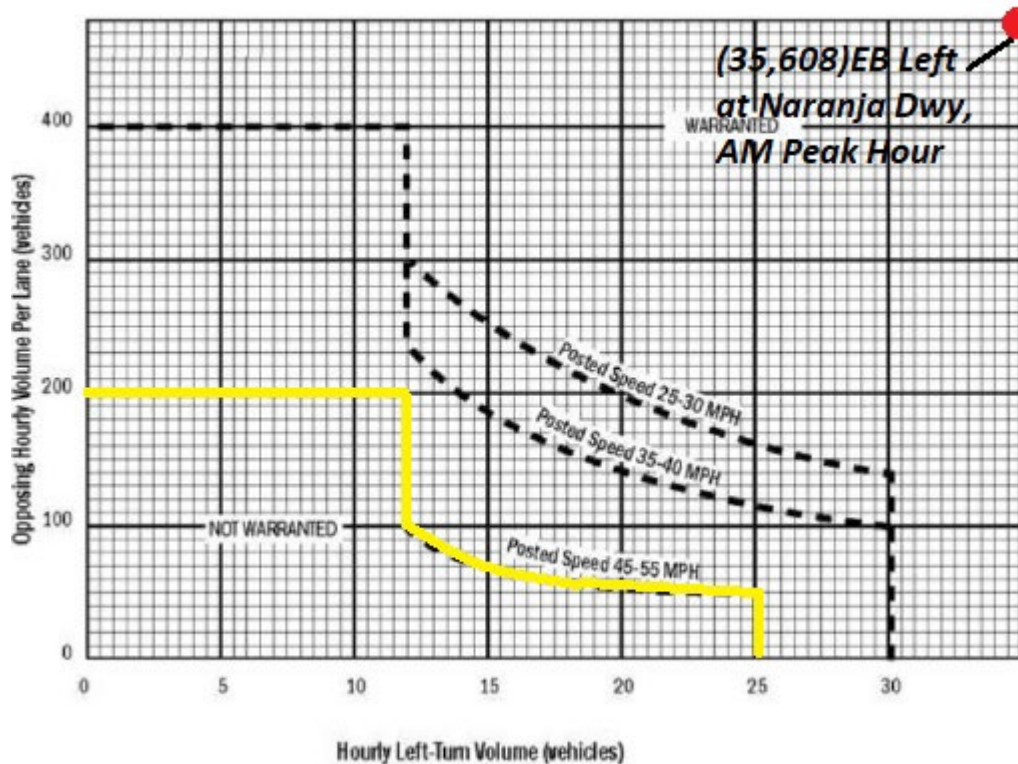
A-3 RIGHT TURN LANE GUIDELINES FOR FOUR-LANE ROADS⁹



Note: Existing roadway constraints may restrict the ability or need to install turning lanes. Traffic Engineering may require a traffic engineering analysis to support alternative recommendations for the installation of turning lanes.

Exhibit 30 Pima County Left Turn Lane Warrants

A-1 LEFT TURN LANE GUIDELINES⁹



Based on the Pima County turn lane criteria, a right turn lane is warranted on Naranja Drive at La Canada Drive for eastbound to southbound movements under existing conditions. A right turn lane is warranted on Naranja Drive for westbound to northbound movement at the Naranja Drive project driveway under 2025 With Project conditions. A right turn lane is also warranted on La Canada Drive for the southbound to westbound movements at the La Canada Drive project driveway under 2025 With Project conditions.

Turn lanes and pavement tapers required for any of the above improvements shall be designed in accordance with Pima County's "Roadway Design Manual". By reference, Pima County's Roadway Design Manual defers to the Pima County/City of Tucson Signing and Pavement Marking Manual, and the Pima County Subdivision and Development Street Standards for the length and design of turn lanes.

For a 45-mph roadway (La Canada Drive and Naranja Drive) the minimum storage length is 150 feet.

The minimum right turn lane taper on roadways with a 45-mph speed limit is 210 feet (based on the Oro Valley minimum turn lane width of 14 feet and the taper rate of 15:1).

The location of the project driveway on La Canada is within the existing taper for the southbound right turn lane at the La Canada/Naranja intersection. The construction of a right turn lane at this location may require the extension of the existing storm drain culvert further west, which would require a new headwall, and may also require the re-alignment of other storm drainage infrastructure in the street. Providing a new right turn lane would also require shifting the existing multi-use path west as well. If Oro Valley determines that a turn lane should be constructed, it should be constructed to be integrated

into this turn lane to create a continuous right turn lane. The length of the turn lane for the project driveway should extend 150 north of the driveway. The Town's Public Works Director indicated that it would be acceptable to provide a ten-foot-wide turn lane within the new section and transition it to its existing width after the culvert structure.³ Based on this ten-lane section, the taper length should be constructed to be 15 feet times 10 feet, or 150 feet.

A left turn lane is warranted for access into the Naranja Driveway. The existing center turn lane on Naranja Drive should be restriped to delineate a 150-foot left turn lane into this driveway.

Turn Lane Storage Lengths

The Synchro intersection analysis results include projected queue lengths (95th percentile) based on the projected year 2025 traffic volumes at the intersections. The calculated queue lengths are shown in Exhibit 31. With one exception, all existing or planned project area turn lanes will be long enough to accommodate the projected 95th percentile queue lengths through the year 2025 with the project. The 95th percentile peak hour queues for the northbound left turn lane at the La Canada/Naranja intersection are projected to exceed the existing length (150 feet) of the turn lane. The existing AM peak hour queue for this movement currently exceeds (192 feet) the turn lane length. The 2025 No Project condition is projected to be 200 feet. The 2025 With Project conditions with the existing lane configuration is projected to be 267 feet. If an eastbound right turn lane is constructed at the intersection and green times are reallocated to optimize the level of service at the intersection, the 2025 With Project condition storage length for the northbound left turn lane would be 201 feet (see Exhibit 32). It may be possible to further reduce the 95th percentile queues with traffic signal phasing and timing modifications, although the north/south left turn phasing at this intersection were recently converted to "protected only" phasing.

Adequacy of Location and Design of Driveway Access

Access at the La Canada driveway will be limited to rights in only. The Town of Oro Valley has approved the provision of full access at the Naranja Driveway.

Alternative Modes Considerations

The driveways will intersect with the shared use paths on La Canada Drive and Naranja Drive. The driveway design should be done to Oro Valley specifications.

Traffic Control Needs

A "Right Turn Only" sign should be located at the egress to the driveway on La Canada Drive, and a "One Way (Right)" sign should be placed opposite this driveway. Sign construction and placement should comply with the MUTCD and local policies.

Traffic Signal Warrants

Traffic volumes at the project driveways are not expected to warrant traffic signals.

³ E-mail from Paul Keesler to Robert Swartz on September 24, 2021.

Exhibit 31 Turn Lane Storage Lengths (Year 2025 With Project)

Intersection	Lane	95th Percentile Queue Length (ft)		Existing or Planned Storage Length
		AM Peak Hour	PM Peak Hour	
La Canada/Naranja	EB Left	102	67	125
	WB Left	160	150	225
	WB Right	0	0	150
	NB Left	267	172	150
	NB Right	34	45	180
	SB Left	67	105	150
	SB Right	70	0	150
La Canada/Crystal Vision	EB Left/Right	<25	<25	Single Lane Approach
	NB Left/U-Turn	<25	<25	150
La Canada/Project Driveway	EB Right	<25	<25	Single Lane Approach
	SB Right	<25	<25	110
Naranja/Project Driveway	EB Left	<25	<25	TWLTL
	WB R	<25	<25	150
	SB Approach	<25	<25	Single Lane Approach
Naranja/Scioto	EB Left	<25	<25	TWLTL
	SB LR	<25	<25	Single Lane Approach

**The existing AM peak hour queue for the NB left turn lane at La Canada/Naranja is 192 feet. The 2025 No Project AM peak hour queue for this left turn lane is 200 feet.*

With an eastbound right turn lane at the La Canada/Naranja intersection, the queues would be less under 2025 With Project conditions. The turn lane storage lengths were calculated by the Synchro program with the analysis of the intersection with an exclusive right turn lane. The results are shown in Exhibit 32.

Exhibit 32 Turn Lane Storage Lengths at La Canada/Naranja with EB Right (Year 2025 With Project)

With EB Right Turn Lane		95th Percentile Queue Length (ft)		Existing or Planned Storage Length
Intersection	Lane	AM Peak Hour	PM Peak Hour	
La Canada/Naranja	EB Left	119	79	125
	EB Right	54	27	150
	WB Left	168	129	225
	WB Right	0	0	150
	NB Left	200	164	150
	NB Right	30	49	180
	SB Left	73	93	150
	SB Right	50	0	150

7. Conclusions and Recommendations

Conclusions

1. Although the project will generate an estimated 2,720 daily trips with 277 AM peak hour trips and 173 PM peak hour trips, most of the coffee shop trips will be “pass-by” trips. Therefore, the total number of new trips generated by the project is expected to be 858 daily new trips, 75 AM peak hour new trips and 75 PM peak hour new trips.
2. The signalized intersection of La Canada Drive/Naranja Drive has turning movements that currently operate at LOS E or F during the AM and PM peak hours. In addition, the existing AM peak hour left turn queue of 192 feet on the northbound approach exceeds the available storage (150 feet). By the year 2025, the calculated queue will be 200 feet long without the project and 267 feet long with the project with the existing intersection lane configurations.
3. The other study area roadways and intersections currently operate at acceptable levels of service (LOS D or better).
4. Because of the existing raised median on La Canada Drive, the project driveway on La Canada Drive will be limited to right in, right out movements only. The project driveway on Naranja Drive will be a full access driveway with one left turn lane and one right turn lane. An eastbound left turn lane and a right turn lane are warranted on Naranja Drive for access into the driveway.
5. There do not appear to be any sight distance constraints for intersections or proposed driveways near the project.
6. Right turn lanes are warranted on La Canada Drive and Naranja Drive at the project driveways.

Recommendations

1. Based on input from Town staff on May 26th, 2021, the driveway on Naranja Drive should be a full access driveway. The capacity analysis at this intersection found that all movements will operate at LOS D or better during both peak hours. The driveway was analyzed with a southbound left turn lane and a southbound right turn lane. The pavement markings on La Canada Drive should be revised to provide a 150-foot left turn lane for the eastbound left turn lane for turns into the project driveway. This turn lane will not encroach into the existing eastbound left turn lane at the La Canada/Naranja Drive intersection. The highest peak hour queue for the La Canada/Naranja intersection for the eastbound movements is calculated to be 374 feet for the through movements during the AM peak hour which may create delays for drivers exiting the driveway who wish to continue west on Naranja Drive or south on La Canada Drive. This is not unusual for drivers entering arterials during peak hours. However, if a right turn lane is constructed for the eastbound movement at the La Canada Drive/Naranja Drive intersection (see Recommendation 5), the eastbound queue lengths at this intersection will be much less.
2. Construct a westbound right turn lane for access into the driveway on Naranja Drive. The right turn lane should be 150 feet long based on Pima County turn lane design standards for a right turn lane on a 45-mph roadway. Because the driveway will be 230 feet from La Canada, the taper should begin immediately after the curb return at the intersection. Because the taper length will not meet Pima County standards for turn lane design, the Town Engineer has required that a 100-foot full width lane be constructed with the remaining 50 feet ± for the taper.

3. Provide a “Right Turn Only” sign with the stop sign at the project driveway egress on La Canada Drive. A “One-Way (R)” sign should be placed on the raised median opposite the project driveway.
4. Although a southbound right turn lane is warranted for access into the driveway on La Canada Drive, the construction of a right turn lane at this location may require the extension of the existing storm drain culvert further west, which would require a new headwall, and may also require the re-alignment of other storm drainage infrastructure in the street. Providing a new right turn lane would also require shifting the existing multi-use path west as well. If Oro Valley determines that a turn lane should be constructed, it should be constructed to be integrated into this turn lane to create a continuous right turn lane. The right turn lane should be 150 feet long based on Pima County turn lane design standards for a right turn lane on a 45-mph roadway. Because the driveway will intersect a section of the existing taper of the southbound right turn lane at the La Canada/Naranja intersection, the existing southbound right turn lane should be extended to the north to provide a continuous right turn lane for both this movement and the project driveway. This turn lane should extend 150 feet north of the project driveway. The Town’s Public Works Director indicated that it would be acceptable to provide a ten-foot-wide turn lane within the new section and transitioning it to its existing width after the culvert structure.⁴ Based on this ten-lane section, the taper length should be constructed to be 15 feet times 10 feet, or 150 feet.
5. The intersection of La Canada Drive and Naranja Drive has existing conditions that should be mitigated, even without the project. The northbound left turn queue (200 feet) under existing conditions exceeds the available storage (150 feet). In addition, there are three movements that operate at LOS E or F conditions during the AM peak hour: the eastbound through/right lane, and the westbound and northbound turn lane movements. The Town should consider constructing an eastbound right turn lane at the intersection. This would improve the eastbound approach so each movement would operate at LOS D or better. The 95th percentile queue length for the eastbound through movement would be reduced from 374 feet to 137 feet with this improvement. There would be an indirect reduction in queue length for the northbound left turn lane due to the reallocation of green time for all movements at the intersection. The 95th percentile queue for this movement would be reduced from 267 feet to 200 feet under 2025 With Project conditions with this improvement. The Town Engineer has required that the turn lane should be extended. The developer is responsible for the portion of the additional storage required by the impact of the 2025 with project conditions. As 200 feet is required without the project, the developer would be responsible for the construction and cost of the additional 67 feet needed. The developer may partner with the Town to construct a longer turn lane.
6. Ensure that there is acceptable sight distance to and from the project entrances.
7. Roadway and subdivision design should conform to current Oro Valley standards.
8. All new traffic signs and markings must comply with the current *Manual on Uniform Traffic Control Devices* and local requirements.
9. The Town has required that a Traffic Control Plan be prepared to manage traffic during the construction of the sewer line from the northbound lanes on La Canada to the site. The Town requires one lane of traffic to be maintained in each direction with 11-foot lanes. The Traffic Control Plan is a requirement of the right-of-way permit application. The application is submitted by the construction contractor. The permit will include the condition that one lane of traffic be maintained in each direction with minimum 11-foot lanes.

⁴ E-mail from Paul Keesler to Robert Swartz on September 24, 2021.

Appendix

- Site Plan
- Traffic Counts
- Capacity Analysis Worksheets

GENERAL NOTES

1. THE GROSS AREA OF THE DEVELOPMENT SITE IS 2.81 AC. (122,556.3 S.F.). THE GROSS AREA OF ONSITE DISTURBANCE IS 2.23 AC. (97,224 S.F.). THE GROSS AREA OF OFFSITE DISTURBANCE IS 0.42 AC. (18,213 AC.)
2. THE GROSS FLOOR AREA OF STRUCTURES IS 20,601 SQUARE FEET. BUILDING #1 IS 7,195 SF, BUILDING #2 IS 5,428 SF, BUILDING #3 IS 5,428 SF, BUILDING #4 IS 2,550 SF.
3. MAXIMUM TOTAL BUILDING COVERAGE PER THE PAD IS 80%. PROVIDED LOT COVERAGE IS 16.8%.
4. TOTAL MILES OF NEW PUBLIC STREETS IS 0.0 MILES.
5. TOTAL MILES OF NEW PRIVATE STREETS IS 0.0 MILES.
6. THIS PROJECT FALLS UNDER DEVELOPMENT AREA D WITHIN THE EL CONQUISTADOR COUNTRY CLUB PLANNED AREA DEVELOPMENT (PAD) DATED AUGUST 17, 1983. PER 23.9.C.C AND 23.4 TABLE 23-2B, THE UNDERLYING ZONING DESIGNATION IS C-2.
7. ASSURANCES FOR WATER SERVICE, SITE STABILIZATION AND LANDSCAPING MUST BE POSTED PRIOR TO THE ISSUANCE OF GRADING PERMITS.
8. THE PROPOSED USES FOR THIS PROJECT ARE RESTAURANT, OFFICE AND MEDICAL SERVICE.
9. PER ZONING CODE REQUIREMENTS, CONVENIENCE USES SHALL NOT BE OPEN FOR BUSINESS UNTIL A MINIMUM OF FIFTY PERCENT (50%) OF THE NET FLOOR ARE FOR NON-CONVENIENCE USE STRUCTURES WITHIN THE SHOPPING CENTER HAVE BEEN CONSTRUCTED.
10. THIS PROJECT IS SUBJECT TO THE CONDITIONS OF APPROVAL FROM THE 2006 GRADING EXCEPTION (OV12-06-16A).

PLANNING GENERAL NOTES

1. THE MAXIMUM ALLOWABLE BUILDING HEIGHT PER THE 2006 GRADING EXCEPTION (OV12-06-16A) IS 28'. THE PROPOSED BUILDING HEIGHTS ARE AS FOLLOWS: BUILDING #1 IS 28', BUILDING #2 IS 25', BUILDING #3 IS 25', BUILDING #4 IS 20'. ALL BUILDINGS ARE 1-STORY.
2. THIS PROJECT IS NOT SUBJECT TO SPECIAL OVERLAY ZONES.
3. THIS PROJECT IS NOT SUBJECT TO TO CRITERIA FOR THE GENERAL PLAN SIGNIFICANT RESOURCE AREAS (SRA) OR ENVIRONMENTALLY SENSITIVE LANDS (ESL).
4. THIS PROJECT DOES NOT CONTAIN ANY RIPARIAN HABITAT WITHIN THE 100-YEAR FLOODPLAIN.
5.
 - a. THE TOTAL AREA OF OPEN SPACE REQUIRED PER ORO VALLEY ZONING CODE TABLE 23-2B (C-2 UNDERLYING ZONING) IS 20% OF THE GROSS AREA OF THE PARCEL. TOTAL AREA OF OPEN SPACE PROVIDED IS 20.03% (LANDSCAPE=9.68%, FRONTAGE=10.35%)
 - b. THE MINIMUM AMOUNT OF LANDSCAPED COURTYARD/PEDESTRIAN MALLS IS 2% OF THE NET LOT AREA (EXCLUDING UN-BUILDABLE WASH AREA) PER 23.8.3.B.c. (97,224 S.F. X 0.02 = 1,944 S.F.). THE TOTAL AMOUNT OF PROVIDED LANDSCAPED COURTYARDS/PEDESTRIAN MALLS IS 2.61% (2,533 S.F.)
 - c. THE REQUIRED LANDSCAPED BUFFER-YARD TYPE B HAS BEEN CHOSEN FOR THE UNDERLYING ZONING DESIGNATION:
STREET = 30'
SIDE = 30'
REAR = 30'
 - d. BUILDING SETBACKS:
STREET (LA CANADA) - 25' REQUIRED; 30.1' (MIN.) PROVIDED
STREET (NARANJA) - 25' REQUIRED; 30.2' (MIN.) PROVIDED
NORTH - 25' REQUIRED; 42.6' (MIN.) PROVIDED
WEST - 25' REQUIRED; 43.5' (MIN.) PROVIDED
6. THE OWNER IS RESPONSIBLE FOR THE OPEN SPACE AND BUFFERYARD MAINTENANCE.
7. THIS PROJECT FALLS UNDER DEVELOPMENT AREA D OF THE EL CONQUISTADOR COUNTRY CLUB PLANNED AREA DEVELOPMENT (PAD). SEE PAD DOCUMENT DATED AUGUST 17, 1983, LATEST REVISION BY ORDINANCE (O) 92-21 DATED DECEMBER 2, 1992.
8. ALL PUBLIC ART REQUIREMENTS MUST BE MET PRIOR TO FINAL CERTIFICATE OF OCCUPANCY ISSUANCE, PER ORO VALLEY ZONING CODE REVISED SECTION 27.3.
9. ALL SIGNAGE AND LIGHTING TO BE ADDRESSED AS PART OF A SEPARATE REVIEW AND APPROVAL PROCESS.

PERMITTING DIVISION - BUILDING CODES

1. THE FOLLOWING CODES AND STANDARDS SHALL BE APPLICABLE TO THIS DEVELOPMENT AS ADOPTED BY THE TOWN OF ORO VALLEY:
A. INTERNATIONAL CODES WITH LOCAL AMENDMENTS.
B. NATIONAL ELECTRICAL CODE.
C. ADA STANDARDS FOR ACCESSIBLE DESIGN.
D. GOLDER RANCH FIRE DISTRICT STANDARDS AND FORMS.
E. TOWN OF ORO VALLEY POOL CODE.
F. PIMA ASSOCIATION OF GOVERNMENTS (P.A.G.) STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC IMPROVEMENTS
G. TOWN OF ORO VALLEY DRAINAGE CRITERIA MANUAL.
H. TOWN OF ORO VALLEY SUBDIVISION STREET STANDARDS AND POLICIES MANUAL.
I. TOWN OF ORO VALLEY ZONING CODE, CURRENT REVISED.
J. ORO VALLEY TOWN CODE, CURRENT REVISED.

ENGINEERING GENERAL NOTES

1. THE DESIGN VEHICLE IS SU-30. THE DESIGN SPEED IS 15 MPH.
2. ALL NEW PUBLIC ROADS WITHIN OR ADJACENT TO THIS PROJECT WILL BE CONSTRUCTED IN ACCORDANCE WITH APPROVED PLANS. SEPARATE PUBLIC IMPROVEMENT AND CONSTRUCTION PLANS BE SUBMITTED TO THE TOWN ENGINEER'S OFFICE FOR REVIEW AND APPROVAL.
3. ANY RELOCATION OR MODIFICATION OF EXISTING UTILITIES AND/OR PUBLIC IMPROVEMENTS NECESSITATED BY THE PROPOSED DEVELOPMENT WILL BE AT NO EXPENSE TO THE PUBLIC.
4. THE BASIS OF BEARINGS FOR THIS PROJECT IS THE EAST LINE OF THE S.E. 1/4 OF SECTION 3, T12S, R13E G.&S.R.M., PIMA COUNTY, ARIZONA AS SHOWN ON THIS PLAN AND ON THE "CANADA HILLS - VILLAGE 15" PLAT AS RECORDED IN BOOK 23, PAGE 49, MAPS & PLATS, RECORDS OF PIMA COUNTY, AZ. THE BEARING OF SAID LINE IS N 00°00'16" E.
5. THE BASIS OF ELEVATIONS FOR THIS PROJECT IS PIMA COUNTY DEPARTMENT OF TRANSPORTATION "OPUS" CONTROL POINT "12S13E_E17", DESCRIBED AS A 1/2" REBAR TAGGED "PCDOT GPS" 2FT EAST OF AN ELECTRIC TRANSFORMER, APPROX. 201 FT N.W. OF THE INTERSECTION OF LA CANADA DR AND NARANJA DR., THE ELEVATION OF SAID BENCHMARK IS 2,716.67', NAVD 88 DATUM.

ORO VALLEY WATER UTILITY NOTES

1. THIS DEVELOPMENT MUST COMPLY WITH THE ORO VALLEY WATER UTILITY SPECIFICATIONS MANUAL DURING ALL PHASES OF CONSTRUCTION.
2. THIS PROJECT WILL BE SERVED BY ORO VALLEY WATER UTILITY WHICH HAS BEEN DESIGNATED AS HAVING AN ASSURED 100 YEAR WATER SUPPLY BY THE DIRECTOR OF WATER RESOURCES. ANY AND ALL WELLS MUST BE ABANDONED PER ADWR REGULATIONS.
3. A LINE EXTENSION AGREEMENT MUST BE IN PLACE BEFORE ANY WORK ON THE WATER INFRASTRUCTURE FOR THIS PROJECT BEGINS.
4. ALL METERS SHALL HAVE A BACKFLOW PROTECTION DEVICE INSTALLED ON THE CUSTOMER SIDE OF THE METER.
5. ALL FIRE SERVICES SHALL HAVE A BACKFLOW PROTECTION DEVICE INSTALLED ON THEM. MEANS SHALL BE PROVIDED DOWNSTREAM OF ALL BACKFLOW PREVENTION VALVES FOR FORWARD FLOW TESTS AT A MINIMUM FLOW RATE OF THE SYSTEM DEMAND INCLUDING HOSE ALLOWANCE WHERE APPLICABLE. PROVIDE TEST HEADERS.
6. WATER INFRASTRUCTURE AS REPRESENTED ON THIS PLAN IS FOR INFORMATIONAL PURPOSES ONLY. A SEPARATE WATER IMPROVEMENT PLAN MUST BE SUBMITTED TO THE ORO VALLEY WATER UTILITY (OVWU) FOR TECHNICAL REVIEW AND COMPLIANCE WITH APPLICABLE STATUTES, CODES AND SPECIFICATIONS. ADDITIONAL WATER INFRASTRUCTURE MAY BE DEEMED NECESSARY UPON REVIEW OF THE WATER IMPROVEMENT PLAN.
7. ORO VALLEY WATER UTILITY WILL BE THE WATER SERVICE PROVIDER.

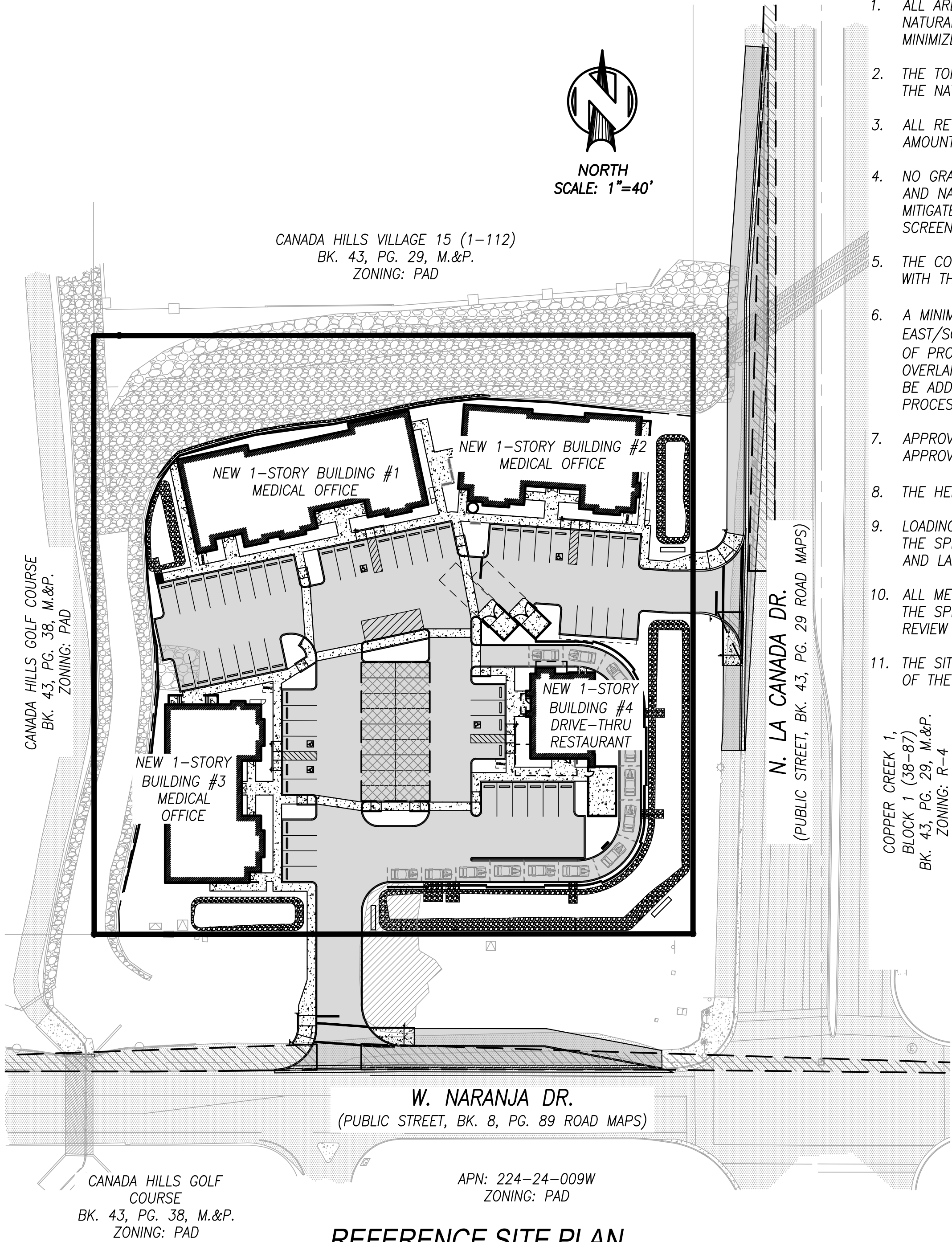
GENERAL UTILITY NOTES

1. SHOULD AN EASEMENT BE IN CONFLICT WITH ANY PROPOSED BUILDING LOCATION, VACATION OF THE EASEMENT IS TO OCCUR PRIOR TO ISSUANCE OF BUILDING PERMITS.

GOLDER RANCH FIRE GENERAL NOTES

1. APPROVED FIRE APPARATUS ACCESS ROADWAYS AND FIRE HYDRANTS CONNECTED TO AN APPROVED WATER SUPPLY OF 1500 GPM FOR FIRE PROTECTION MUST BE INSTALLED AND IN SERVICE PRIOR TO COMBUSTIBLE MATERIAL DELIVERY TO THE SITE. TEMPORARY CONSTRUCTION OFFICE TRAILERS ARE CONSIDERED COMBUSTIBLE MATERIAL.
2. ROADWAYS SHALL BE SURFACED WITH AN ALL-WEATHER MATERIAL CAPABLE OF SUPPORTING AN IMPOSED LOAD OF 82,000 POUNDS.
3. NEW COMMERCIAL BUILDINGS SHALL BE EQUIPPED WITH AUTOMATIC FIRE SPRINKLER SYSTEM.
4. TEMPORARY STREET SIGNS MUST BE INSTALLED AT EACH STREET INTERSECTION WHEN CONSTRUCTION OF NEW ROADWAYS ALLOWS PASSAGE OF VEHICLES. ALL STRUCTURES UNDER CONSTRUCTION MUST BE CLEARLY IDENTIFIED WITH AN APPROVED ADDRESS.

CONCEPTUAL SITE PLAN FOR
NWC LA CANADA / NARANJA
2101733



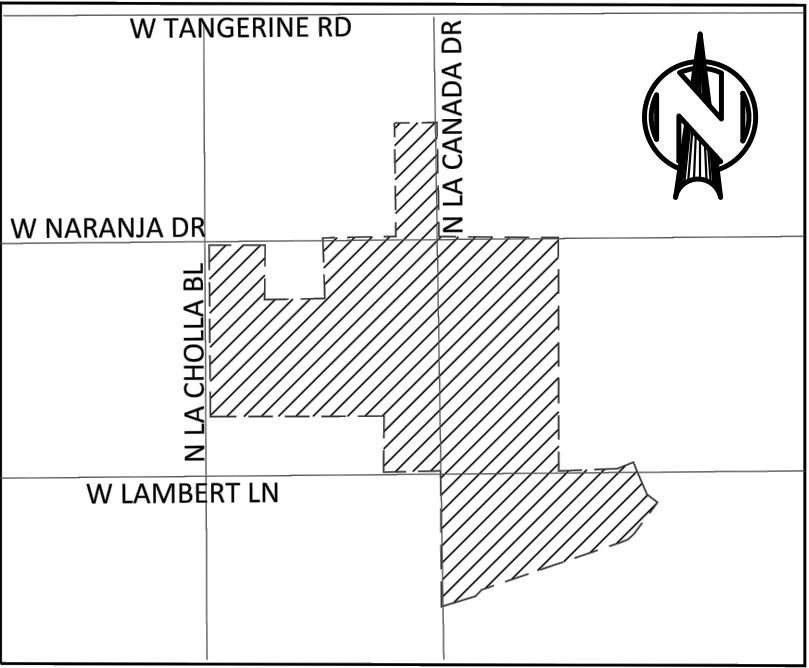
REFERENCE SITE PLAN

PARKING, LOADING, AND BICYCLE STORAGE CALCULATIONS

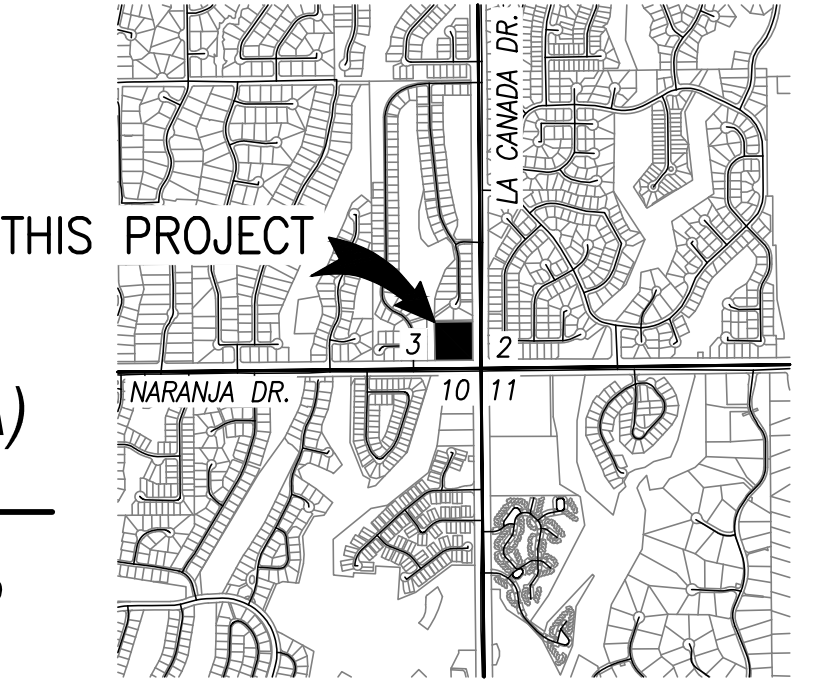
BUILDING NUMBER	PROPOSED USE	SQUARE FOOTAGE	PARKING RATIO (PER PAD)	TOTAL PARKING		ACCESSIBLE PARKING		LOADING ZONE RATIO	TOTAL LOADING ZONES		BIKE PARKING CLASS I		BIKE PARKING CLASS II	
				REQUIRED	PROVIDED	REQUIRED	PROVIDED		REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED
1	OFFICE/MEDICAL SERVICE	7,195	1:300	24	24	1	1		0	0	1	1	1	2
2	OFFICE/MEDICAL SERVICE	5,428	1:300	19	19	1	1		0	0	1	1	1	2
3	OFFICE/MEDICAL SERVICE	5,428	1:300	19	19	1	2		0	0	1	1	1	2
4	DRIVE-THRU RESTAURANT	2,055	1:200	11	13	1	1	0	0	0	0	0	1	2
TOTALS		20,106		73	75	4 (1 VAN)	5 (4 VAN)	1:5,000-24,999	1	1	3	3	4	8

2006 GRADING EXCEPTION (OV12-06-16A)
CONDITIONS OF APPROVAL

1. ALL AREAS DISTURBED BY GRADING SHALL BE RE-VEGETATED WITH NATURAL ROCK AND PLANT MATERIAL. VEGETATION SHALL BE USED TO MINIMIZE THE VISUAL IMPACTS OF GRADING.
2. THE TOPS AND TOES OF SLOPES SHALL BE ROUNDED TO BLEND WITH THE NATURAL GRADES.
3. ALL RETAINING WALLS SHALL BE DESIGNED TO REDUCE EXCESSIVE AMOUNT OF SLOPE AREA AND PRESERVE EXISTING VEGETATION.
4. NO GRADING DISTURBANCES SHALL BE VISIBLE FROM LA CANADA DRIVE AND NARANJA DRIVE. ANY AREAS OF VISIBLE DISTURBANCE SHALL BE MITIGATED WITH THE ABOVE METHODS OR SHALL HAVE VEGETATIVE SCREENING.
5. THE COLOR AND TEXTURE OF RETAINING WALLS SHALL BE CONSISTENT WITH THE CHARACTER OF SURROUNDING NATURAL AREAS.
6. A MINIMUM 15' WIDE LANDSCAPE BUFFER MUST BE PROVIDED ON THE EAST/SOUTH SIDE OF THE DRAINAGE CHANNEL (WEST AND NORTH SIDE OF PROPERTY). A COMBINATION 6' HIGH SCREEN WALL AND AN OVERLAPPING TREE CANOPY MUST BE ACHIEVED. THE SPECIFICS MUST BE ADDRESSED AS PART OF THE DEVELOPMENT AND LANDSCAPE PLAN PROCESS. NOTE: THIS CONDITION IS PROPOSED TO BE REMOVED.
7. APPROVAL OF THE GRADING EXCEPTION DOES NOT CONSTITUTE APPROVAL OF THE PROPOSED CONCEPTUAL PLAN.
8. THE HEIGHT OF THE BUILDING(S) SHALL BE LIMITED TO (28').
9. LOADING ZONES SHALL BE ADEQUATELY SCREENED ON ALL FIVE SIDES. THE SPECIFICS MUST BE ADDRESSED AS PART OF THE ARCHITECTURAL REVIEW PROCESS.
10. ALL MECHANICAL EQUIPMENT MUST BE SCREENED ON ALL FIVE SIDES. THE SPECIFICS MUST BE ADDRESSED AS PART OF THE ARCHITECTURAL REVIEW PROCESS.
11. THE SITE DESIGN MUST NOT INCORPORATE A LOOP ROAD AT THE BACK OF THE BUILDINGS ADJACENT TO THE DRAINAGEWAYS.



PAD DISTRICT PLAN



LOCATION MAP

SCALE: 3" = 1 MILE
A PORTION OF SECTION 3, T-12-S,
R-13-E, GLA AND SALT RIVER MERIDIAN,
PIMA COUNTY, ARIZONA

SHEET INDEX

- 1 - C1.0 COVER SHEET
- 2 - C1.1 LEGEND & ABBREVIATIONS
- 3 - C2.0 SITE PLAN
- 4 - C3.0 GRADING PLAN
- 5 - C4.0 PRIVATE UTILITY PLAN

OWNER/DEVELOPER

LA CANADA/NARANJA LLC
CONTACT : PAUL OLAND
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TUCSON, AZ 85732
PHONE : (520) 664-4304
EMAIL : gpo@paradigmiland.us

CIVIL ENGINEER

GRENIER ENGINEERING, INC.
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SUITE A120, TUCSON, AZ 85715
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EMAIL : jrmorse@greniereng.com

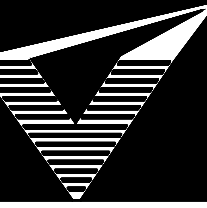
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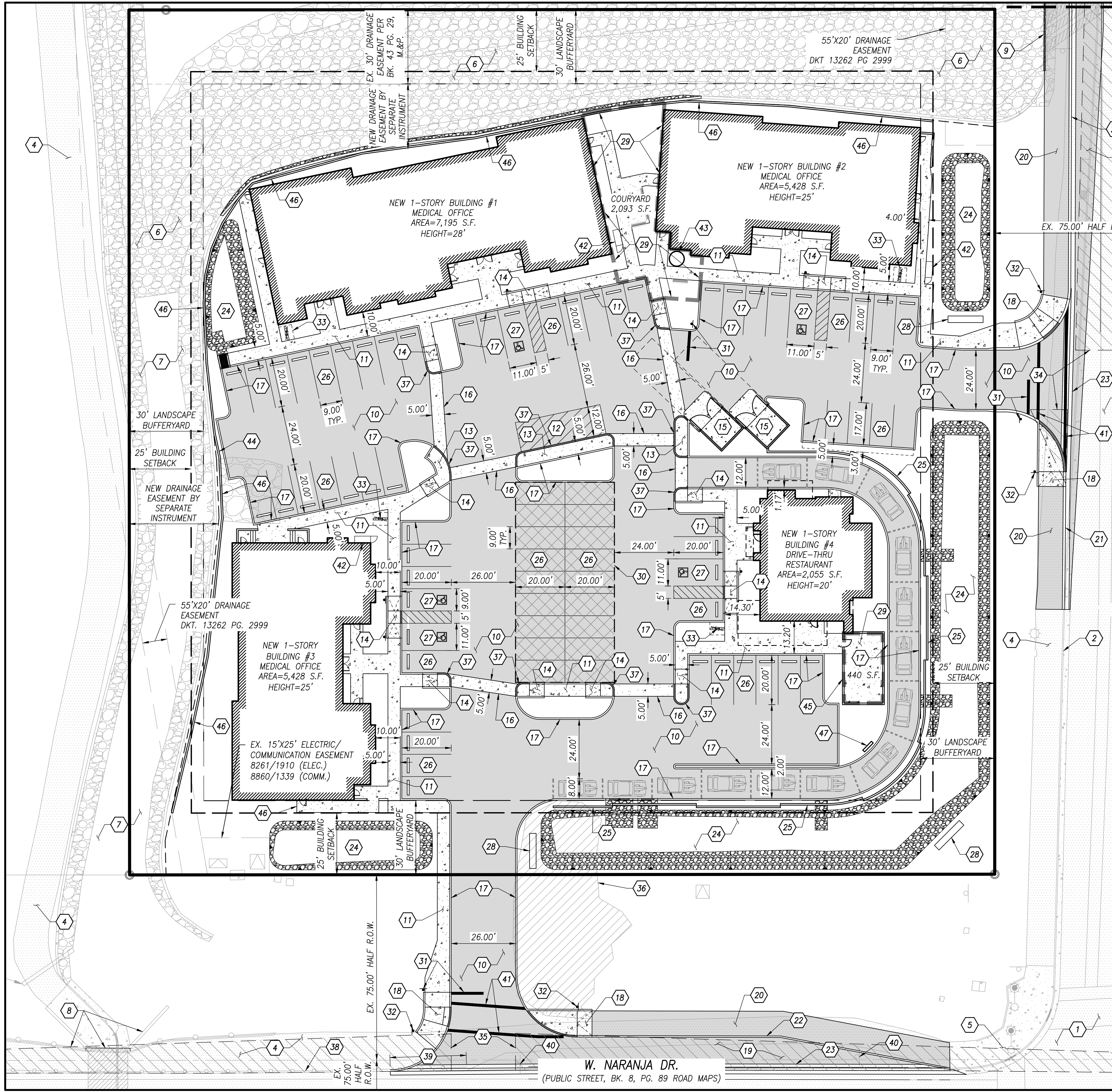
GANSLINE & ASSOCIATES
CONTACT : BILL GANSLINE
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TUCSON, AZ 85718
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EMAIL : gansline@usa.net

LANDSCAPE ARCHITECT

ARC STUDIOS
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REGISTRATION NO. 39813

REFERENCE CASE NUMBERS:
2101748, 2100814, OV1602760, OV1206-16A, IP1912-06,
G1300016, G1400034, G1500014, G1702595, OV1204-19

Rev #	Date	Description
 GRENIER ENGINEERING, Inc. Structural & Civil Engineering Consultant 6300 E. El Dorado Plaza Suite A120, Tucson, Arizona 85715 Phone: 520.326.7082 ~ Fax: 520.326.7508		
Sheet Name COVER SHEET		
Project CONCEPTUAL SITE PLAN FOR NWC LA CANADA / NARANJA PROJECT NAME A PORTION OF SECTION 3, T12S, R13E, G&SRM, PIMA COUNTY, ARIZONA		
Job Number: 21164 Designed By: AR/JEG Drawn By: AR Checked By: JM Date: 12/12/2022 Scale: N/A Ht: AS NOTED Sheet Number: C1.0 Sheet 1 of 5		



MATCHLINE, SEE RIGHT

NORTH
SCALE: 1"=20'

N. LA CANADA DR.
(PUBLIC STREET, BK. 43, PG. 29 ROAD MAPS)

W. NARANJA DR.
(PUBLIC STREET, BK. 8, PG. 89 ROAD MAPS)

- ### KEYNOTES
- 1 EXISTING A.C. PAVEMENT TO REMAIN.
 - 2 EXISTING CONCRETE CURB AND GUTTER TO REMAIN.
 - 3 EXISTING CONCRETE VERTICAL CURB TO REMAIN.
 - 4 EXISTING 10' WIDE MULTI-USE A.C. PATH TO REMAIN.
 - 5 EXISTING CURB ACCESS RAMP TO REMAIN.
 - 6 EXISTING GROUTED RIPRAP DRAINAGE CHANNEL TO REMAIN.
 - 7 EXISTING DRAINAGE CHANNEL WITH GROUTED RIPRAP SIDE SLOPES TO REMAIN.
 - 8 EXISTING BOX CULVERT, HEADWALL, AND WING WALLS TO REMAIN.
 - 9 EXISTING HEADWALL AND STORM PIPES TO REMAIN.
 - 10 NEW A.C. PAVEMENT.
 - 11 NEW CONCRETE SIDEWALK PER P.A.G. STANDARD DETAIL 200. 5% MAX. LONGITUDINAL SLOPE AND 2% MAX. CROSS SLOPE.
 - 12 NEW 12' X 35' LOADING ZONE & PASSENGER DROP-OFF.
 - 13 NEW CONCRETE SIDEWALK FLUSH WITH PAVEMENT PER P.A.G. STANDARD DETAIL 200. 5% MAX. LONGITUDINAL SLOPE AND 2% MAX. CROSS SLOPE.
 - 14 NEW CURB ACCESS RAMP.
 - 15 NEW DUMPSTER ENCLOSURE WITH 6' HIGH MASONRY WALLS, FINISH TO MATCH THE ARCHITECTURAL CHARACTER OF THE PROJECT. PROVIDE SELF-CLOSING, SELF-LATCHING GATE.
 - 16 NEW 5' WIDE DECORATIVE CONCRETE OR PAVER CROSSWALK.
 - 17 NEW 6" REVEAL CONCRETE VERTICAL CURB PER P.A.G. STANDARD DETAIL 209, TYPE 2.
 - 18 NEW CURB ACCESS RAMP PER PUBLIC IMPROVEMENT PLANS.
 - 19 NEW RIGHT TURN LANE PER PUBLIC IMPROVEMENT PLANS.
 - 20 NEW 10' WIDE MULTI-USE A.C. PATH PER PUBLIC IMPROVEMENT PLANS.
 - 21 NEW CONCRETE CURB AND GUTTER PER PUBLIC IMPROVEMENT PLANS.
 - 22 NEW CONCRETE VERTICAL CURB PER PUBLIC IMPROVEMENT PLANS.
 - 23 NEW CONCRETE VALLEY GUTTER PER PUBLIC IMPROVEMENT PLANS.
 - 24 NEW DETENTION BASIN, SEE GRADING PLAN.
 - 25 NEW 3'-6" HIGH CMU SCREEN WALL WITH SCREEN ABOVE PER BUILDING PLANS, (TOTAL SCREEN WALL HEIGHT= 6'-0"). WALL SHALL HAVE VARIED SETBACKS AS SHOWN. SEE WALL NOTE BELOW.
 - 26 NEW 9' X 20' STANDARD PARKING SPACES. PRECAST CONCRETE WHEEL STOPS WHERE SHOWN.
 - 27 NEW ACCESSIBLE PARKING SPACE, ACCESS AISLE, AND SIGN PER DIMENSIONS SHOWN.
 - 28 NEW MONUMENT SIGN.
 - 29 NEW COURTYARD WITH SEATING, SEE LANDSCAPE PLANS.

- ### KEYNOTES - CONTINUED
- 30 POTENTIAL COVERED PARKING BY SEPARATE PERMIT. LOCATION AND QUANTITY COULD CHANGE.
 - 31 NEW STOP SIGN & STOP BAR.
 - 32 NEW PEDESTRIAN STOP SIGN.
 - 33 NEW CLASS II BICYCLE PARKING RACK.
 - 34 SIGHT VISIBILITY TRIANGLES: NEAR SIDE=300', FAR SIDE=30' (PEDESTRIAN), STEM=15'
 - 35 SIGHT VISIBILITY TRIANGLES: NEAR SIDE=300', FAR SIDE=470', STEM=15'
 - 36 EXISTING GRAVEL TO BE REMOVED AS REQUIRED TO CONSTRUCT NEW IMPROVEMENTS.
 - 37 NEW CONCRETE HEADER PER P.A.G. STANDARD DETAIL 213.
 - 38 EXISTING GUARDRAIL TO REMAIN.
 - 39 ±31 L.F. OF EXISTING GUARDRAIL TO BE REMOVED PER PUBLIC IMPROVEMENT PLANS.
 - 40 EXISTING SIGN TO BE RELOCATED PER PUBLIC IMPROVEMENT PLANS.
 - 41 NEW CROSSWALK & STOP BAR PER PUBLIC IMPROVEMENT PLANS.
 - 42 NEW CLASS I BICYCLE PARKING LOCKER.
 - 43 NEW PUBLIC ART, SEE LANDSCAPE PLANS.

- ### KEYNOTES - CONTINUED
- 44 NEW CMU RETAINING WALL WITH 5'-0" HIGH SCREEN WALL ABOVE. SEE WALL NOTE BELOW.
 - 45 OUTDOOR SHADED SEATING AREA WITH NEW 3'-0" HIGH CMU SCREEN WALL. SEE WALL NOTE BELOW.
 - 46 NEW 5' HIGH CMU SCREEN WALL, SEE WALL NOTE BELOW.
 - 47 NEW DRIVE-THRU MENU BOARD.

WALL NOTE:
ALL SITE WALLS TO PROVIDE DECORATIVE FEATURES SUCH AS CAPS, PATTERNS, AND VARIATIONS IN TEXTURE OR MATERIALS.

MATCHLINE, SEE LEFT

REFERENCE CASE NUMBERS:
2101748, 2100814, OV1602760, OV1206-16A, IP1912-06,
G1300016, G1400034, G1500014, G1702595, OV1204-19

Rev #	Date	Description

GRENIER ENGINEERING, Inc.
Structural & Civil Engineering Consultant
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Phone: 520.326.7082 ~ Fax: 520.326.7508

Job Number: 21164
Designed By: AR/JEG
Drawn By: AR
Checked By: JM
Date: 12/12/2022
Scale: N/A
Sheet Number: 3 of 5

Project: CONCEPTUAL SITE PLAN FOR
NWC LA CANADA / NARANJA PROJECT NAME
A PORTION OF SECTION 3, T12S, R13E,
G&SRM, PIMA COUNTY, ARIZONA

C2.0

Date: Wednesday, September 11, 2019

Count 0:15

	Count Starts at																			
	7:00 AM	NB La Canada			SB La Canada			EB Naranja			WB Naranja			TOTALS					END	
	END Time	Left Turn	THRU	Right	Left Turn	THRU	Right Turn	Left Turn	THRU	Right Turn	Left Turn	THRU	Right Turn	NB	SB	EB	WB	Total	Time	
	7:15 AM													0	0	0	0	0	7:15 AM	
	7:30 AM	32	155	44	4	283	31	20	33	45	50	18	11	549	318	98	79	1044	7:30 AM	
	7:45 AM	31	147	46	9	295	48	24	25	53	64	47	19	808	352	102	130	1392	7:45 AM	
	8:00 AM	36	152	40	11	303	58	41	40	48	41	44	11	825	372	129	96	1422	8:00 AM	
	8:15 AM	36	126	29	10	230	44	30	32	58	49	39	13	696	284	120	101	1201	8:15 AM	
	8:30 AM													0	0	0	0	0	8:30 AM	
	8:45 AM													0	0	0	0	0	8:45 AM	
9:00 AM													0	0	0	0	0	9:00 AM		
7:00 AM	8:00 AM	99	454	130	24	881	137	85	98	146	155	109	41	2182	1042	329	305	3858	7:00 AM	8:00 AM
7:15 AM	8:15 AM	135	580	159	34	1111	181	115	130	204	204	148	54	2878	1326	449	406	5059	7:15 AM	8:15 AM
7:30 AM	8:30 AM	103	425	115	30	828	150	95	97	159	154	130	43	2329	1008	351	327	4015	7:30 AM	8:30 AM
7:45 AM	8:45 AM	72	278	69	21	533	102	71	72	106	90	83	24	1521	656	249	197	2623	7:45 AM	8:45 AM
8:00 AM	9:00 AM	36	126	29	10	230	44	30	32	58	49	39	13	696	284	120	101	1201	8:00 AM	9:00 AM
7:00 AM	9:00 AM	135	580	159	34	1111	181	115	130	204	204	148	54	2878	1326	449	406	5059	7:00 AM	9:00 AM
														0.87	0.89	0.87	0.78			
2021 Existing		135	580	159	34	1111	181	115	130	204	204	148	54							
2022 NP		136	586	161	34	1122	183	116	131	206	206	149	55							
2025 NP		140	604	165	35	1156	188	120	135	212	212	154	56							
Non-Pass By		21			5	5		2	1	4		8								
Pass-By		20			8	16		12	7		16									
Pass-By Reductions			-13	-7		-6					-10	-6								
2022 WP		177	573	154	47	1143	177	130	139	210	196	173	49							
2025 WP		181	591	158	48	1177	182	134	143	216	202	178	50							

Count Starts at																				
	4:00 PM	NB La Canada			SB La Canada			EB Naranja			WB Naranja			TOTALS					END	
	END Time	Left Turn	THRU	Right	Left Turn	THRU	Right Turn	Left Turn	THRU	Right Turn	Left Turn	THRU	Right Turn	NB	SB	EB	WB	Total	Time	
	4:15 PM													0	0	0	0	0	4:15 PM	
	4:30 PM	21	542	53	13	158	18	20	30	30	39	25	18	967	189	80	82	1318	4:30 PM	
	4:45 PM	46	204	58	9	166	20	13	20	28	44	33	14	655	195	61	91	1002	4:45 PM	
	5:00 PM	39	190	57	16	201	24	30	32	32	37	32	11	701	241	94	80	1116	5:00 PM	
	5:15 PM	36	227	63	17	162	13	15	25	27	33	24	19	661	192	67	76	996	5:15 PM	
	5:30 PM													0	0	0	0	0	5:30 PM	
	5:45 PM													0	0	0	0	0	5:45 PM	
	6:00 PM													0	0	0	0	0	6:00 PM	
4:00 PM	5:00 PM	106	936	168	38	525	62	63	82	90	120	90	43	2323	625	235	253	3436	4:00 PM	5:00 PM
4:15 PM	5:15 PM	142	1163	231	55	687	75	78	107	117	153	114	62	2984	817	302	329	4432	4:15 PM	5:15 PM
4:30 PM	5:30 PM	121	621	178	42	529	57	58	77	87	114	89	44	2017	628	222	247	3114	4:30 PM	5:30 PM
4:45 PM	5:45 PM	75	417	120	33	363	37	45	57	59	70	56	30	1362	433	161	156	2112	4:45 PM	5:45 PM
5:00 PM	6:00 PM	36	227	63	17	162	13	15	25	27	33	24	19	661	192	67	76	996	5:00 PM	6:00 PM
4:00 PM	6:00 PM	142	1163	231	55	687	75	78	107	117	153	114	62	2984	817	302	329	4432	4:00 PM	6:00 PM
														0.77	0.85	0.80	0.90			
2021 Existing		142	1163	231	55	687	75	78	107	117	153	114	62							
2022 NP		143	1175	233	56	694	76	79	108	118	155	115	63							
2025 NP		148	1210	240	57	715	78	81	111	122	159	119	65							
Non-Pass By		9			9	11		6	4	10		3								
Pass-By		10			4	9		5	3			8								
Pass-By Reductions			-7	-3			-3			-6		-2								
2022 WP		162	1168	230	69	714	73	90	115	128	149	126	61							
2025 WP		167	1203	237	70	735	75	92	118	132	153	130	63							

Intersection Turning Movement

Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: Scioto Ave

DATE: 04/29/21

LOCATION: Oro Valley

E-W STREET: Naranja Dr

DAY: THURSDAY

PROJECT# 21-1277-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 0	NT 0	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	2	0	59	0	0	65	0	126
7:15 AM	0	0	0	5	0	2	1	87	0	0	74	0	169
7:30 AM	0	0	0	3	0	2	1	94	0	0	126	0	226
7:45 AM	0	0	0	4	0	3	1	104	0	0	186	2	300
8:00 AM	0	0	0	2	0	0	1	106	0	0	154	2	265
8:15 AM	0	0	0	2	0	0	0	116	0	0	57	1	176
8:30 AM	0	0	0	0	0	1	1	43	0	0	35	0	80
8:45 AM	0	0	0	2	0	0	3	51	0	0	53	1	110
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	18	0	10	8	660	0	0	750	6	1452
Approach %	####	####	####	64.29	0.00	35.71	1.20	98.80	0.00	0.00	99.21	0.79	
App/Depart	0	/	14	28	/	0	668	/	678	756	/	760	

AM Peak Hr Begins at: 730 AM

PEAK

Volumes	0	0	0	11	0	5	3	420	0	0	523	5	967
Approach %	####	####	####	68.75	0.00	31.25	0.71	99.29	0.00	0.00	99.05	0.95	
2022 NP	0	0	0	11	0	5	3	424	0	0	528	5	
2025 NP	0	0	0	11	0	5	3	437	0	0	544	5	
Pass-By													
Non-Pass By								11			4		
Pass-By Reduction													
2022 WP	0	0	0	11	0	5	3	435	0	0	532	5	
2025 WP	0	0	0	11	0	5	3	448	0	0	548	5	

PEAK HR.

FACTOR: | 0.000 | 0.571 | 0.912 | 0.702 | 0.806 |

CONTROL: 1-Way Stop (SB)

COMMENT 1:

GPS: 32.409782, -110.997796

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: Scioto Ave

0

DATE: 04/29/21

LOCATION: Oro Valley

E-W STREET: Naranja Dr

DAY: THURSDAY

PROJECT# 21-1277-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	0	0	0	1	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	0	2	0	1	3	102	0	0	74	2	184
4:15 PM	0	0	0	4	0	1	0	67	0	0	71	4	147
4:30 PM	0	0	0	1	0	0	0	63	0	0	58	1	123
4:45 PM	0	0	0	2	0	1	3	64	0	0	72	1	143
5:00 PM	0	0	0	2	0	1	1	71	0	0	78	1	154
5:15 PM	0	0	0	0	0	2	2	65	0	0	82	3	154
5:30 PM	0	0	0	0	0	1	0	81	0	0	59	0	141
5:45 PM	0	0	0	1	0	0	0	91	0	0	66	0	158
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	0	0	0	12	0	7	9	604	0	0	560	12	1204
Approach %	####	####	####	63.16	0.00	36.84	1.47	98.53	0.00	0.00	97.90	2.10	
App/Depart	0	/	21	19	/	0	613	/	616	572	/	567	

PM Peak Hr Begins at: 500 PM

PEAK

Volumes	0	0	0	3	0	4	3	308	0	0	285	4	607
Approach %	####	####	####	42.86	0.00	57.14	0.96	99.04	0.00	0.00	98.62	1.38	
2022 NP	0	0	0	3	0	4	3	311	0	0	288	4	
2025 NP	0	0	0	3	0	4	3	321	0	0	297	4	
Pass-By													
Non-Pass By								5			11		
Pass-By Reduction													
2022 WP	0	0	0	3	0	4	3	316	0	0	299	4	
2025 WP	0	0	0	3	0	4	3	326	0	0	308	4	

PEAK HR. FACTOR:	0.000	0.583	0.854	0.850	0.960
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CONTROL: 1-Way Stop (SB)
COMMENT 1: 0
GPS: 32.409782, -110.997796

Intersection Turning Movement

Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: Caldwell Banker Driveway

DATE: 04/29/21

LOCATION: Oro Valley

E-W STREET: Naranja Dr

DAY: THURSDAY

PROJECT# 21-1277-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	0	0	0	1	0	0	1	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	0	5	0	0	0	0	58	1	0	63	0	129
7:15 AM	0	0	3	0	0	0	0	85	7	0	74	0	169
7:30 AM	0	0	4	0	0	0	0	89	8	0	126	0	227
7:45 AM	0	0	7	0	0	0	0	98	10	1	188	0	304
8:00 AM	0	0	5	0	0	0	0	96	12	0	156	0	269
8:15 AM	0	0	4	0	0	0	0	110	8	0	58	0	180
8:30 AM	0	0	7	0	0	0	0	40	3	0	35	0	85
8:45 AM	2	0	13	0	0	0	0	48	5	0	52	0	120
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	4	0	48	0	0	0	0	624	54	1	752	0	1483
Approach %	7.69	0.00	92.31	####	####	####	0.00	92.04	7.96	0.13	99.87	0.00	
App/Depart	52	/	0	0	/	55	678	/	672	753	/	756	

AM Peak Hr Begins at: 730 AM

PEAK

Volumes	0	0	20	0	0	0	0	393	38	1	528	0	980
Approach %	0.00	0.00	100.00	####	####	####	0.00	91.18	8.82	0.19	99.81	0.00	
2022 NP	0	0	20	0	0	0	0	397	38	1	533	0	
2025 NP	0	0	21	0	0	0	0	409	40	1	549	0	
Pass-By				36		20	24					49	
Non-Pass By				7		4	11					29	
Pass-By Reduction							-24				-19		
2022 WP	0	0	20	43	0	24	35	373	38	1	514	78	
2025 WP	0	0	21	43	0	24	35	385	40	1	530	78	
PEAK HR.													
FACTOR:	0.714			0.000			0.913			0.700			0.806

CONTROL: 1-Way Stop (NB)

COMMENT 1:

GPS: 32.409751, -110.996718

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: Caldwell Banker Driveway
0

DATE: 04/29/21

LOCATION: Oro Valley

E-W STREET: Naranja Dr

DAY: THURSDAY

PROJECT# 21-1277-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	0	1	0	0	0	0	0	1	0	0	1	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	0	0	2	0	0	0	0	99	5	0	76	0	182
4:15 PM	0	0	7	0	0	0	0	68	3	0	75	0	153
4:30 PM	1	0	14	0	0	0	0	60	4	0	58	0	137
4:45 PM	0	0	7	0	0	0	0	64	2	0	73	0	146
5:00 PM	0	0	5	0	0	0	0	71	2	0	79	0	157
5:15 PM	1	0	6	0	0	0	0	58	7	0	84	0	156
5:30 PM	0	0	5	0	0	0	0	79	2	0	59	0	145
5:45 PM	2	0	6	0	0	0	0	90	2	0	64	0	164
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	4	0	52	0	0	0	0	589	27	0	568	0	1240
Approach %	7.14	0.00	92.86	####	####	####	0.00	95.62	4.38	0.00	100.00	0.00	
App/Depart	56	/	0	0	/	27	616	/	641	568	/	572	

PM Peak Hr Begins at: 500 PM

PEAK

Volumes	3	0	22	0	0	0	0	298	13	0	286	0	622
Approach %	12.00	0.00	88.00	####	####	####	0.00	95.82	4.18	0.00	100.00	0.00	
2022 NP	3	0	22	0	0	0	0	301	13	0	289	0	
2025 NP	3	0	23	0	0	0	0	310	14	0	298	0	
Pass-By				16		10	11					24	
Non-Pass By				20		11	5					12	
Pass-By Reduction								-11			-9		
2022 WP	3	0	22	36	0	21	16	290	13	0	280	36	
2025 WP	3	0	23	36	0	21	16	299	14	0	289	36	

PEAK HR. FACTOR:	0.781	0.000	0.845	0.851	0.948
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CONTROL: 1-Way Stop (NB)
COMMENT 1: 0
GPS: 32.409751, -110.996718

Intersection Turning Movement

Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: La Canada Dr DATE: 04/29/21 LOCATION: Oro Valley

E-W STREET: Crystal Vision St DAY: THURSDAY PROJECT#: 21-1277-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	0	0	2	0	0	1	0	0	0	0	
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	2	98	0	0	208	0	0	0	1	0	0	0	309
7:15 AM	0	144	0	0	205	0	0	0	1	0	0	0	350
7:30 AM	2	142	0	0	306	1	1	0	2	0	0	0	454
7:45 AM	2	161	0	0	330	1	1	0	1	0	0	0	496
8:00 AM	2	123	0	0	265	1	0	0	3	0	0	0	394
8:15 AM	3	152	0	0	149	0	0	0	3	0	0	0	307
8:30 AM	1	112	0	0	184	0	0	0	1	0	0	0	298
8:45 AM	2	129	0	0	158	1	0	0	1	0	0	0	291
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	14	1061	0	0	1805	4	2	0	13	0	0	0	2899
Approach %	1.30	98.70	0.00	0.00	99.78	0.22	13.33	0.00	86.67	####	####	####	
App/Depart	1075	/	1063	1809	/	1818	15	/	0	0	/	18	

AM Peak Hr Begins at: 715 AM

PEAK													
Volumes	6	570	0	0	1106	3	2	0	7	0	0	0	1694
Peak Adjust		178			209								
U-Turn	4												
Existing Adjusted	10	748	0	0	1315	3	2	0	7	0	0	0	
2022 NP	10	755	0	0	1328	3	2	0	7	0	0	0	
2025 NP	10	778	0	0	1368	3	2	0	7	0	0	0	
Pass-By													
Non-Pass By		5			14								
Pass-By Reduction													
2022 WP	10	760	0	0	1342	3	2	0	7	0	0	0	
2025 WP	10	783	0	0	1382	3	2	0	7	0	0	0	
Approach %	1.04	98.96	0.00	0.00	99.73	0.27	22.22	0.00	77.78	####	####	####	

PEAK HR.													
FACTOR:		0.883			0.838			0.750			0.000		0.854

CONTROL: 1-Way Stop (EB)
COMMENT 1:
GPS: 32.412999, -110.995769

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: **La Canada Dr** DATE: **04/29/21** LOCATION: **Oro Valley**
E-W STREET: **Crystal Vision St** DAY: **THURSDAY** PROJECT# **21-1277-003**

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	0	0	2	0	0	1	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	158	0	0	142	0	0	0	2	0	0	0	305
4:15 PM	5	182	0	0	149	2	1	0	0	0	0	0	339
4:30 PM	0	180	0	0	148	1	0	0	2	0	0	0	331
4:45 PM	1	176	0	0	150	0	0	0	2	0	0	0	329
5:00 PM	2	187	0	0	136	0	0	0	1	0	0	0	326
5:15 PM	0	176	0	0	126	0	0	0	0	0	0	0	302
5:30 PM	1	175	0	0	131	1	1	0	2	0	0	0	311
5:45 PM	0	117	0	0	116	0	0	0	1	0	0	0	234
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	12	1351	0	0	1098	4	2	0	10	0	0	0	2477
Approach %	0.88	99.12	0.00	0.00	99.64	0.36	16.67	0.00	83.33	####	####	####	
App/Depart	1363	/	1353	1102	/	1108	12	/	0	0	/	16	

PM Peak Hr Begins at: 415 PM

PEAK													
Volumes	8	725	0	0	583	3	1	0	5	0	0	0	1325
Peak Adjust		568			226								
U-turn	3												
Existing Adjust	11	1293	0	0	809	3	1	0	5	0	0	0	
2022 NP	11	1306	0	0	817	3	1	0	5	0	0	0	
2025 NP	11	1346	0	0	842	3	1	0	5	0	0	0	
Pass-By													
Non-Pass By		12			7								
Pass-By Reduction													
2022 WP	11	1318	0	0	824	3	1	0	5	0	0	0	
2025 WP	11	1358	0	0	849	3	1	0	5	0	0	0	
Approach %	1.09	98.91	0.00	0.00	99.49	0.51	16.67	0.00	83.33	####	####	####	

PEAK HR.													
FACTOR:		0.970			0.970			0.750			0.000		0.977

CONTROL: **1-Way Stop (EB)**
COMMENT 1: **0**
GPS: **32.412999, -110.995769**

Intersection Turning Movement

Prepared by:



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: La Canada Dr

DATE: 04/29/21

LOCATION: Oro Valley

E-W STREET: Crystal Vision St

DAY: THURSDAY

PROJECT#: 21-1277-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL 1	NT 2	NR 0	SL 0	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 0	WR 0	TOTAL
6:00 AM													
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	2	0	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	5	0	0	0	0	0	0	0	0	0	0	0	5
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	####	####	####	
App/Depart	5	/	0	0	/	0	0	/	0	0	/	5	

AM Peak Hr Begins at: 745 AM

PEAK

Volumes	4	0	0	0	0	0	0	0	0	0	0	0	4
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	####	####	####	

PEAK HR.

FACTOR:	0.500	0.000	0.000	0.000	0.500
---------	-------	-------	-------	-------	-------

CONTROL: 1-Way Stop (EB)

COMMENT 1:

GPS: 32.412999, -110.995769

Intersection Turning Movement



FIELD DATA SERVICES OF ARIZONA, INC.
520.316.6745



veracitytrafficgroup

N-S STREET: **La Canada Dr** DATE: **04/29/21** LOCATION: **Oro Valley**
E-W STREET: **Crystal Vision St** DAY: **THURSDAY** PROJECT#: **21-1277-003**

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	1	2	0	0	2	0	0	1	0	0	0	0	
1:00 PM													
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													

TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
Volumes	4	0	0	0	0	0	0	0	0	0	0	0	4
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	####	####	####	
App/Depart	4	/	0	0	/	0	0	/	0	0	/	4	

PM Peak Hr Begins at: 415 PM

PEAK

Volumes	3	0	0	0	0	0	0	0	0	0	0	0	3
Approach %	100.00	0.00	0.00	####	####	####	####	####	####	####	####	####	

PEAK HR.

FACTOR:	0.375	0.000	0.000	0.000	0.375
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CONTROL: **1-Way Stop (EB)**
COMMENT 1: **0**
GPS: **32.412999, -110.995769**

HCM 6th Signalized Intersection Summary 3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	130	204	204	148	54	135	580	159	34	1111	181
Future Volume (veh/h)	115	130	204	204	148	54	135	580	159	34	1111	181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	149	234	262	190	69	155	667	183	38	1248	203
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	419	132	207	282	244	207	176	1481	660	123	1374	613
Arrive On Green	0.18	0.20	0.20	0.11	0.13	0.13	0.10	0.42	0.42	0.07	0.39	0.39
Sat Flow, veh/h	1781	656	1030	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	132	0	383	262	190	69	155	667	183	38	1248	203
Grp Sat Flow(s),veh/h/ln	1781	0	1685	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.9	0.0	18.1	9.0	8.8	3.6	7.7	12.1	6.9	1.8	29.9	8.1
Cycle Q Clear(g_c), s	0.9	0.0	18.1	9.0	8.8	3.6	7.7	12.1	6.9	1.8	29.9	8.1
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	419	0	339	282	244	207	176	1481	660	123	1374	613
V/C Ratio(X)	0.32	0.00	1.13	0.93	0.78	0.33	0.88	0.45	0.28	0.31	0.91	0.33
Avail Cap(c_a), veh/h	419	0	339	282	445	377	176	1481	660	123	1374	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	36.0	38.0	37.9	35.6	40.0	18.9	17.3	39.9	26.1	19.4
Incr Delay (d2), s/veh	0.4	0.0	89.0	35.4	5.3	0.9	36.3	1.0	1.0	1.4	10.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	15.6	8.0	4.3	1.4	5.1	5.0	2.6	0.8	13.9	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.4	0.0	124.9	73.4	43.2	36.5	76.4	19.8	18.4	41.3	36.5	20.9
LnGrp LOS	C	A	F	E	D	D	E	B	B	D	D	C
Approach Vol, veh/h		515			521			1005			1489	
Approach Delay, s/veh		100.7			57.5			28.3			34.5	
Approach LOS		F			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	42.0	14.7	22.6	13.4	39.3	21.1	16.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.2	37.5	10.2	18.1	8.9	34.8	6.9	21.4				
Max Q Clear Time (g_c+I1), s	3.8	14.1	11.0	20.1	9.7	31.9	2.9	10.8				
Green Ext Time (p_c), s	0.0	5.5	0.0	0.0	0.0	2.2	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			45.8									
HCM 6th LOS			D									

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	420	523	5	11	5
Future Vol, veh/h	3	420	523	5	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	70	70	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	462	747	7	19	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	754	0	0 1219 751
Stage 1	-	-	- 751 -
Stage 2	-	-	- 468 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	856	-	- 199 411
Stage 1	-	-	- 466 -
Stage 2	-	-	- 630 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	856	-	- 198 411
Mov Cap-2 Maneuver	-	-	- 331 -
Stage 1	-	-	- 464 -
Stage 2	-	-	- 630 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	856	-	-	-	352
HCM Lane V/C Ratio	0.004	-	-	-	0.08
HCM Control Delay (s)	9.2	-	-	-	16.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection								
Int Delay, s/veh	0.2							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	2	7	4	6	748	1315	3	
Future Vol, veh/h	2	7	4	6	748	1315	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	2	8	4	7	813	1429	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1860	716	1433	1432	0	-	0	
Stage 1	1431	-	-	-	-	-	-	
Stage 2	429	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	65	373	174	470	-	-	-	
Stage 1	186	-	-	-	-	-	-	
Stage 2	624	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	62	373	277	277	-	-	-	
Mov Cap-2 Maneuver	62	-	-	-	-	-	-	
Stage 1	179	-	-	-	-	-	-	
Stage 2	624	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	26.7	0.2		0				
HCM LOS	D							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	277	-	176	-	-			
HCM Lane V/C Ratio	0.039	-	0.056	-	-			
HCM Control Delay (s)	18.5	-	26.7	-	-			
HCM Lane LOS	C	-	D	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-			

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	393	38	0	528	0	20
Future Vol, veh/h	393	38	0	528	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	70	70	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	432	42	0	754	0	28

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 453
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.318
Pot Cap-1 Maneuver	-	-	0 - 0 607
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 607
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	607	-	-	-
HCM Lane V/C Ratio	0.046	-	-	-
HCM Control Delay (s)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	107	117	153	114	62	142	1163	231	55	687	75
Future Volume (veh/h)	78	107	117	153	114	62	142	1163	231	55	687	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	134	146	170	127	69	184	1510	300	65	808	88
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	386	158	172	211	188	159	250	1610	718	88	1288	575
Arrive On Green	0.16	0.19	0.19	0.06	0.10	0.10	0.14	0.45	0.45	0.05	0.36	0.36
Sat Flow, veh/h	1781	818	892	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	98	0	280	170	127	69	184	1510	300	65	808	88
Grp Sat Flow(s),veh/h/ln	1781	0	1710	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	11.9	2.9	4.9	3.1	7.4	30.3	9.6	2.7	14.1	2.8
Cycle Q Clear(g_c), s	0.0	0.0	11.9	2.9	4.9	3.1	7.4	30.3	9.6	2.7	14.1	2.8
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	386	0	330	211	188	159	250	1610	718	88	1288	575
V/C Ratio(X)	0.25	0.00	0.85	0.80	0.68	0.43	0.74	0.94	0.42	0.74	0.63	0.15
Avail Cap(c_a), veh/h	386	0	410	215	449	380	280	1610	718	119	1288	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	29.2	33.4	32.6	31.7	30.9	19.5	13.8	35.2	19.7	16.1
Incr Delay (d2), s/veh	0.3	0.0	13.0	19.4	4.2	1.9	8.7	11.8	1.8	14.9	2.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	5.9	4.0	2.4	1.2	3.7	13.8	3.5	1.5	5.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	42.2	52.8	36.8	33.6	39.7	31.3	15.6	50.0	22.1	16.7
LnGrp LOS	C	A	D	D	D	C	D	C	B	D	C	B
Approach Vol, veh/h		378			366			1994			961	
Approach Delay, s/veh		38.3			43.6			29.7			23.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	38.5	9.4	19.0	15.0	31.7	16.3	12.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	11.8	27.2	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.7	32.3	4.9	13.9	9.4	16.1	2.0	6.9				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.6	0.1	4.5	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			30.4									
HCM 6th LOS			C									

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	308	285	4	3	4
Future Vol, veh/h	3	308	285	4	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	362	335	5	5	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	340	0	0 708 338
Stage 1	-	-	- 338 -
Stage 2	-	-	- 370 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1219	-	- 401 704
Stage 1	-	-	- 722 -
Stage 2	-	-	- 699 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1219	-	- 400 704
Mov Cap-2 Maneuver	-	-	- 506 -
Stage 1	-	-	- 720 -
Stage 2	-	-	- 699 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1219	-	-	-	603
HCM Lane V/C Ratio	0.003	-	-	-	0.02
HCM Control Delay (s)	8	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection								
Int Delay, s/veh	0.1							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	1	5	3	8	1293	809	3	
Future Vol, veh/h	1	5	3	8	1293	809	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	75	75	97	97	97	97	97	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	1	7	3	8	1333	834	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1525	419	837	837	0	-	0	
Stage 1	836	-	-	-	-	-	-	
Stage 2	689	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	109	583	422	793	-	-	-	
Stage 1	386	-	-	-	-	-	-	
Stage 2	460	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	107	583	637	637	-	-	-	
Mov Cap-2 Maneuver	107	-	-	-	-	-	-	
Stage 1	379	-	-	-	-	-	-	
Stage 2	460	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	16	0.1		0				
HCM LOS	C							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	637	-	335	-	-			
HCM Lane V/C Ratio	0.018	-	0.024	-	-			
HCM Control Delay (s)	10.8	-	16	-	-			
HCM Lane LOS	B	-	C	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-			

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	289	13	0	286	3	22
Future Vol, veh/h	289	13	0	286	3	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	340	15	0	336	4	28

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 684 348
Stage 1	-	-	- 348 -
Stage 2	-	-	- 336 -
Critical Hdwy	-	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	-	-	- 3.518 3.318
Pot Cap-1 Maneuver	-	- 0	- 414 695
Stage 1	-	- 0	- 715 -
Stage 2	-	- 0	- 724 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 414 695
Mov Cap-2 Maneuver	-	-	- 517 -
Stage 1	-	-	- 715 -
Stage 2	-	-	- 724 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	695	-	-	-
HCM Lane V/C Ratio	0.041	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	131	206	206	149	55	136	586	161	34	1122	183
Future Volume (veh/h)	116	131	206	206	149	55	136	586	161	34	1122	183
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	151	237	264	191	71	156	674	185	38	1261	206
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	132	207	282	245	208	176	1481	660	123	1374	613
Arrive On Green	0.18	0.20	0.20	0.11	0.13	0.13	0.10	0.42	0.42	0.07	0.39	0.39
Sat Flow, veh/h	1781	656	1029	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	133	0	388	264	191	71	156	674	185	38	1261	206
Grp Sat Flow(s),veh/h/ln	1781	0	1685	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.0	0.0	18.1	9.1	8.9	3.7	7.8	12.3	6.9	1.8	30.4	8.2
Cycle Q Clear(g_c), s	1.0	0.0	18.1	9.1	8.9	3.7	7.8	12.3	6.9	1.8	30.4	8.2
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	0	339	282	245	208	176	1481	660	123	1374	613
V/C Ratio(X)	0.32	0.00	1.14	0.94	0.78	0.34	0.89	0.46	0.28	0.31	0.92	0.34
Avail Cap(c_a), veh/h	418	0	339	282	445	377	176	1481	660	123	1374	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	36.0	38.0	37.8	35.6	40.0	18.9	17.3	39.9	26.2	19.5
Incr Delay (d2), s/veh	0.4	0.0	94.2	37.0	5.3	1.0	37.5	1.0	1.1	1.4	11.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	16.1	8.2	4.4	1.5	5.2	5.1	2.6	0.8	14.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.5	0.0	130.2	75.0	43.2	36.5	77.6	19.9	18.4	41.3	37.5	20.9
LnGrp LOS	C	A	F	E	D	D	E	B	B	D	D	C
Approach Vol, veh/h		521			526			1015			1505	
Approach Delay, s/veh		104.7			58.3			28.5			35.3	
Approach LOS		F			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	42.0	14.7	22.6	13.4	39.3	21.0	16.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.2	37.5	10.2	18.1	8.9	34.8	6.9	21.4				
Max Q Clear Time (g_c+I1), s	3.8	14.3	11.1	20.1	9.8	32.4	3.0	10.9				
Green Ext Time (p_c), s	0.0	5.5	0.0	0.0	0.0	1.9	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			46.9									
HCM 6th LOS			D									

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	424	528	5	11	5
Future Vol, veh/h	3	424	528	5	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	70	70	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	466	754	7	19	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	761	0	0 1230 758
Stage 1	-	-	- 758 -
Stage 2	-	-	- 472 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	851	-	- 196 407
Stage 1	-	-	- 463 -
Stage 2	-	-	- 628 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	851	-	- 195 407
Mov Cap-2 Maneuver	-	-	- 328 -
Stage 1	-	-	- 461 -
Stage 2	-	-	- 628 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	851	-	-	-	349
HCM Lane V/C Ratio	0.004	-	-	-	0.08
HCM Control Delay (s)	9.2	-	-	-	16.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection							
Int Delay, s/veh	0.2						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	2	7	4	6	755	1328	3
Future Vol, veh/h	2	7	4	6	755	1328	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	150	-	-	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	8	4	7	821	1443	3

Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1878	723	1447	1446	0	-	0
Stage 1	1445	-	-	-	-	-	-
Stage 2	433	-	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-
Pot Cap-1 Maneuver	63	369	171	465	-	-	-
Stage 1	183	-	-	-	-	-	-
Stage 2	621	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	60	369	272	272	-	-	-
Mov Cap-2 Maneuver	60	-	-	-	-	-	-
Stage 1	176	-	-	-	-	-	-
Stage 2	621	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.2	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	272	-	172	-	-
HCM Lane V/C Ratio	0.04	-	0.057	-	-
HCM Control Delay (s)	18.8	-	27.2	-	-
HCM Lane LOS	C	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	397	38	0	533	0	20
Future Vol, veh/h	397	38	0	533	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	70	70	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	42	0	761	0	28

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 457
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.318
Pot Cap-1 Maneuver	-	-	0 - 0 604
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 604
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	604	-	-	-
HCM Lane V/C Ratio	0.047	-	-	-
HCM Control Delay (s)	11.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	108	118	155	115	63	143	1175	233	56	694	76
Future Volume (veh/h)	79	108	118	155	115	63	143	1175	233	56	694	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	99	135	148	172	128	70	186	1526	303	66	816	89
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	388	158	174	212	189	160	249	1605	716	89	1284	573
Arrive On Green	0.16	0.19	0.19	0.07	0.10	0.10	0.14	0.45	0.45	0.05	0.36	0.36
Sat Flow, veh/h	1781	815	894	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	99	0	283	172	128	70	186	1526	303	66	816	89
Grp Sat Flow(s),veh/h/ln	1781	0	1709	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	12.0	3.0	5.0	3.1	7.5	31.1	9.8	2.8	14.3	2.9
Cycle Q Clear(g_c), s	0.0	0.0	12.0	3.0	5.0	3.1	7.5	31.1	9.8	2.8	14.3	2.9
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	388	0	332	212	189	160	249	1605	716	89	1284	573
V/C Ratio(X)	0.26	0.00	0.85	0.81	0.68	0.44	0.75	0.95	0.42	0.75	0.64	0.16
Avail Cap(c_a), veh/h	388	0	409	214	447	379	279	1605	716	118	1284	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	29.3	33.5	32.7	31.8	31.1	19.8	14.0	35.3	19.9	16.3
Incr Delay (d2), s/veh	0.3	0.0	13.4	20.5	4.2	1.9	9.3	13.5	1.8	16.0	2.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	6.0	4.2	2.4	1.2	3.8	14.5	3.6	1.6	6.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	42.7	53.9	36.9	33.7	40.4	33.3	15.8	51.3	22.3	16.8
LnGrp LOS	C	A	D	D	D	C	D	C	B	D	C	B
Approach Vol, veh/h		382			370			2015			971	
Approach Delay, s/veh		38.6			44.2			31.3			23.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	38.5	9.4	19.1	15.0	31.7	16.4	12.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	11.8	27.2	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.8	33.1	5.0	14.0	9.5	16.3	2.0	7.0				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.6	0.1	4.4	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			31.4									
HCM 6th LOS			C									

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	311	288	4	3	4
Future Vol, veh/h	3	311	288	4	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	366	339	5	5	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	344	0	0 716 342
Stage 1	-	-	- - 342 -
Stage 2	-	-	- - 374 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1215	-	- - 397 701
Stage 1	-	-	- - 719 -
Stage 2	-	-	- - 696 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1215	-	- - 396 701
Mov Cap-2 Maneuver	-	-	- - 503 -
Stage 1	-	-	- - 717 -
Stage 2	-	-	- - 696 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1215	-	-	-	600
HCM Lane V/C Ratio	0.003	-	-	-	0.02
HCM Control Delay (s)	8	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection								
Int Delay, s/veh	0.1							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	1	5	3	8	1306	817	3	
Future Vol, veh/h	1	5	3	8	1306	817	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	75	75	97	97	97	97	97	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	1	7	3	8	1346	842	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1539	423	845	845	0	-	0	
Stage 1	844	-	-	-	-	-	-	
Stage 2	695	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	106	579	417	787	-	-	-	
Stage 1	382	-	-	-	-	-	-	
Stage 2	456	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	104	579	631	631	-	-	-	
Mov Cap-2 Maneuver	104	-	-	-	-	-	-	
Stage 1	376	-	-	-	-	-	-	
Stage 2	456	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	16.2	0.1		0				
HCM LOS	C							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	631	-	329	-	-			
HCM Lane V/C Ratio	0.018	-	0.024	-	-			
HCM Control Delay (s)	10.8	-	16.2	-	-			
HCM Lane LOS	B	-	C	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-			

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	301	13	0	289	3	22
Future Vol, veh/h	301	13	0	289	3	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	354	15	0	340	4	28

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - 702 362
Stage 1	-	-	- - 362 -
Stage 2	-	-	- - 340 -
Critical Hdwy	-	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	-	-	- - 3.518 3.318
Pot Cap-1 Maneuver	-	-	0 - 404 683
Stage 1	-	-	0 - 704 -
Stage 2	-	-	0 - 721 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - 404 683
Mov Cap-2 Maneuver	-	-	- - 509 -
Stage 1	-	-	- - 704 -
Stage 2	-	-	- - 721 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	683	-	-	-
HCM Lane V/C Ratio	0.041	-	-	-
HCM Control Delay (s)	10.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	135	212	212	154	56	140	604	165	35	1156	188
Future Volume (veh/h)	120	135	212	212	154	56	140	604	165	35	1156	188
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	155	244	272	197	72	161	694	190	39	1299	211
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	132	207	282	251	213	176	1481	660	123	1374	613
Arrive On Green	0.18	0.20	0.20	0.11	0.13	0.13	0.10	0.42	0.42	0.07	0.39	0.39
Sat Flow, veh/h	1781	655	1030	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	138	0	399	272	197	72	161	694	190	39	1299	211
Grp Sat Flow(s),veh/h/ln	1781	0	1685	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.2	0.0	18.1	9.6	9.2	3.7	8.1	12.7	7.2	1.9	31.8	8.5
Cycle Q Clear(g_c), s	1.2	0.0	18.1	9.6	9.2	3.7	8.1	12.7	7.2	1.9	31.8	8.5
Prop In Lane	1.00		0.61	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	412	0	339	282	251	213	176	1481	660	123	1374	613
V/C Ratio(X)	0.33	0.00	1.18	0.96	0.78	0.34	0.91	0.47	0.29	0.32	0.95	0.34
Avail Cap(c_a), veh/h	412	0	339	282	445	377	176	1481	660	123	1374	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	36.0	38.2	37.7	35.3	40.2	19.0	17.4	39.9	26.7	19.5
Incr Delay (d2), s/veh	0.5	0.0	106.3	43.9	5.3	0.9	44.0	1.1	1.1	1.5	14.3	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	17.2	8.9	4.5	1.5	5.6	5.3	2.7	0.9	15.5	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	0.0	142.3	82.1	43.0	36.3	84.1	20.1	18.5	41.4	41.0	21.1
LnGrp LOS	C	A	F	F	D	D	F	C	B	D	D	C
Approach Vol, veh/h		537			541			1045			1549	
Approach Delay, s/veh		113.6			61.8			29.7			38.3	
Approach LOS		F			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	42.0	14.7	22.6	13.4	39.3	20.7	16.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.2	37.5	10.2	18.1	8.9	34.8	6.9	21.4				
Max Q Clear Time (g_c+I1), s	3.9	14.7	11.6	20.1	10.1	33.8	3.2	11.2				
Green Ext Time (p_c), s	0.0	5.7	0.0	0.0	0.0	0.8	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			50.3									
HCM 6th LOS			D									

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	437	544	5	11	5
Future Vol, veh/h	3	437	544	5	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	70	70	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	480	777	7	19	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	784	0	0 1267 781
Stage 1	-	-	- 781 -
Stage 2	-	-	- 486 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	834	-	- 186 395
Stage 1	-	-	- 451 -
Stage 2	-	-	- 618 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	834	-	- 185 395
Mov Cap-2 Maneuver	-	-	- 319 -
Stage 1	-	-	- 449 -
Stage 2	-	-	- 618 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	834	-	-	-	339
HCM Lane V/C Ratio	0.004	-	-	-	0.083
HCM Control Delay (s)	9.3	-	-	-	16.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection							
Int Delay, s/veh	0.2						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	2	7	4	6	778	1368	3
Future Vol, veh/h	2	7	4	6	778	1368	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	150	-	-	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	8	4	7	846	1487	3

Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1934	745	1490	1490	0	-	0
Stage 1	1489	-	-	-	-	-	-
Stage 2	445	-	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-
Pot Cap-1 Maneuver	58	357	160	447	-	-	-
Stage 1	173	-	-	-	-	-	-
Stage 2	613	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	56	357	257	257	-	-	-
Mov Cap-2 Maneuver	56	-	-	-	-	-	-
Stage 1	166	-	-	-	-	-	-
Stage 2	613	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.5	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	257	-	163	-	-
HCM Lane V/C Ratio	0.042	-	0.06	-	-
HCM Control Delay (s)	19.6	-	28.5	-	-
HCM Lane LOS	C	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	409	40	0	549	0	21
Future Vol, veh/h	409	40	0	549	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	70	70	71	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	449	44	0	784	0	30

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 471
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.318
Pot Cap-1 Maneuver	-	-	0 - 0 593
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 593
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	593	-	-	-
HCM Lane V/C Ratio	0.05	-	-	-
HCM Control Delay (s)	11.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

05/11/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	111	122	159	119	65	148	1210	240	57	715	78
Future Volume (veh/h)	81	111	122	159	119	65	148	1210	240	57	715	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	101	139	152	177	132	72	192	1571	312	67	841	92
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	162	177	212	193	163	249	1594	711	89	1275	569
Arrive On Green	0.16	0.20	0.20	0.07	0.10	0.10	0.14	0.45	0.45	0.05	0.36	0.36
Sat Flow, veh/h	1781	817	893	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	101	0	291	177	132	72	192	1571	312	67	841	92
Grp Sat Flow(s),veh/h/ln	1781	0	1710	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	12.5	3.3	5.2	3.2	7.9	33.1	10.2	2.8	15.1	3.0
Cycle Q Clear(g_c), s	0.0	0.0	12.5	3.3	5.2	3.2	7.9	33.1	10.2	2.8	15.1	3.0
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	0	339	212	193	163	249	1594	711	89	1275	569
V/C Ratio(X)	0.26	0.00	0.86	0.83	0.69	0.44	0.77	0.99	0.44	0.75	0.66	0.16
Avail Cap(c_a), veh/h	392	0	406	212	444	376	277	1594	711	117	1275	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.6	0.0	29.4	33.7	32.8	32.0	31.5	20.7	14.4	35.6	20.4	16.5
Incr Delay (d2), s/veh	0.3	0.0	14.6	23.7	4.3	1.9	11.4	19.4	2.0	17.5	2.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	6.3	4.5	2.5	1.3	4.1	16.6	3.8	1.6	6.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	44.0	57.5	37.1	33.8	42.9	40.1	16.3	53.1	23.1	17.2
LnGrp LOS	C	A	D	E	D	C	D	D	B	D	C	B
Approach Vol, veh/h		392			381			2075			1000	
Approach Delay, s/veh		39.6			45.9			36.7			24.6	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	38.5	9.5	19.5	15.1	31.7	16.7	12.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	11.8	27.2	5.0	18.0				
Max Q Clear Time (g_c+I1), s	4.8	35.1	5.3	14.5	9.9	17.1	2.0	7.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6	0.1	4.4	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			34.8									
HCM 6th LOS			C									

HCM 6th TWSC
6: Naranja Dr & Scioto Ave

05/11/2021

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	321	297	4	3	4
Future Vol, veh/h	3	321	297	4	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	378	349	5	5	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	354	0	0 738 352
Stage 1	-	-	- - 352 -
Stage 2	-	-	- - 386 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1205	-	- - 385 692
Stage 1	-	-	- - 712 -
Stage 2	-	-	- - 687 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1205	-	- - 384 692
Mov Cap-2 Maneuver	-	-	- - 494 -
Stage 1	-	-	- - 710 -
Stage 2	-	-	- - 687 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1205	-	-	-	591
HCM Lane V/C Ratio	0.003	-	-	-	0.02
HCM Control Delay (s)	8	-	-	-	11.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection								
Int Delay, s/veh	0.1							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	1	5	3	8	1346	842	3	
Future Vol, veh/h	1	5	3	8	1346	842	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	75	75	97	97	97	97	97	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	1	7	3	8	1388	868	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1586	436	871	871	0	-	0	
Stage 1	870	-	-	-	-	-	-	
Stage 2	716	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	99	568	402	770	-	-	-	
Stage 1	370	-	-	-	-	-	-	
Stage 2	445	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	97	568	614	614	-	-	-	
Mov Cap-2 Maneuver	97	-	-	-	-	-	-	
Stage 1	363	-	-	-	-	-	-	
Stage 2	445	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	16.8	0.1		0				
HCM LOS	C							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	614	-	314	-	-			
HCM Lane V/C Ratio	0.018	-	0.025	-	-			
HCM Control Delay (s)	11	-	16.8	-	-			
HCM Lane LOS	B	-	C	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-			

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	310	14	0	298	3	23
Future Vol, veh/h	310	14	0	298	3	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	365	16	0	351	4	29

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 724 373
Stage 1	-	-	- 373 -
Stage 2	-	-	- 351 -
Critical Hdwy	-	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	-	-	- 3.518 3.318
Pot Cap-1 Maneuver	-	- 0	- 393 673
Stage 1	-	- 0	- 696 -
Stage 2	-	- 0	- 713 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 393 673
Mov Cap-2 Maneuver	-	-	- 501 -
Stage 1	-	-	- 696 -
Stage 2	-	-	- 713 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	673	-	-	-
HCM Lane V/C Ratio	0.044	-	-	-
HCM Control Delay (s)	10.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	139	210	196	173	49	177	573	154	47	1143	177
Future Volume (veh/h)	130	139	210	196	173	49	177	573	154	47	1143	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	149	160	241	251	222	63	203	659	177	53	1284	199
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	389	135	204	282	276	234	176	1481	660	123	1374	613
Arrive On Green	0.17	0.20	0.20	0.11	0.15	0.15	0.10	0.42	0.42	0.07	0.39	0.39
Sat Flow, veh/h	1781	673	1014	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	149	0	401	251	222	63	203	659	177	53	1284	199
Grp Sat Flow(s),veh/h/ln	1781	0	1688	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.8	0.0	18.1	8.4	10.3	3.2	8.9	12.0	6.6	2.6	31.2	7.9
Cycle Q Clear(g_c), s	1.8	0.0	18.1	8.4	10.3	3.2	8.9	12.0	6.6	2.6	31.2	7.9
Prop In Lane	1.00		0.60	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	389	0	339	282	276	234	176	1481	660	123	1374	613
V/C Ratio(X)	0.38	0.00	1.18	0.89	0.80	0.27	1.15	0.45	0.27	0.43	0.93	0.32
Avail Cap(c_a), veh/h	389	0	339	282	445	377	176	1481	660	123	1374	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	0.0	36.0	37.8	37.1	34.1	40.6	18.8	17.2	40.2	26.5	19.4
Incr Delay (d2), s/veh	0.6	0.0	107.8	27.6	5.5	0.6	114.8	1.0	1.0	2.4	13.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	17.4	7.1	5.1	1.2	9.5	4.9	0.2	1.2	15.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	143.7	65.3	42.6	34.7	155.3	19.8	18.2	42.6	39.5	20.8
LnGrp LOS	C	A	F	E	D	C	F	B	B	D	D	C
Approach Vol, veh/h		550			536			1039			1536	
Approach Delay, s/veh		113.5			52.3			46.0			37.2	
Approach LOS		F			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	42.0	14.7	22.6	13.4	39.3	19.5	17.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.2	37.5	10.2	18.1	8.9	34.8	6.9	21.4				
Max Q Clear Time (g_c+I1), s	4.6	14.0	10.4	20.1	10.9	33.2	3.8	12.3				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.0	0.0	1.3	0.1	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			53.3									
HCM 6th LOS			D									

HCM 6th TWSC
6: Naranja Dr & Scioto Ave

07/12/2022

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	435	532	5	11	5
Future Vol, veh/h	3	435	532	5	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	70	70	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	478	760	7	19	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	767	0	0 1248 764
Stage 1	-	-	- - 764 -
Stage 2	-	-	- - 484 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	847	-	- - 191 404
Stage 1	-	-	- - 460 -
Stage 2	-	-	- - 620 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	847	-	- - 190 404
Mov Cap-2 Maneuver	-	-	- - 324 -
Stage 1	-	-	- - 458 -
Stage 2	-	-	- - 620 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	847	-	-	-	345
HCM Lane V/C Ratio	0.004	-	-	-	0.081
HCM Control Delay (s)	9.3	-	-	-	16.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
8: La Canada & Crystal Vision

07/12/2022

Intersection								
Int Delay, s/veh	0.2							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	2	7	4	6	760	1342	3	
Future Vol, veh/h	2	7	4	6	760	1342	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	2	8	4	7	826	1459	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1896	731	1462	1462	0	-	0	
Stage 1	1461	-	-	-	-	-	-	
Stage 2	435	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	61	364	167	458	-	-	-	
Stage 1	180	-	-	-	-	-	-	
Stage 2	620	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	58	364	267	267	-	-	-	
Mov Cap-2 Maneuver	58	-	-	-	-	-	-	
Stage 1	173	-	-	-	-	-	-	
Stage 2	620	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	27.7	0.2		0				
HCM LOS	D							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	267	-	168	-	-			
HCM Lane V/C Ratio	0.041	-	0.058	-	-			
HCM Control Delay (s)	19.1	-	27.7	-	-			
HCM Lane LOS	C	-	D	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-			

HCM 6th TWSC
10: South Dwy & Naranja Dr

07/12/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	373	38	0	514	78	0	0	20	43	0	24
Future Vol, veh/h	35	373	38	0	514	78	0	0	20	43	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	91	70	70	92	71	92	71	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	410	42	0	734	85	0	0	28	47	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	819	0	0	-	-	0	-	-	431	1298	-	777
Stage 1	-	-	-	-	-	-	-	-	-	777	-	-
Stage 2	-	-	-	-	-	-	-	-	-	521	-	-
Critical Hdwy	4.12	-	-	-	-	-	-	-	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	-	-	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	810	-	-	0	-	-	0	0	624	139	0	397
Stage 1	-	-	-	0	-	-	0	0	-	390	0	-
Stage 2	-	-	-	0	-	-	0	0	-	539	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	810	-	-	-	-	-	-	-	624	128	-	397
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	250	-	-
Stage 1	-	-	-	-	-	-	-	-	-	372	-	-
Stage 2	-	-	-	-	-	-	-	-	-	491	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	11	19.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	624	810	-	-	-	-	250	397
HCM Lane V/C Ratio	0.045	0.047	-	-	-	-	0.187	0.066
HCM Control Delay (s)	11	9.7	-	-	-	-	22.7	14.7
HCM Lane LOS	B	A	-	-	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	-	-	0.7	0.2

HCM 6th TWSC
15: La Canada & East Dwy

07/12/2022

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	55	0	770	1313	42
Future Vol, veh/h	0	55	0	770	1313	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	0	837	1427	46

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 737	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 361	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 361	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 361	- -	- -
HCM Lane V/C Ratio	- 0.166	- -	- -
HCM Control Delay (s)	- 16.9	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.6	- -	- -

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	115	128	149	126	61	162	1168	230	69	714	73
Future Volume (veh/h)	90	115	128	149	126	61	162	1168	230	69	714	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	112	144	160	166	140	68	210	1517	299	81	840	86
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	389	165	184	206	199	169	261	1567	699	104	1254	559
Arrive On Green	0.16	0.20	0.20	0.06	0.11	0.11	0.15	0.44	0.44	0.06	0.35	0.35
Sat Flow, veh/h	1781	809	899	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	112	0	304	166	140	68	210	1517	299	81	840	86
Grp Sat Flow(s),veh/h/ln	1781	0	1709	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	13.3	3.0	5.6	3.1	8.8	32.1	10.0	3.5	15.4	2.9
Cycle Q Clear(g_c), s	0.0	0.0	13.3	3.0	5.6	3.1	8.8	32.1	10.0	3.5	15.4	2.9
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	389	0	349	206	199	169	261	1567	699	104	1254	559
V/C Ratio(X)	0.29	0.00	0.87	0.81	0.70	0.40	0.80	0.97	0.43	0.78	0.67	0.15
Avail Cap(c_a), veh/h	389	0	399	209	437	370	273	1567	699	116	1254	559
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	29.7	34.4	33.3	32.1	31.8	21.0	14.9	35.8	21.1	17.1
Incr Delay (d2), s/veh	0.4	0.0	16.9	20.2	4.4	1.5	15.5	16.3	1.9	25.9	2.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	6.9	4.1	2.7	1.2	4.8	15.6	3.7	2.2	6.5	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.0	46.6	54.6	37.7	33.7	47.3	37.3	16.8	61.7	24.0	17.7
LnGrp LOS	C	A	D	D	D	C	D	D	B	E	C	B
Approach Vol, veh/h		416			374			2026			1007	
Approach Delay, s/veh		41.5			44.5			35.3			26.5	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	38.5	9.4	20.3	15.8	31.7	16.9	12.7				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	11.8	27.2	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.5	34.1	5.0	15.3	10.8	17.4	2.0	7.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	4.2	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			34.6									
HCM 6th LOS			C									

HCM 6th TWSC
6: Naranja Dr & Scioto Ave

07/12/2022

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	316	299	4	3	4
Future Vol, veh/h	3	316	299	4	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	372	352	5	5	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	357	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1202	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1202	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1202	-	-	-	589
HCM Lane V/C Ratio	0.003	-	-	-	0.02
HCM Control Delay (s)	8	-	-	-	11.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
8: La Canada & Crystal Vision

07/12/2022

Intersection								
Int Delay, s/veh	0.1							
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Vol, veh/h	1	5	3	8	1318	824	3	
Future Vol, veh/h	1	5	3	8	1318	824	3	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	
RT Channelized	-	None	-	-	None	-	None	
Storage Length	0	-	-	150	-	-	-	
Veh in Median Storage, #	0	-	-	-	0	0	-	
Grade, %	0	-	-	-	0	0	-	
Peak Hour Factor	75	75	97	97	97	97	97	
Heavy Vehicles, %	2	2	2	2	2	2	2	
Mvmt Flow	1	7	3	8	1359	849	3	
Major/Minor	Minor2	Major1		Major2				
Conflicting Flow All	1553	426	853	852	0	-	0	
Stage 1	851	-	-	-	-	-	-	
Stage 2	702	-	-	-	-	-	-	
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-	
Pot Cap-1 Maneuver	104	577	413	783	-	-	-	
Stage 1	379	-	-	-	-	-	-	
Stage 2	453	-	-	-	-	-	-	
Platoon blocked, %					-	-	-	
Mov Cap-1 Maneuver	102	577	627	627	-	-	-	
Mov Cap-2 Maneuver	102	-	-	-	-	-	-	
Stage 1	372	-	-	-	-	-	-	
Stage 2	453	-	-	-	-	-	-	
Approach	EB	NB		SB				
HCM Control Delay, s	16.4	0.1		0				
HCM LOS	C							
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR			
Capacity (veh/h)	627	-	325	-	-			
HCM Lane V/C Ratio	0.018	-	0.025	-	-			
HCM Control Delay (s)	10.8	-	16.4	-	-			
HCM Lane LOS	B	-	C	-	-			
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-			

HCM 6th TWSC
10: South Dwy & Naranja Dr

07/12/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	290	13	0	280	36	3	0	22	36	0	21
Future Vol, veh/h	16	290	13	0	280	36	3	0	22	36	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	85	85	85	85	92	78	92	78	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	341	15	0	329	39	4	0	28	39	0	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	368	0	0	-	-	0	743	-	349	746	-	349
Stage 1	-	-	-	-	-	-	383	-	-	349	-	-
Stage 2	-	-	-	-	-	-	360	-	-	397	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	-	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1191	-	-	0	-	-	331	0	694	330	0	694
Stage 1	-	-	-	0	-	-	640	0	-	667	0	-
Stage 2	-	-	-	0	-	-	658	0	-	629	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1191	-	-	-	-	-	317	-	694	313	-	694
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	-	-	427	-	-
Stage 1	-	-	-	-	-	-	631	-	-	658	-	-
Stage 2	-	-	-	-	-	-	636	-	-	595	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			10.4			12.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2				
Capacity (veh/h)	694	1191	-	-	-	-	427	694				
HCM Lane V/C Ratio	0.041	0.015	-	-	-	-	0.092	0.033				
HCM Control Delay (s)	10.4	8.1	-	-	-	-	14.3	10.4				
HCM Lane LOS	B	A	-	-	-	-	B	B				
HCM 95th %tile O(veh)	0.1	0	-	-	-	-	0.3	0.1				

HCM 6th TWSC
15: La Canada & East Dwy

07/12/2022

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	43	0	1329	812	21
Future Vol, veh/h	0	43	0	1329	812	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	47	0	1445	883	23

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 453	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 554	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 554	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 554	- -	- -
HCM Lane V/C Ratio	- 0.084	- -	- -
HCM Control Delay (s)	- 12.1	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.3	- -	- -

HCM 6th Signalized Intersection Summary 3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	143	216	202	178	50	181	591	158	48	1177	182
Future Volume (veh/h)	134	143	216	202	178	50	181	591	158	48	1177	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	164	248	259	228	64	208	679	182	54	1322	204
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	383	135	204	282	282	239	176	1481	660	123	1374	613
Arrive On Green	0.16	0.20	0.20	0.11	0.15	0.15	0.10	0.42	0.42	0.07	0.39	0.39
Sat Flow, veh/h	1781	672	1016	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	154	0	412	259	228	64	208	679	182	54	1322	204
Grp Sat Flow(s),veh/h/ln	1781	0	1688	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.1	0.0	18.1	8.8	10.6	3.2	8.9	12.4	6.8	2.6	32.7	8.2
Cycle Q Clear(g_c), s	2.1	0.0	18.1	8.8	10.6	3.2	8.9	12.4	6.8	2.6	32.7	8.2
Prop In Lane	1.00		0.60	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	383	0	339	282	282	239	176	1481	660	123	1374	613
V/C Ratio(X)	0.40	0.00	1.21	0.92	0.81	0.27	1.18	0.46	0.28	0.44	0.96	0.33
Avail Cap(c_a), veh/h	383	0	339	282	445	377	176	1481	660	123	1374	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	36.0	37.9	37.0	33.8	40.6	18.9	17.3	40.2	27.0	19.4
Incr Delay (d2), s/veh	0.7	0.0	120.4	33.1	6.0	0.6	124.9	1.0	1.0	2.5	16.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	18.6	7.7	5.2	1.3	10.0	5.1	2.6	1.2	16.3	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.4	0.0	156.3	71.0	42.9	34.4	165.4	20.0	18.3	42.7	43.7	20.9
LnGrp LOS	C	A	F	E	D	C	F	B	B	D	D	C
Approach Vol, veh/h		566			551			1069			1580	
Approach Delay, s/veh		122.6			55.1			48.0			40.7	
Approach LOS		F			E			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	42.0	14.7	22.6	13.4	39.3	19.2	18.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.2	37.5	10.2	18.1	8.9	34.8	6.9	21.4				
Max Q Clear Time (g_c+I1), s	4.6	14.4	10.8	20.1	10.9	34.7	4.1	12.6				
Green Ext Time (p_c), s	0.0	5.6	0.0	0.0	0.0	0.1	0.1	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			57.2									
HCM 6th LOS			E									

HCM 6th TWSC
6: Naranja Dr & Scioto Ave

07/12/2022

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	448	548	5	11	5
Future Vol, veh/h	3	448	548	5	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	70	70	57	57
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	492	783	7	19	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	790	0	0 1285 787
Stage 1	-	-	- 787 -
Stage 2	-	-	- 498 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	830	-	- 182 392
Stage 1	-	-	- 449 -
Stage 2	-	-	- 611 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	830	-	- 181 392
Mov Cap-2 Maneuver	-	-	- 315 -
Stage 1	-	-	- 447 -
Stage 2	-	-	- 611 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	830	-	-	-	336
HCM Lane V/C Ratio	0.004	-	-	-	0.084
HCM Control Delay (s)	9.4	-	-	-	16.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

HCM 6th TWSC
8: La Canada & Crystal Vision

07/12/2022

Intersection							
Int Delay, s/veh	0.2						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	2	7	4	6	783	1382	3
Future Vol, veh/h	2	7	4	6	783	1382	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	150	-	-	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	8	4	7	851	1502	3
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	1952	753	1505	1505	0	-	0
Stage 1	1504	-	-	-	-	-	-
Stage 2	448	-	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-	-
Pot Cap-1 Maneuver	56	352	157	441	-	-	-
Stage 1	170	-	-	-	-	-	-
Stage 2	611	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	54	352	253	253	-	-	-
Mov Cap-2 Maneuver	54	-	-	-	-	-	-
Stage 1	163	-	-	-	-	-	-
Stage 2	611	-	-	-	-	-	-
Approach	EB	NB		SB			
HCM Control Delay, s	29.3	0.3		0			
HCM LOS	D						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	253	-	158	-	-		
HCM Lane V/C Ratio	0.043	-	0.062	-	-		
HCM Control Delay (s)	19.9	-	29.3	-	-		
HCM Lane LOS	C	-	D	-	-		
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-		

HCM 6th TWSC
10: South Dwy & Naranja Dr

07/12/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	385	40	0	530	78	0	0	21	43	0	24
Future Vol, veh/h	35	385	40	0	530	78	0	0	21	43	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	91	91	70	70	92	71	92	71	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	423	44	0	757	85	0	0	30	47	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	842	0	0	-	-	0	-	-	445	1336	-	800
Stage 1	-	-	-	-	-	-	-	-	-	800	-	-
Stage 2	-	-	-	-	-	-	-	-	-	536	-	-
Critical Hdwy	4.12	-	-	-	-	-	-	-	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	-	-	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	794	-	-	0	-	-	0	0	613	130	0	385
Stage 1	-	-	-	0	-	-	0	0	-	379	0	-
Stage 2	-	-	-	0	-	-	0	0	-	529	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	794	-	-	-	-	-	-	-	613	119	-	385
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	241	-	-
Stage 1	-	-	-	-	-	-	-	-	-	361	-	-
Stage 2	-	-	-	-	-	-	-	-	-	479	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	11.2	20.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	613	794	-	-	-	-	241	385
HCM Lane V/C Ratio	0.048	0.048	-	-	-	-	0.194	0.068
HCM Control Delay (s)	11.2	9.8	-	-	-	-	23.5	15
HCM Lane LOS	B	A	-	-	-	-	C	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	-	-	0.7	0.2

HCM 6th TWSC
15: La Canada & East Dwy

07/12/2022

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	55	0	793	1355	42
Future Vol, veh/h	0	55	0	793	1355	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	0	862	1473	46

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 760	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 349	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 349	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 349	- -	- -
HCM Lane V/C Ratio	- 0.171	- -	- -
HCM Control Delay (s)	- 17.4	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.6	- -	- -

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	118	132	155	130	63	167	1203	237	70	735	75
Future Volume (veh/h)	92	118	132	155	130	63	167	1203	237	70	735	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	148	165	172	144	70	217	1562	308	82	865	88
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	395	168	188	207	203	172	261	1553	693	105	1242	554
Arrive On Green	0.16	0.21	0.21	0.06	0.11	0.11	0.15	0.44	0.44	0.06	0.35	0.35
Sat Flow, veh/h	1781	808	901	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	115	0	313	172	144	70	217	1562	308	82	865	88
Grp Sat Flow(s),veh/h/ln	1781	0	1708	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	0.0	13.8	3.3	5.8	3.2	9.2	34.0	10.6	3.5	16.3	3.0
Cycle Q Clear(g_c), s	0.0	0.0	13.8	3.3	5.8	3.2	9.2	34.0	10.6	3.5	16.3	3.0
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	0	356	207	203	172	261	1553	693	105	1242	554
V/C Ratio(X)	0.29	0.00	0.88	0.83	0.71	0.41	0.83	1.01	0.44	0.78	0.70	0.16
Avail Cap(c_a), veh/h	395	0	395	207	433	367	270	1553	693	114	1242	554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	29.8	34.7	33.5	32.3	32.3	21.9	15.3	36.1	21.8	17.4
Incr Delay (d2), s/veh	0.4	0.0	18.5	23.9	4.5	1.5	18.9	24.3	2.1	26.6	3.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	7.3	4.5	2.8	1.3	5.2	18.0	3.9	2.3	7.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	48.3	58.6	38.0	33.9	51.2	46.2	17.4	62.7	25.0	18.0
LnGrp LOS	C	A	D	E	D	C	D	F	B	E	C	B
Approach Vol, veh/h		428			386			2087			1035	
Approach Delay, s/veh		42.7			46.4			42.5			27.4	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	38.5	9.5	20.7	15.9	31.7	17.3	13.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.0	34.0	5.0	18.0	11.8	27.2	5.0	18.0				
Max Q Clear Time (g_c+I1), s	5.5	36.0	5.3	15.8	11.2	18.3	2.0	7.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.0	4.1	0.1	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			38.9									
HCM 6th LOS			D									

HCM 6th TWSC
6: Naranja Dr & Scioto Ave

07/12/2022

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	326	308	4	3	4
Future Vol, veh/h	3	326	308	4	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	58	58
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	384	362	5	5	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	367	0	0 757 365
Stage 1	-	-	- - 365 -
Stage 2	-	-	- - 392 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1192	-	- - 375 680
Stage 1	-	-	- - 702 -
Stage 2	-	-	- - 683 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1192	-	- - 374 680
Mov Cap-2 Maneuver	-	-	- - 485 -
Stage 1	-	-	- - 700 -
Stage 2	-	-	- - 683 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1192	-	-	-	580
HCM Lane V/C Ratio	0.003	-	-	-	0.021
HCM Control Delay (s)	8	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
8: La Canada & Crystal Vision

07/12/2022

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	1	5	3	8	1358	849	3
Future Vol, veh/h	1	5	3	8	1358	849	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	150	-	-	-
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	75	75	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	1	7	3	8	1400	875	3

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1599	439	878	878	0	0
Stage 1	877	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.14	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.22	-	-
Pot Cap-1 Maneuver	97	566	398	765	-	-
Stage 1	367	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	95	566	609	609	-	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	442	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	609	-	310	-	-
HCM Lane V/C Ratio	0.019	-	0.026	-	-
HCM Control Delay (s)	11	-	16.9	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

HCM 6th TWSC
10: South Dwy & Naranja Dr

07/12/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	299	14	0	289	36	3	0	23	36	0	21
Future Vol, veh/h	16	299	14	0	289	36	3	0	23	36	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	85	85	85	85	92	78	92	78	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	352	16	0	340	39	4	0	29	39	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	379	0	0	-	-	0	765	-	360	769	-	360
Stage 1	-	-	-	-	-	-	394	-	-	360	-	-
Stage 2	-	-	-	-	-	-	371	-	-	409	-	-
Critical Hdwy	4.12	-	-	-	-	-	7.12	-	6.22	7.12	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	-	-	6.12	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	-	-	6.12	-	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	-	3.318	3.518	-	3.318
Pot Cap-1 Maneuver	1179	-	-	0	-	-	320	0	684	318	0	684
Stage 1	-	-	-	0	-	-	631	0	-	658	0	-
Stage 2	-	-	-	0	-	-	649	0	-	619	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1179	-	-	-	-	-	306	-	684	301	-	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	421	-	-	417	-	-
Stage 1	-	-	-	-	-	-	622	-	-	649	-	-
Stage 2	-	-	-	-	-	-	627	-	-	584	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	10.5	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	684	1179	-	-	-	-	417	684
HCM Lane V/C Ratio	0.043	0.015	-	-	-	-	0.094	0.033
HCM Control Delay (s)	10.5	8.1	-	-	-	-	14.5	10.4
HCM Lane LOS	B	A	-	-	-	-	B	B
HCM 95th %tile Q(veh)	0.1	0	-	-	-	-	0.3	0.1

HCM 6th TWSC
15: La Canada & East Dwy

07/12/2022

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	43	0	1369	837	21
Future Vol, veh/h	0	43	0	1369	837	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	47	0	1488	910	23

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 467	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 542	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 542	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 542	- -	- -
HCM Lane V/C Ratio	- 0.086	- -	- -
HCM Control Delay (s)	- 12.3	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.3	- -	- -

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	143	216	202	178	50	181	591	158	48	1177	182
Future Volume (veh/h)	134	143	216	202	178	50	181	591	158	48	1177	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	164	248	259	228	64	208	679	182	54	1322	204
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	296	340	288	277	281	238	263	1765	787	75	1392	621
Arrive On Green	0.10	0.18	0.18	0.07	0.15	0.15	0.15	0.50	0.50	0.04	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	154	164	248	259	228	64	208	679	182	54	1322	204
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.1	6.7	13.0	4.9	10.1	3.1	9.6	10.2	5.6	2.6	30.8	7.7
Cycle Q Clear(g_c), s	1.1	6.7	13.0	4.9	10.1	3.1	9.6	10.2	5.6	2.6	30.8	7.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	296	340	288	277	281	238	263	1765	787	75	1392	621
V/C Ratio(X)	0.52	0.48	0.86	0.94	0.81	0.27	0.79	0.38	0.23	0.72	0.95	0.33
Avail Cap(c_a), veh/h	296	394	333	277	402	341	304	1765	787	117	1392	621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	31.4	34.0	37.1	35.2	32.2	35.2	13.4	12.2	40.5	25.2	18.2
Incr Delay (d2), s/veh	1.6	1.1	18.0	37.3	8.1	0.6	11.7	0.6	0.7	12.0	14.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.1	6.3	8.1	5.1	1.2	4.9	4.0	2.0	1.4	15.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	32.5	52.0	74.4	43.3	32.8	46.9	14.0	12.9	52.5	40.0	19.6
LnGrp LOS	D	C	D	E	D	C	D	B	B	D	D	B
Approach Vol, veh/h	566			551			1069			1580		
Approach Delay, s/veh	42.0			56.7			20.2			37.8		
Approach LOS	D			E			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	47.0	10.4	20.0	17.1	38.0	13.1	17.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.6	42.5	5.9	18.0	14.6	33.5	5.5	18.4				
Max Q Clear Time (g_c+I1), s	4.6	12.2	6.9	15.0	11.6	32.8	3.1	12.1				
Green Ext Time (p_c), s	0.0	6.0	0.0	0.6	0.2	0.6	0.1	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	36.2											
HCM 6th LOS	D											

HCM 6th Signalized Intersection Summary

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	118	132	155	130	63	167	1203	237	70	735	75
Future Volume (veh/h)	92	118	132	155	130	63	167	1203	237	70	735	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	148	165	172	144	70	217	1562	308	82	865	88
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.77	0.77	0.77	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	254	215	235	201	171	270	1843	822	106	1515	676
Arrive On Green	0.09	0.14	0.14	0.06	0.11	0.11	0.15	0.52	0.52	0.06	0.43	0.43
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	115	148	165	172	144	70	217	1562	308	82	865	88
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.0	5.9	8.0	1.8	6.0	3.3	9.4	30.2	9.3	3.6	14.8	2.7
Cycle Q Clear(g_c), s	0.0	5.9	8.0	1.8	6.0	3.3	9.4	30.2	9.3	3.6	14.8	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	254	215	235	201	171	270	1843	822	106	1515	676
V/C Ratio(X)	0.40	0.58	0.77	0.73	0.71	0.41	0.80	0.85	0.37	0.78	0.57	0.13
Avail Cap(c_a), veh/h	288	423	359	239	423	359	327	1843	822	163	1515	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.7	32.4	33.3	35.2	34.5	33.3	32.8	16.5	11.5	37.1	17.4	13.9
Incr Delay (d2), s/veh	0.9	2.1	5.6	10.8	4.7	1.6	11.3	5.1	1.3	11.9	1.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.8	3.3	3.8	2.9	1.3	4.8	12.2	3.3	1.9	6.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	34.5	38.9	46.0	39.2	34.9	44.1	21.6	12.8	49.0	19.0	14.3
LnGrp LOS	C	C	D	D	D	C	D	C	B	D	B	B
Approach Vol, veh/h		428			386			2087			1035	
Approach Delay, s/veh		36.0			41.4			22.6			21.0	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.2	46.0	9.4	15.4	16.6	38.6	11.6	13.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	7.3	41.5	5.1	18.1	14.7	34.1	5.1	18.1				
Max Q Clear Time (g_c+I1), s	5.6	32.2	3.8	10.0	11.4	16.8	2.0	8.0				
Green Ext Time (p_c), s	0.0	7.3	0.1	0.8	0.2	6.1	0.1	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			25.5									
HCM 6th LOS			C									

Queues

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	154	412	259	228	64	208	679	182	54	1322	204
v/c Ratio	0.40	1.03	0.92	0.69	0.17	1.19	0.44	0.23	0.46	0.97	0.29
Control Delay	28.2	83.2	70.8	45.0	1.1	165.9	19.2	3.4	53.1	45.6	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	83.2	70.8	45.0	1.1	165.9	19.2	3.4	53.1	45.6	8.3
Queue Length 50th (ft)	60	~215	108	122	0	~144	142	0	30	379	25
Queue Length 95th (ft)	102	#374	#160	156	0	#267	183	34	67	#521	70
Internal Link Dist (ft)		204		1068			1191			318	
Turn Bay Length (ft)	125		225		150	150		180	150		150
Base Capacity (vph)	385	401	282	442	473	175	1558	798	121	1368	694
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	1.03	0.92	0.52	0.14	1.19	0.44	0.23	0.45	0.97	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	115	313	172	144	70	217	1562	308	82	865	88
v/c Ratio	0.29	0.80	0.84	0.43	0.15	0.83	0.95	0.36	0.71	0.69	0.13
Control Delay	22.1	39.4	63.9	34.0	0.7	59.3	36.2	5.3	71.5	25.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	39.4	63.9	34.0	0.7	59.3	36.2	5.3	71.5	25.4	0.4
Queue Length 50th (ft)	40	115	62	67	0	106	~442	19	41	193	0
Queue Length 95th (ft)	67	170	#150	116	0	#172	#414	45	#105	242	0
Internal Link Dist (ft)		204		1068			1191			228	
Turn Bay Length (ft)	125		225		150	150		180	150		150
Base Capacity (vph)	399	451	204	442	532	271	1645	863	115	1252	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.69	0.84	0.33	0.13	0.80	0.95	0.36	0.71	0.69	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	154	164	248	259	228	64	208	679	182	54	1322	204
v/c Ratio	0.74	0.58	0.55	0.79	0.70	0.15	0.75	0.38	0.20	0.47	0.95	0.28
Control Delay	53.1	42.6	9.5	49.1	45.7	0.7	52.6	14.5	2.8	54.2	42.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.1	42.6	9.5	49.1	45.7	0.7	52.6	14.5	2.8	54.2	42.6	5.3
Queue Length 50th (ft)	65	86	0	117	118	0	109	119	0	29	369	7
Queue Length 95th (ft)	#119	137	54	#168	163	0	#200	163	30	#73	#537	50
Internal Link Dist (ft)		204			1068			1191			318	
Turn Bay Length (ft)	125		150	225		150	150		180	150		150
Base Capacity (vph)	207	392	529	327	401	483	302	1808	898	116	1387	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.42	0.47	0.79	0.57	0.13	0.69	0.38	0.20	0.47	0.95	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	115	148	165	172	144	70	217	1562	308	82	865	88
v/c Ratio	0.43	0.55	0.43	0.64	0.46	0.17	0.75	0.85	0.33	0.55	0.59	0.12
Control Delay	31.2	41.2	7.8	39.8	38.1	0.9	50.8	24.8	5.1	52.9	21.9	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	41.2	7.8	39.8	38.1	0.9	50.8	24.8	5.1	52.9	21.9	0.3
Queue Length 50th (ft)	48	74	0	75	72	0	108	371	21	42	183	0
Queue Length 95th (ft)	79	114	27	129	129	0	164	411	49	#93	251	0
Internal Link Dist (ft)		204			1068			1191			228	
Turn Bay Length (ft)	125		150	225		150	150		180	150		150
Base Capacity (vph)	269	407	488	269	407	488	314	1841	932	156	1457	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.36	0.34	0.64	0.35	0.14	0.69	0.85	0.33	0.53	0.59	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	11.4	22.6	14.7	25.9	25.9	13.4	42.0	42.0	10.7	39.3	39.3
Total Split (%)	12.7%	25.1%	16.3%	28.8%	28.8%	14.9%	46.7%	46.7%	11.9%	43.7%	43.7%
Maximum Green (s)	6.9	18.1	10.2	21.4	21.4	8.9	37.5	37.5	6.2	34.8	34.8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0
90th %ile Green (s)	6.9	18.1	10.2	21.4	21.4	8.9	37.5	37.5	6.2	34.8	34.8
90th %ile Term Code	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	10.1	18.1	10.2	18.2	18.2	8.9	37.5	37.5	6.2	34.8	34.8
70th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	12.4	18.1	10.2	15.9	15.9	8.9	37.5	37.5	6.2	34.8	34.8
50th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	14.7	18.1	10.2	13.6	13.6	8.9	48.2	48.2	0.0	34.8	34.8
30th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	Hold	Hold	Skip	MaxR	MaxR
10th %ile Green (s)	18.1	18.1	10.2	10.2	10.2	8.9	48.2	48.2	0.0	34.8	34.8
10th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 90

70th %ile Actuated Cycle: 90

50th %ile Actuated Cycle: 90

30th %ile Actuated Cycle: 90

10th %ile Actuated Cycle: 90

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	22.5	9.5	22.5	22.5	16.3	38.5	38.5	9.5	31.7	31.7
Total Split (%)	11.9%	28.1%	11.9%	28.1%	28.1%	20.4%	48.1%	48.1%	11.9%	39.6%	39.6%
Maximum Green (s)	5.0	18.0	5.0	18.0	18.0	11.8	34.0	34.0	5.0	27.2	27.2
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0
90th %ile Green (s)	7.5	18.0	5.0	15.5	15.5	11.8	34.0	34.0	5.0	27.2	27.2
90th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	10.0	18.0	5.0	13.0	13.0	11.8	34.0	34.0	5.0	27.2	27.2
70th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	10.4	16.6	5.0	11.2	11.2	11.8	34.0	34.0	5.0	27.2	27.2
50th %ile Term Code	Hold	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	9.2	13.5	5.0	9.3	9.3	11.8	34.0	34.0	5.0	27.2	27.2
30th %ile Term Code	Hold	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
10th %ile Green (s)	0.0	9.3	5.0	18.8	18.8	9.8	41.5	41.5	0.0	27.2	27.2
10th %ile Term Code	Skip	Gap	Max	Hold	Hold	Gap	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 76.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 80

50th %ile Actuated Cycle: 78.6

30th %ile Actuated Cycle: 75.5

10th %ile Actuated Cycle: 69.3

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	11.4	22.6	14.7	25.9	25.9	13.4	42.0	42.0	10.7	39.3	39.3
Total Split (%)	12.7%	25.1%	16.3%	28.8%	28.8%	14.9%	46.7%	46.7%	11.9%	43.7%	43.7%
Maximum Green (s)	6.9	18.1	10.2	21.4	21.4	8.9	37.5	37.5	6.2	34.8	34.8
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0
90th %ile Green (s)	6.9	18.1	10.2	21.4	21.4	8.9	37.5	37.5	6.2	34.8	34.8
90th %ile Term Code	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	9.8	18.1	10.2	18.5	18.5	8.9	37.5	37.5	6.2	34.8	34.8
70th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	12.1	18.1	10.2	16.2	16.2	8.9	37.5	37.5	6.2	34.8	34.8
50th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	14.5	18.1	10.2	13.8	13.8	8.9	37.5	37.5	6.2	34.8	34.8
30th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
10th %ile Green (s)	17.9	18.1	10.2	10.4	10.4	8.9	48.2	48.2	0.0	34.8	34.8
10th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 90

70th %ile Actuated Cycle: 90

50th %ile Actuated Cycle: 90

30th %ile Actuated Cycle: 90

10th %ile Actuated Cycle: 90

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases	4		8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.5	22.5	9.5	22.5	22.5	16.3	38.5	38.5	9.5	31.7	31.7
Total Split (%)	11.9%	28.1%	11.9%	28.1%	28.1%	20.4%	48.1%	48.1%	11.9%	39.6%	39.6%
Maximum Green (s)	5.0	18.0	5.0	18.0	18.0	11.8	34.0	34.0	5.0	27.2	27.2
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0
90th %ile Green (s)	7.3	18.0	5.0	15.7	15.7	11.8	34.0	34.0	5.0	27.2	27.2
90th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	9.8	18.0	5.0	13.2	13.2	11.8	34.0	34.0	5.0	27.2	27.2
70th %ile Term Code	Hold	Max	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	10.9	17.3	5.0	11.4	11.4	11.8	34.0	34.0	5.0	27.2	27.2
50th %ile Term Code	Hold	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	9.5	14.0	5.0	9.5	9.5	11.8	34.0	34.0	5.0	27.2	27.2
30th %ile Term Code	Hold	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
10th %ile Green (s)	0.0	9.7	5.0	19.2	19.2	10.2	41.9	41.9	0.0	27.2	27.2
10th %ile Term Code	Skip	Gap	Max	Hold	Hold	Gap	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 77.1

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 80

70th %ile Actuated Cycle: 80

50th %ile Actuated Cycle: 79.3

30th %ile Actuated Cycle: 76

10th %ile Actuated Cycle: 70.1

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	10.0	22.5	22.5	10.4	22.9	22.9	19.1	47.0	47.0	10.1	38.0	38.0
Total Split (%)	11.1%	25.0%	25.0%	11.6%	25.4%	25.4%	21.2%	52.2%	52.2%	11.2%	42.2%	42.2%
Maximum Green (s)	5.5	18.0	18.0	5.9	18.4	18.4	14.6	42.5	42.5	5.6	33.5	33.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
90th %ile Green (s)	5.5	18.0	18.0	5.9	18.4	18.4	14.6	42.5	42.5	5.6	33.5	33.5
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	5.5	16.0	16.0	7.9	18.4	18.4	14.6	42.5	42.5	5.6	33.5	33.5
70th %ile Term Code	Max	Gap	Gap	Hold	Max	Max	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	5.5	12.9	12.9	8.4	15.8	15.8	14.6	42.5	42.5	5.6	33.5	33.5
50th %ile Term Code	Max	Gap	Gap	Hold	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	5.5	10.8	10.8	8.0	13.3	13.3	14.6	42.5	42.5	5.6	33.5	33.5
30th %ile Term Code	Max	Gap	Gap	Hold	Gap	Gap	Hold	MaxR	MaxR	Max	MaxR	MaxR
10th %ile Green (s)	5.5	7.8	7.8	7.4	9.7	9.7	9.7	47.7	47.7	0.0	33.5	33.5
10th %ile Term Code	Max	Gap	Gap	Hold	Gap	Gap	Gap	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 90

70th %ile Actuated Cycle: 90

50th %ile Actuated Cycle: 87.4

30th %ile Actuated Cycle: 84.9

10th %ile Actuated Cycle: 76.4

Phasings

3: La Canada Dr/La Canada & Naranja Dr

07/12/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	9.6	22.6	22.6	9.6	22.6	22.6	19.2	46.0	46.0	11.8	38.6	38.6
Total Split (%)	10.7%	25.1%	25.1%	10.7%	25.1%	25.1%	21.3%	51.1%	51.1%	13.1%	42.9%	42.9%
Maximum Green (s)	5.1	18.1	18.1	5.1	18.1	18.1	14.7	41.5	41.5	7.3	34.1	34.1
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
90th %ile Green (s)	6.2	17.8	17.8	5.1	16.7	16.7	14.7	41.5	41.5	7.3	34.1	34.1
90th %ile Term Code	Hold	Gap	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
70th %ile Green (s)	5.3	13.8	13.8	5.1	13.6	13.6	14.7	41.5	41.5	7.3	34.1	34.1
70th %ile Term Code	Hold	Gap	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
50th %ile Green (s)	5.3	11.9	11.9	5.1	11.7	11.7	14.7	41.5	41.5	7.3	34.1	34.1
50th %ile Term Code	Hold	Gap	Gap	Max	Gap	Gap	Max	MaxR	MaxR	Max	MaxR	MaxR
30th %ile Green (s)	5.2	10.0	10.0	5.1	9.9	9.9	14.7	41.5	41.5	7.3	34.1	34.1
30th %ile Term Code	Hold	Gap	Gap	Max	Gap	Gap	Hold	MaxR	MaxR	Max	MaxR	MaxR
10th %ile Green (s)	0.0	7.3	7.3	5.1	16.9	16.9	10.0	48.6	48.6	0.0	34.1	34.1
10th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Gap	Hold	Hold	Skip	MaxR	MaxR

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.1

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 89.7

70th %ile Actuated Cycle: 85.7

50th %ile Actuated Cycle: 83.8

30th %ile Actuated Cycle: 81.9

10th %ile Actuated Cycle: 74.5