LOCAL TRANSPORTATION ASSESSMENT (LTA)

1450 ARTESIA BOULEVARD, CITY OF GARDENA, CA

DECEMBER 2023 | DRAFT

Prepared By:

Kimley»Horn

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1.0 INTRODUCTION

1.1 INTRODUCTION

This report documents a Local Transportation Assessment (LTA) for the proposed 1450 Artesia Boulevard Project ("Project") in the City of Gardena ("City") conducted by Kimley-Horn and Associates, Inc. ("Kimley-Horn"). The LTA was conducted pursuant to the City of Gardena Transportation Analysis Updates[1] (LTA Procedures). The LTA was also conducted pursuant to the City-approved *1450 Artesia Boulevard Local Transportation Assessment – Scoping Agreement*. The scoping agreement is included in **Appendix A**. For Intersection 4 (Western Avenue and Artesia Boulevard), which is owned and maintained by the City of Torrance, the analysis was conducted pursuant to the *City of Torrance Traffic Circulation Analysis (TCA) Guidelines*[2] (TCA Guidelines).

1.2 PROJECT DESCRIPTION

OVERVIEW

Insite Property Group proposes a mixed-use development comprised of a 268,000 gross-square-foot (GSF) building with associated surface parking (approximately 124 off-street parking spaces), and landscaping and circulation improvements; see Exhibit 3: Conceptual Site Plan. The proposed development would contain a self-storage use (four levels totaling 186,000 GSF with 1,480 storage units), an industrial warehouse use (one level totaling 72,000 GSF plus ten loading docks), and an office/retail use (a mezzanine totaling 10,000 GSF). It is noted, to provide a conservative analysis, the Project's proposed 72,000 GSF of warehouse use includes 10,000 GSF, to account for the potential future acquisition of the 0.23-acre parcel; see the *General Plan and Zoning* Section below.

Vehicular access to the Project site would be provided via one 35-foot driveway on Artesia Boulevard. The Project driveway will only service the Project. The Project proposes 124 automobile parking stalls and 10 dock doors. Parking would be located on the northern portion of the site, to the east of the building. The dock doors would be oriented to face east. Trucks would enter the Project site from Artesia Boulevard and travel south, then east around the building, entering into the truck loading area. The truck loading area would be gated and only used for the industrial component. Trucks would exit the Project site by travelling along the eastern and northern perimeter to the site entrance/exit on Artesia Boulevard. Daily activities within the Project site would include maneuvering forklifts, lift equipment, and large semi-trucks through and around the site and backing into the loading docks. Additionally, proposed associated facilities and improvements include perimeter fencing, onsite and perimeter landscaping, lighting, and exterior sidewalks.

Two commercial uses (i.e., a U-Haul dealer and sandblasting service) totaling approximately 12,064 GSF (circa 1950) with associated surface parking currently occupy the Project site's northern portion and three

[1] City of Gardena. SB743 Implementation Transportation Analysis Updates. June 2020

[2] City of Torrance Traffic Circulation Analysis (TCA) Guidelines. Available at https://www.torranceca.gov/our-city/public-works/civil-and-traffic-engineering/traffic-engineering/traffic-impact-analysis-guidelines (Accessed November 2022).

single-family residential DU occupy the southern portion. Of the three existing single-family residential DU, only one (i.e., the DU that would remain) is currently occupied; see *General Plan and Zoning* Section below. Except the single-family residential DU that would remain, the Project proposes to remove all onsite uses and improvements and replace these with the proposed mixed-use development.

Land uses surrounding the Project site include commercial to the north across West Artesia Boulevard, a single-family residential DU (see *General Plan and Zoning* Section below) and LA County Flood Control uses (Dominguez Channel) to the south, live/work and multi-family residential to the west, and LA County Flood Control and railroad uses to the east.

GENERAL PLAN AND ZONING

The Project site is designated Specific Plan[3] (i.e., Artesia Corridor Specific Plan (Artesia Corridor SP)). The General Plan Land Use Plan describes the Artesia Corridor SP's land use as "375,000 square feet of General Commercial, 40,000 square feet of restaurant, and up to 300 residential units on 44-acre area."[4] The Project proposes to retain the Project site's existing Specific Plan land use designation, but would rescind the Artesia Corridor SP, as discussed below.

The Project site is zoned Artesia Corridor Specific Plan.[5] The Artesia Corridor SP is comprised of six planning areas and three land use categories (Commercial (C), Mixed-Use (MU), and Public (P)). The Project site is in Planning Area 4 (eastern half, hereafter 4B) and Planning Area 5 and designated for Mixed Use (MU) and Commercial (C), respectively. The Artesia Corridor SP anticipated that Planning Area 4 would achieve a minimum of 70,000 SF of commercial development and up to 100 residential units, and Planning Area 5 would achieve a minimum of 80,000 SF of commercial development. The west half of Area 4 (Area 4A) has been developed with 60 residential units, including 30 live-work units, which include a total of 10,320 square feet that can be attributable to commercial development. Planning Area 4B could accommodate the remainder of the 70,000 SF of commercial development and Planning Area 5 could be developed with the anticipated 80,000 SF of commercial development.

The Project proposes to rescind the Artesia Corridor SP within Planning Areas 4B and 5 and replace it with a new Specific Plan (i.e., 1450 Artesia Boulevard Specific Plan (1450 Artesia Boulevard SP)). The proposed 1450 Artesia Boulevard SP area would include former Artesia Corridor SP Areas 4B and 5, including the approximately 0.23-acre parcel situated at the Project site's southwest corner that is currently occupied by one single-family residential DU. Because this single-family residential DU would remain upon adoption of the proposed 1450 Artesia Boulevard SP, this DU would become a legal non-conforming use.

As this last parcel may be acquired and incorporated into the Project, the environmental impacts resulting from the potential future acquisition of the 0.23-acre parcel are included in the Project analyses.

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[3] City of Gardena. 2022. *Land Use Plan*. Available at: https://cityofgardena.org/wp-content/uploads/2021/07/2021-Updated-Land-Use-Plan-04-21.pdf (Accessed October 2022).

[4] Ibid, Table LU-1.

[5] City of Gardena. 2021. *Zoning 2021*. https://cityofgardena.org/wp-content/uploads/2022/07/sGardena_Zoning_2021.pdf (Accessed October 2022)

SPECIAL EVENTS

The City is proposing to host various special events on an approximately 36,000-SF portion (0.8 acre) of the proposed industrial use's parking area (over approximately 62 parking spaces). The City anticipates hosting several types of medium-size special events, including the following:

- Food trucks
- Farmer's markets
- Car shows
- Live entertainment
- Food giveaways
- Mobile vaccination events

The special events would be held approximately two to three times per month, including weekday evening events (after 6 PM) and weekend daytime events. Thus, the special events would be held when the industrial use is not in operation and its parking area is not in use.

PROJECT PHASING AND CONSTRUCTION

The construction timeline, contingent on planning, zoning, and construction document approval, is anticipated to start June 2023 and end December 2024 (18 months or 487 days). The proposed Project is anticipated to begin operations in January 2025.

2.0 ANALYSIS SCENARIOS AND METHODOLOGY

2.1 SCENARIOS

The traffic operation evaluation of morning (AM) and evening (PM) peak hour conditions was conducted for the following scenarios:

- Existing (2022) Conditions
- Opening Year (2025) Without Project Conditions
- Opening Year (2025) With Project Conditions

2.2 STUDY AREA

In accordance with the City's LTA Procedures, any intersection to which a proposed project is expected to add 50 peak hour trips (AM or PM) should be considered a study intersection. Hence, based on the Project's trip generation and assignment, and review of the Project area, site, and access points, the following four study area intersections were identified for analysis of weekday peak-hour operations:

1. Dalton Avenue & Artesia Boulevard – Signalized
2. Gateway Plaza & Artesia Boulevard – Unsignalized
3. Normandie Avenue and Artesia Boulevard – Signalized
4. Western Avenue & Artesia Boulevard – Signalized

It is noted that the unsignalized study intersection of Gateway Plaza and Artesia Boulevard is currently a three-legged intersection with stop-control on the driveway approach. The Project site driveway at Artesia Boulevard is proposed as the fourth leg on the south side of this intersection. A directional median opening currently provides eastbound left-turn in and southbound left-turn out to and from the Gateway Plaza located north of the Project site. See Section 5.3.1, Traffic Signal Warrant Analysis below.

Figure 1 illustrates the study area and Project site location in a regional setting. All study intersections are within the City of Gardena, except the Western Avenue and Artesia Boulevard intersection (Intersection 4), which is owned and maintained by the City of Torrance. The Project's Conceptual Site Plan is shown in **Figure 2**.

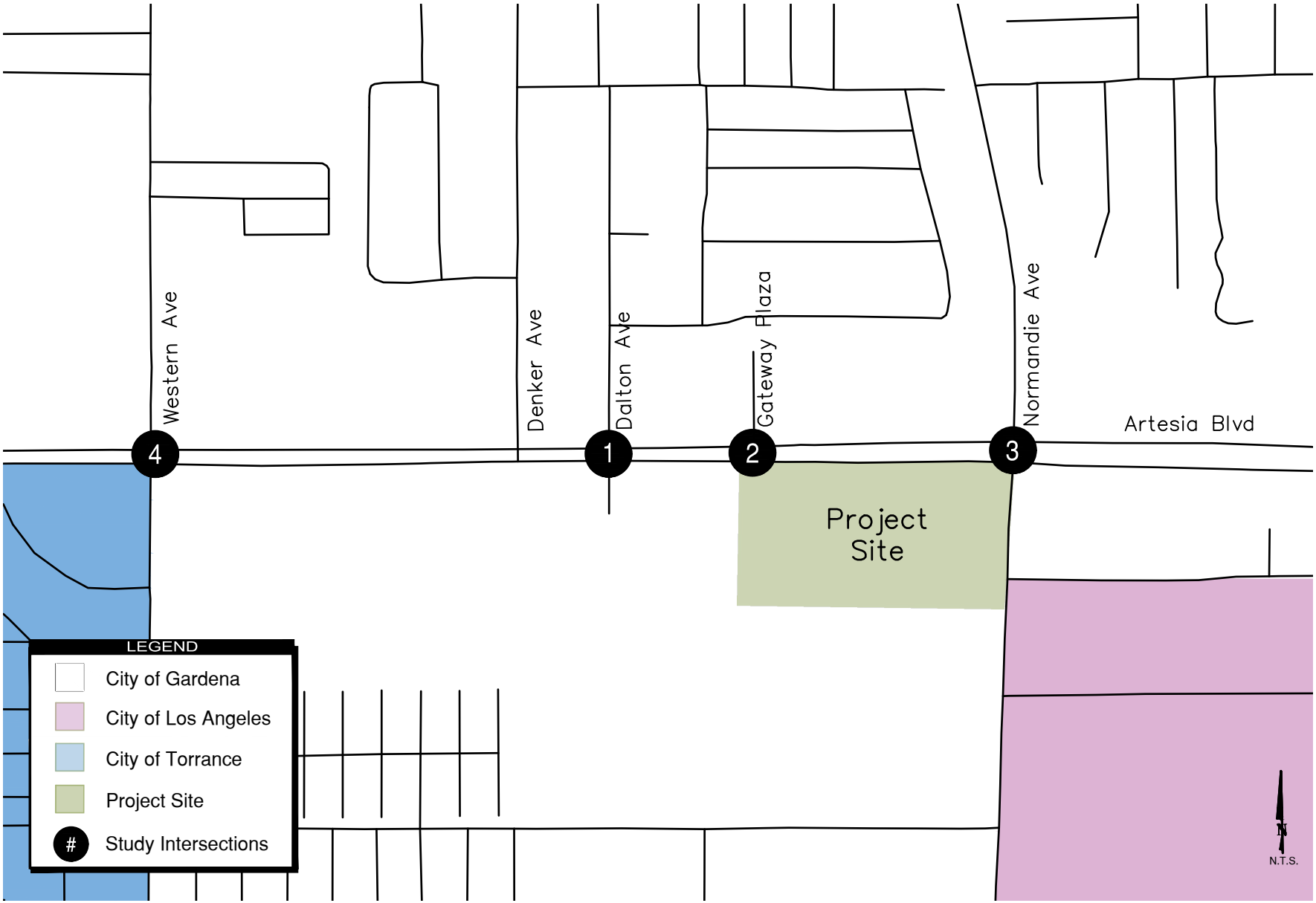


FIGURE 1 - Vicinity Map
1450 Artesia Boulevard

Kimley»Horn

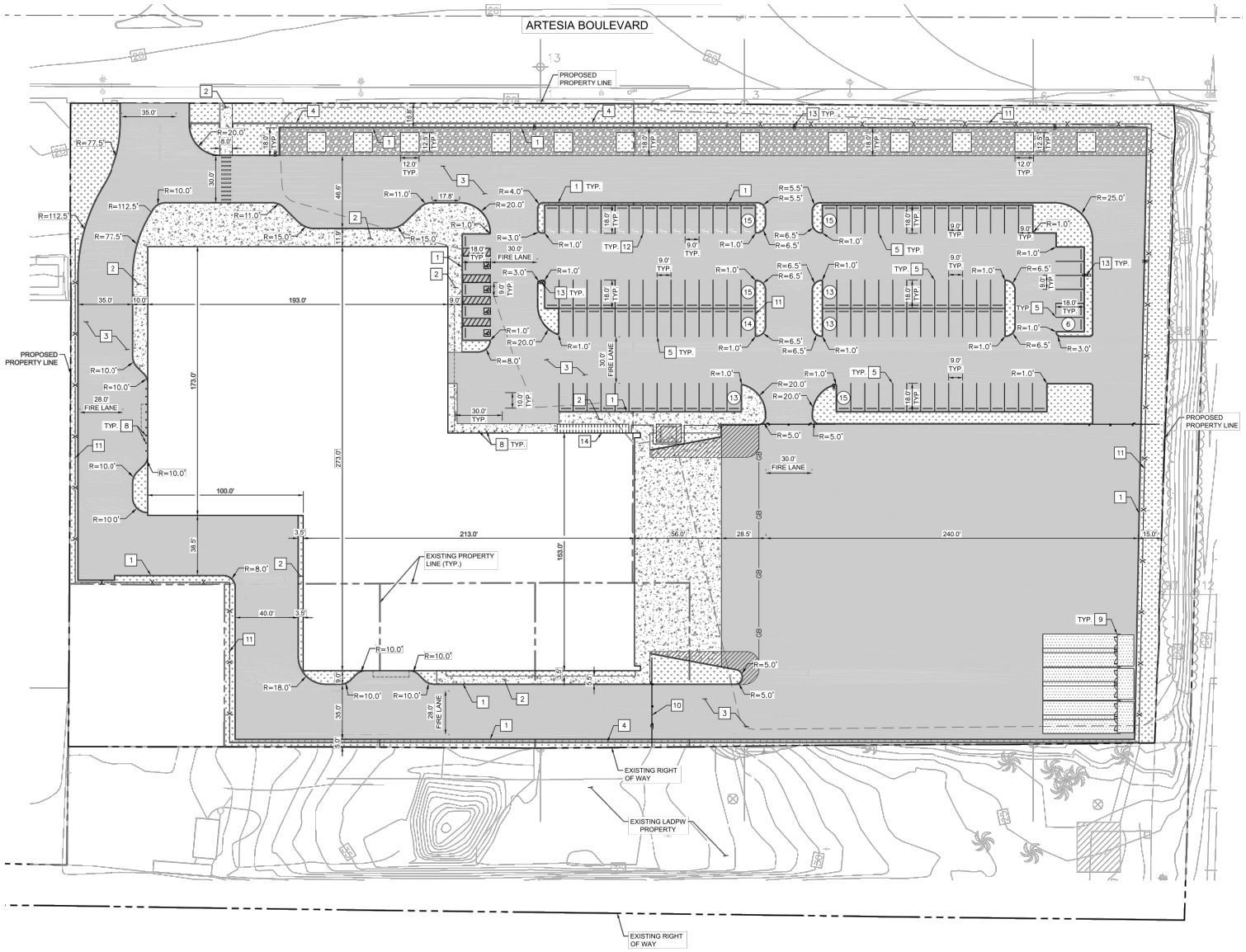


FIGURE 2 - Project Site Plan
1450 Artesia Boulevard

2.3 ANALYSIS METHODOLOGY

STUDY INTERSECTIONS

The analysis focuses on the Project's off-site traffic-related effects. In accordance with the City's LTA Procedures, intersection operations for study area Intersections 1 to 3 are evaluated using the *Highway Capacity Manual*, 6th Edition (HCM) delay methodologies within Synchro 11 analysis software. In accordance with the City of Torrance TCA Guidelines, intersection operations for study area Intersection 4 (Western Avenue and Artesia Boulevard) were evaluated using ICU methodologies.

Under the HCM methodology, LOS for signalized intersections is based on the average delay experienced by vehicles traveling through an intersection, whereas for unsignalized intersections, the LOS is based on the worst approach where the minor leg has a shared lane and on the worst movement where the minor leg has dedicated turn lanes. Under the ICU methodology, LOS for signalized intersection is based on volume to capacity (V/C) ratios for key conflicting traffic movements. For ICU calculations, a lane capacity of 1,600 vehicles per hour (vph) for through, left turn and right turn lane is used. For dual left-turn lanes capacity of 2,880 vph is sued and clearance adjustment factor of 0.10 was added to each LOS calculation. **Table 1** presents a brief description of each level of service (LOS) letter grade, as well as the range of delays associated with each grade.

Table 1: Intersection Level of Service Definitions

LOS	Interpretation	Signalized Intersection Control Delay (seconds/vehicle)	Unsignalized Intersection Control Delay (seconds/vehicle)	Intersection Capacity Utilization
A	**Excellent operation**. No vehicle waits longer than one red light and no approach phase is fully used.	≤10	≤10	≤ 0.600
B	**Very good operation**. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and ≤20	>10 and ≤15	0.601 – 0.700
C	**Good operation**. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	>20 and ≤35	>15 and ≤25	0.701 – 0.800
D	**Fair operation**. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	>35 and ≤55	>25 and ≤35	0.800 – 0.900
E	**Poor operation**. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	>55 and ≤80	>35 and ≤50	0.901 – 1.000
F	**Forced flow**. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	>80	>50 or v/c > 1	> 1.000

Source: Highway Capacity Manual, 6th Edition.

OPENING YEAR (2025) WITHOUT PROJECT CONDITIONS

Background Growth. Future year forecasts for Opening Year (2025) Without Project Conditions were developed using the "build-up" process, starting with adding a background growth factor to existing peak hour volumes. The annual ambient growth rate of 1.0 percent per year was used for the growth projection. The growth rate assumption of 1.0 percent is consistent with the rate used for traffic analysis in Gardena. The growth was applied over a three-year period (2022 to 2025) and applied to Existing (2022) Conditions volumes.

Cumulative Projects. In addition to ambient growth, traffic from cumulative projects in the Project vicinity were added to the Opening Year (2025) forecasts to develop Opening Year (2025) Cumulative conditions. Cumulative projects consist of any project that has been approved and is not yet occupied, and projects that are in various stages of the application and approval process but have not yet been approved.

OPENING YEAR (2025) WITH PROJECT CONDITIONS

Project-related peak hour traffic volumes were added to the Opening Year (2025) Without Project Conditions forecast traffic volumes to develop Opening Year (2025) with Project Conditions forecast traffic volumes.

2.4 PERFORMANCE CRITERIA

Per City of Gardena LTA Procedures, the analysis criteria for signalized intersections (i.e., Intersections 1 and 3) are the following:

- *To the extent feasible, maintain traffic flows at non-residential, signalized intersections at LOS E during peak rush hours.*
- *To the extent feasible, maintain traffic flows at residential signalized intersections at LOS D during peak rush hours.*

For unsignalized intersections (i.e., Intersection 2), Gardena's LTA Procedures do not specify any analysis criteria. The LTA Procedures refer to the potential to install traffic signals at unsignalized intersections where traffic volumes are high enough to meet traffic signal warrants.

The City of Gardena requires that projects be reviewed for potential conflicts with adopted plans and policies related to active transportation, such as The South Bay Bicycle Master Plan.[6]

Per City of Torrance TCA Guidelines, the analysis criteria for signalized intersections (i.e., Intersection 4, Western Avenue and Artesia Boulevard), are the following:

- *For intersections under City of Torrance jurisdiction, a developer may be required to incorporate offsite work into the project to offset the project's negative effect in the City's traffic circulation when the following conditions are met:*
    - *If the Pre-Project LOS is C and Project V/C increases by 0.04 or more.*

[6] The South Bay Bicycle Master Plan Draft Final Plan – August 2011. Available at https://www.efaidnbmnnnibpcajpcglclefindmkaj/https://bchd.org/docs/healthy-communities/South_Bay_BMP_Draft_Final_Plan.pdf (Accessed December 2022).

- *If the Pre-Project LOS is D and Project V/C increases by 0.02 or more.*
- *If the Pre-Project LOS is E/F and Project V/C increases by 0.01 or more.*

3.0 EXISTING (2022) CONDITIONS

3.1 EXISTING ROADWAY FACILITIES

Regional access to the Project site is provided by Interstate 405 (I-405) located approximately 1.6 miles south of the Project site, State Route 91 (SR-91) located approximately 0.9 mile east of the Project site, and Interstate 110 (I-110) also located approximately 0.9 mile east of the Project site.

Local access to the Project site is provided by the following arterial and commuter roadways:

Artesia Boulevard is an east-west Arterial with three to four lanes in each direction that is under local City of Gardena jurisdiction. Artesia Boulevard transitions into SR-91 (Gardena Freeway) east of Vermont Avenue under Caltrans jurisdiction. Artesia Boulevard contains a raised median and the posted speed limit is 45 miles per hour (mph). There are left-turn pockets at all intersections. On-street parking is prohibited on both sides of Artesia Boulevard.

Normandie Avenue is a north-south Major Collector with two lanes in each direction that traverses the City of Gardena. Left-turn lanes are provided at major intersections. The posted speed limit is 35 mph. On-street parking is prohibited on both sides of the street. It is a designated truck route.

Western Avenue is a north-south Arterial with two lanes in each direction that traverses the City of Gardena. Left-turn lanes are provided at major intersections. The posted speed limit is 40 mph. On-street parking is allowed on both sides of the street. It is a designated truck route.

3.2 EXISTING PEDESTRIAN AND BICYCLE FACILTIES

Existing sidewalks are provided along the Artesia Boulevard Project frontage and within a continuous and complete pedestrian network in the surrounding areas.

City of Gardena Circulation Plan Figure CI-4 illustrates the locations of existing bikeways within the City and shows that a Class III bicycle route exists along Normandie Avenue east of the Project site (i.e., between 170th Street and 182nd Street).[7] The Circulation Plan defines a Class III Bicycle Route as "a bicycle way designated within a public right-of-way. They are identified by signage along the street that denotes "BIKE ROUTE." No other pavement markings are employed with these facilities."

As previously noted, the City requires that projects be reviewed for potential conflicts with adopted plans and policies related to active transportation, such as The South Bay Bicycle Master Plan. The South Bay Bicycle Master Plan is intended to guide development and maintenance of a comprehensive bicycle network and set of programs and policies throughout the participating cities, which include Gardena and 6 other South Bay cities. South Bay Bicycle Master Plan Figure 4-2 - Existing Bicycle Facilities in Gardena depicts the Cities existing bicycle facilities and indicates a Class III bicycle route exists along Normandie Avenue east of the Project site (i.e., between 170th Street and 182nd Street). This is the same facility identified by the City's Circulation Plan; see discussion above. South Bay Bicycle Master Plan Figure 4-3 –

[7] Gardena General Plan 2006, Circulation Plan (Updated 2020). Available at: https://cityofgardena.org/wp-content/uploads/2016/04/Circulation-Plan-2020-Update.pdf (Accessed November 2022)

Proposed Bicycle Facilities in Gardena depicts the City's proposed bicycle network and indicates no bicycle facilities are proposed near the Project site.

3.3 EXISTING TRANSIT FACILITIES

Transit service to the Project area is provided by the three services: LA Metro, which is the transit system that serves the greater Los Angeles metropolitan area; GTrans, which is the City of Gardena transit service; and Torrance Transit, which is the City of Torrance transit service.

Bus routes serving the Project area are described below.

LA Metro Route 344 operates between the Harbor Gateway Transit Center and Rancho Palos Verdes, traveling through the City of Gardena along Artesia Boulevard in the Project vicinity. Route 344 operates on weekdays from approximately 5:00 AM to 9:30 PM with 30-minute headways (the time between bus arrivals). On weekdays and holidays, the Route 344 operates from approximately 5:00 AM to 9:30 PM with approximately 50 to 60-minute headways.[8]

GTrans Line 4 operates between the Harbor Gateway Transit Center and various destinations in the Cities of Gardena and Hawthorne. As of July 2022, the Line 4 service is on hold until further notice[9].

Torrance Transit Line 13 operates between Redondo Beach and Artesia Stations, traveling along Artesia Boulevard in the Project vicinity. Line 2 operates on weekdays from approximately 5:10 AM to 10:00 PM with 45-minute headways. On weekends, Line 13 operates from approximately 6:00 AM to 10:00 PM with 55- to 60-minute headways[10].

The bus stops within 0.25 mile of the Project site are the following:

- LA Metro Route 344 and Torrance Transit Line 13: On the northeast and southwest corners of the intersection of Artesia Boulevard at Normandie Avenue;
- GTrans Line 4: On the east side of Normandie Avenue north of Artesia Boulevard; and
- GTrans Line 4: On the east side of Normandie Avenue south of 177th Street.

3.4 EXISTING (2022) CONDITIONS - LEVEL OF SERVICE

Peak periods (7 to 9 AM and 4 to 6 PM) turning movement counts were collected at the four study area intersections in May 2022 and August 2022. The AM and PM peak hours correspond to the peak hours of the adjacent street system. Twenty-four-hour bidirectional traffic volumes were also collected at each approach to the unsignalized study intersection of Gateway Plaza and Artesia Boulevard. The existing AM and PM peak hour turning movement volumes are shown in **Figure 3**. Detailed reports with AM and PM peak hour turning movement volumes are included in **Appendix B**.

[8] LA Metro Line 344. https://media.metro.net/documents/244f3ff6-d991-4238-b892-fdb03e161523.pdf. (Accessed November 2022)

[9] GTrans Line 4 https://ridegtrans.com/line/4/ (Accessed November 2022)

[10] Torrance Transit Line 13 https://ridegtrans.com/line/4/ (Accessed November 2022)

The signal timing plan information for the study intersections were obtained from the Cities of Gardena and Torrance. Intersection lane configuration data was obtained from Google maps; the existing lane geometry and control type is shown in **Figure 4**.

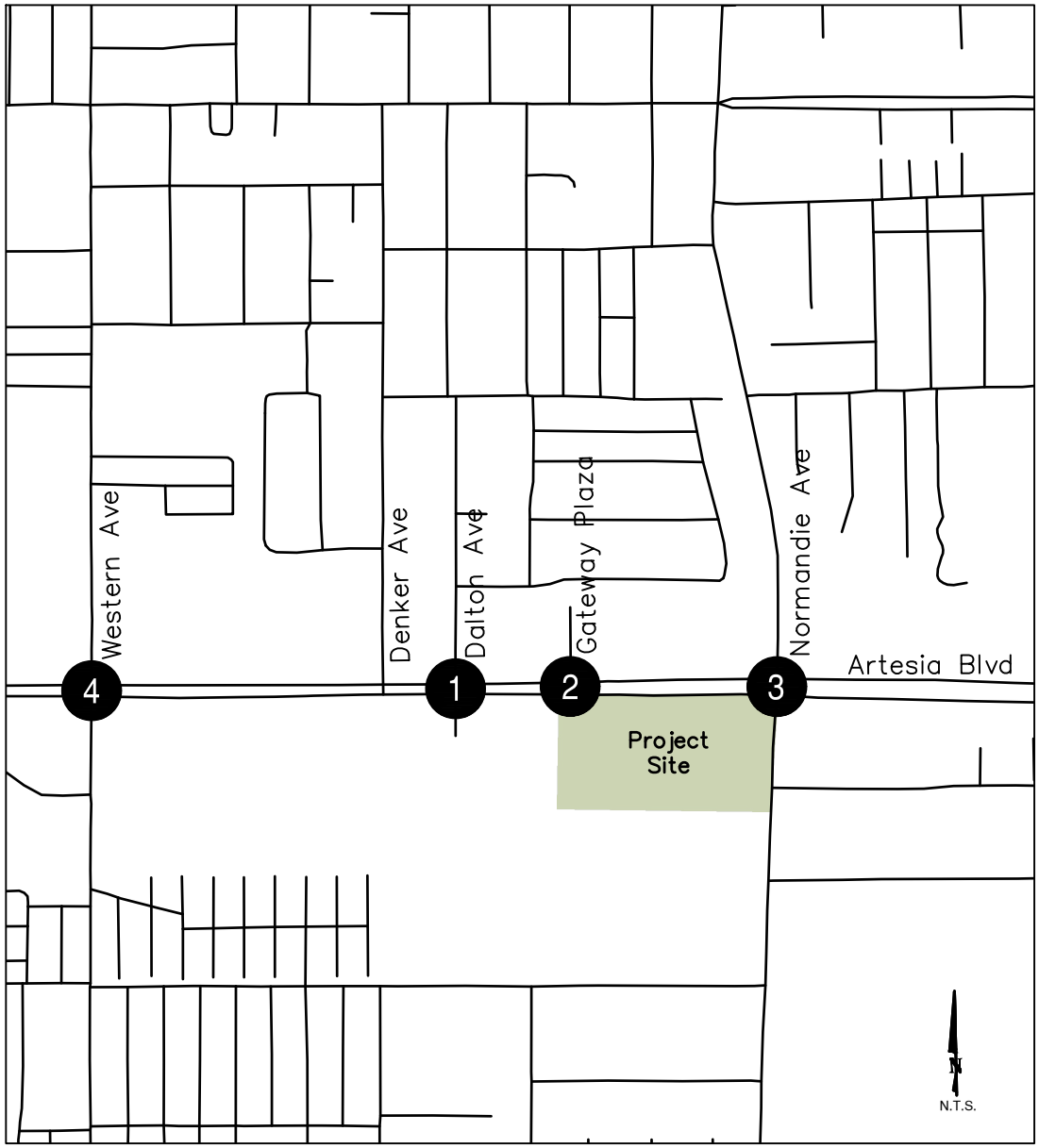
The LOS at the study area intersections was evaluated using the traffic count data as described previously. LOS results are summarized in **Table 2**. LOS analysis reports for the AM and PM peak hour Existing (2022) Conditions are included in **Appendix C**.

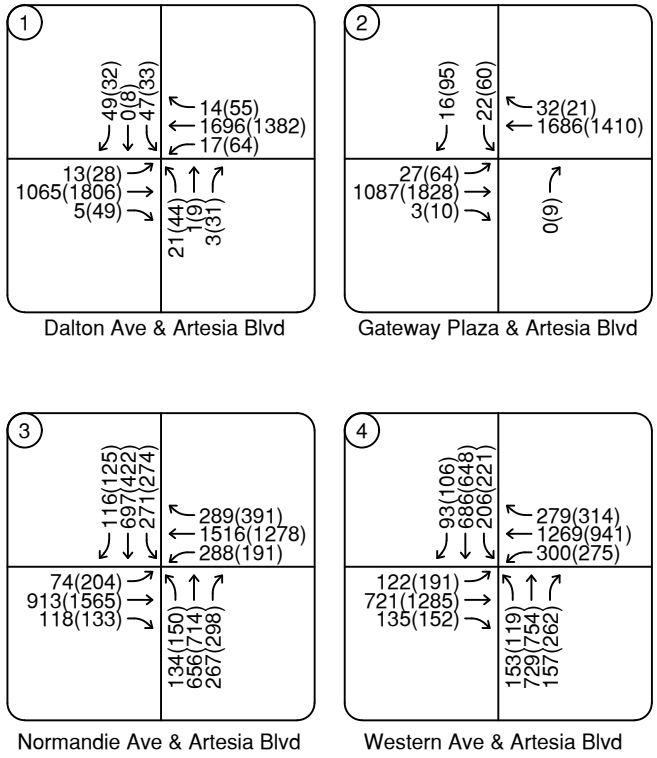
Table 2. Existing (2022) Conditions Intersection Level of Service

	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay	V/C	LOS	Delay	V/C	LOS
1	Dalton Avenue & Artesia Boulevard	Signal	4.6	-	A	11.2	-	B
2	Gateway Plaza & Artesia Boulevard	TWSC	120.3	**-**	**F**	610.7	**-**	**F**
3	Normandie Avenue & Artesia Boulevard	Signal	42.1	-	D	41.9	-	D
4	Western Avenue & Artesia Boulevard	Signal	-	0.81	D	-	0.87	D

Bold values indicate intersection is operating at unsatisfactory LOS
TWSC – Two-Way Stop Control

As shown in **Table 2**, all signalized intersections operate at LOS D or better during AM and PM peak hours under Existing (2022) Conditions. The unsignalized intersection of Gateway Plaza and Artesia Boulevard currently operates at LOS F during AM and PM peak hours under Existing (2022) Conditions. It is noted that for a two-way stop control, the intersection LOS is based on the delay of the worst approach. The Gateway Plaza and Artesia Boulevard intersection has a stop sign at Gateway Plaza. Due to high volumes on Artesia Boulevard during peak hours, the left turn movement from Gateway Plaza to eastbound Artesia Boulevard witnesses longer delays.





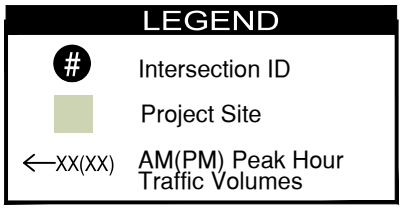
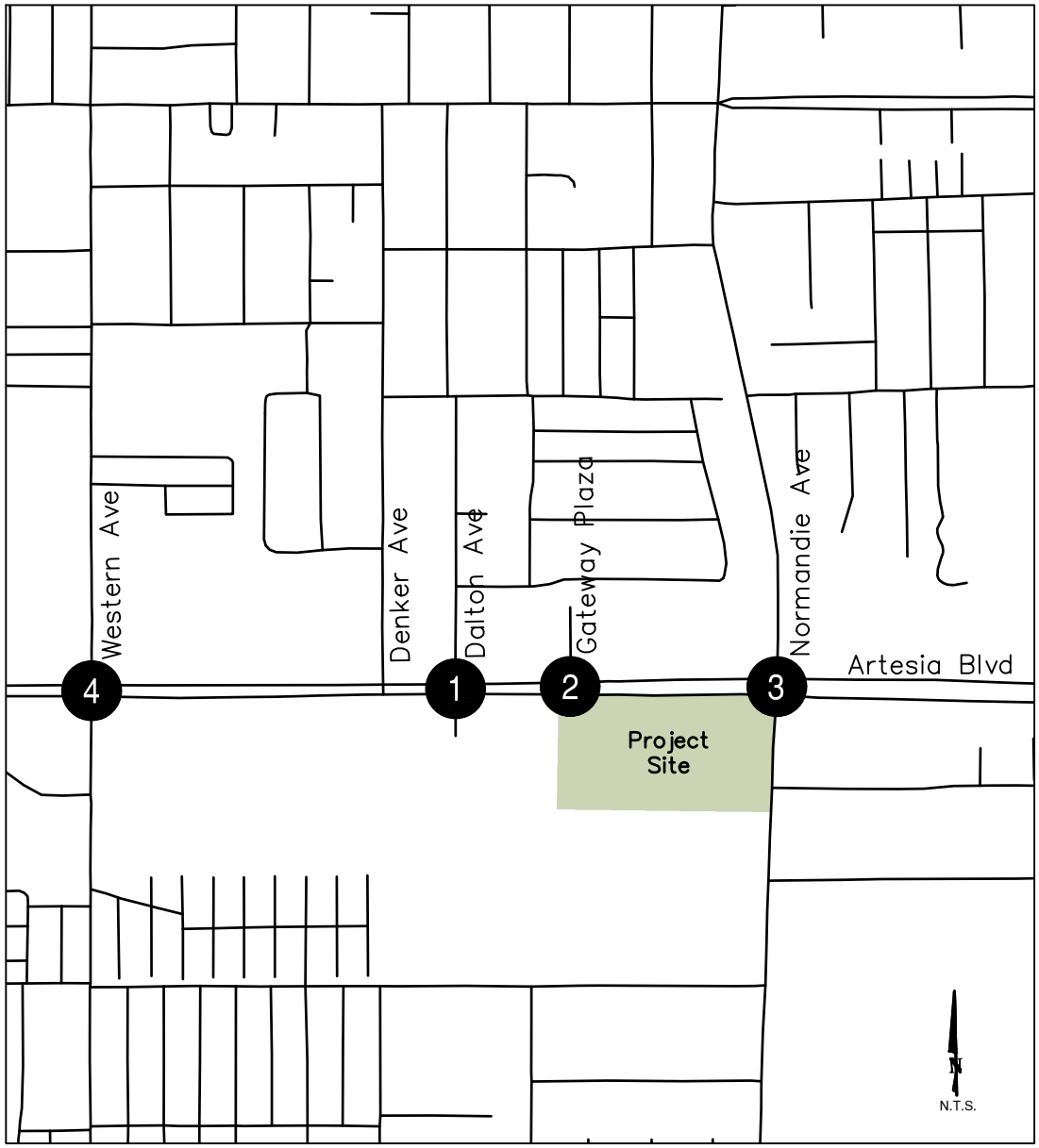
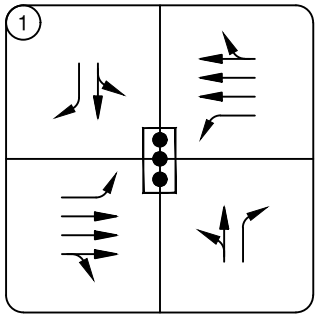
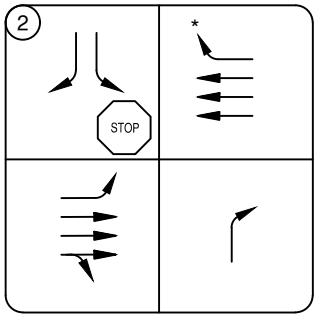


FIGURE 3 - Existing (2022) Weekday Peak-Hour Turning Movement Volumes
1450 Artesia Boulevard

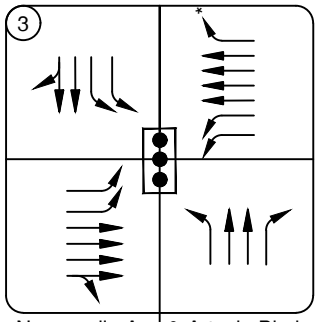




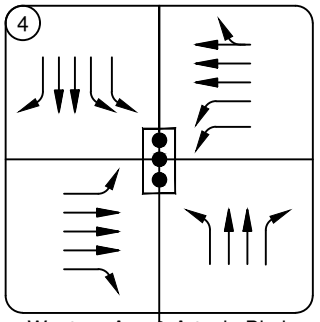
Dalton Ave & Artesia Blvd



Gateway Plaza & Artesia Blvd



Normandie Ave & Artesia Blvd



Western Ave & Artesia Blvd

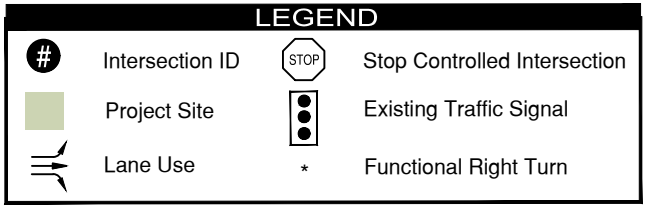


FIGURE 4 - Existing (2022) Lane Geometry and Control Type
1450 Artesia Boulevard

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4.0 PROJECT TRIP GENERATION

4.1 EXISTING LAND USES

Two commercial uses (i.e., a U-Haul dealer and sandblasting service) totaling approximately 12,064 GSF (circa 1950) with associated surface parking currently occupy the Project site's northern portion and three single-family residential DU occupy the southern portion. Of the three existing single-family residential DU, only one (i.e., the DU that would remain) is currently occupied; see *General Plan and Zoning* Section below. Except the single-family residential DU that would remain, the Project proposes to remove all onsite uses and improvements and replace these with the proposed mixed-use development. Therefore, the trips currently associated with the Project site would be taken as a trip credit to offset the new trips that would be generated by the proposed Project.

Trip generation estimates for the existing land uses were developed by collecting AM and PM peak hour traffic count data at the two existing site driveways along Artesia Boulevard. Traffic count data was collected at the two driveways on Tuesday, May 3, 2022. A summary of the Existing (2022) Conditions AM and PM peak hour site trips is provided in **Table 3**. As indicated in **Table 3**, the existing land uses currently generate approximately 166 average daily trips (ADT).

Table 3: Existing Land Uses Trip Generation – based on Traffic Counts

Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Existing (U-Haul Dealer, Sandblasting Service and Single-Family Detached Housing)	12.064 5	KSF DU	166	3	0	3	10	9	19

Table 4 summarizes the existing land use trip generation credit considering all onsite uses, except the two single-family DU, which would be removed. As indicated in **Table 3**, the existing land uses that would be displaced by the Project currently generate approximately 144 ADT.

Table 4: Existing Land Uses Trip Credit for Removed Land Uses

Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Existing (U-Haul Dealer, Sandblasting Service and Single-Family Detached Housing)	12.064 3	KSF DU	147	3	0	3	9	8	17

4.2 PROPOSED PROJECT TRIP GENERATION

The AM and PM peak hour daily trips were estimated for the Project using the trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. The ITE Land Use Code, trip generation rates, and estimated trips that would be generated by the Project are presented in **Table 5** for Opening Year (2025) Project Conditions when the site would be fully operational.

Table 5: Project Trip Generation

ITE Code	Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Trip Generation Rates*										
110	General Light Industrial	-	KSF	4.870	0.651	0.089	0.74	0.091	0.559	0.65
151	Mini-Warehouse	-	Storage Units (100s)	17.960	0.617	0.593	1.21	0.840	0.840	1.68
710	General Office Building	-	KSF	10.840	1.338	0.182	1.52	0.245	1.195	1.44
Trip Generation Estimates										
110	General Light Industrial	72.00	KSF	351	47	6	53	7	40	47
151	Mini-Warehouse	14.80	Storage Units (100s)	266	9	9	18	12	12	24
710	General Office Building	10.00	KSF	108	13	2	15	2	12	14
Total Proposed Project Trips				**725**	**69**	**17**	**86**	**21**	**64**	**85**
Existing Land Use Trips**				147	3	0	3	9	8	17
Net Proposed Project Trips				**578**	**66**	**17**	**83**	**12**	**56**	**68**

* Source: Institute of Transportation Engineers Trip Generation Manual, 11th Edition.
** Source: Existing counts (see **Table 3** and **Table 4**)

As shown in **Table 5**, the proposed Project is forecast to generate approximately 725 average daily trips, including 86 AM peak hour trips and 85 PM peak hour trips. When the trips generated by the existing land uses (to be removed) are subtracted from the proposed Project trip generation estimates, the Project would generate 578 net average daily trips, including 83 AM peak hour trips and 68 PM peak hour trips.

4.3 PROPOSED TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution assumptions for the Project trips were developed based on the existing roadway system and land uses in the Project vicinity. As noted previously, the Project site driveway would allow right-in-right-out operations only. It is anticipated that while passenger vehicles would be able to make U-turns at Normandie Avenue and Western Avenue where this movement is allowed, trucks would use a reasonable path along the grid roadway network such that no U-turns would be required. Hence, trip distribution for passenger vehicles and trucks are shown separately. **Figure 5** shows the Project area, study intersections, and trip distribution estimates for passenger vehicles. **Figure 6** and **Figure 7** show the trip distribution for entering and exiting trucks, respectively, based on access to the regional roadway facilities.

Trips generated by the proposed development were assigned to the roadway network based on the trip distribution and likely travel patterns to and from the site. **Figure 8** shows the Project development traffic assignment for the AM and PM peak hours.

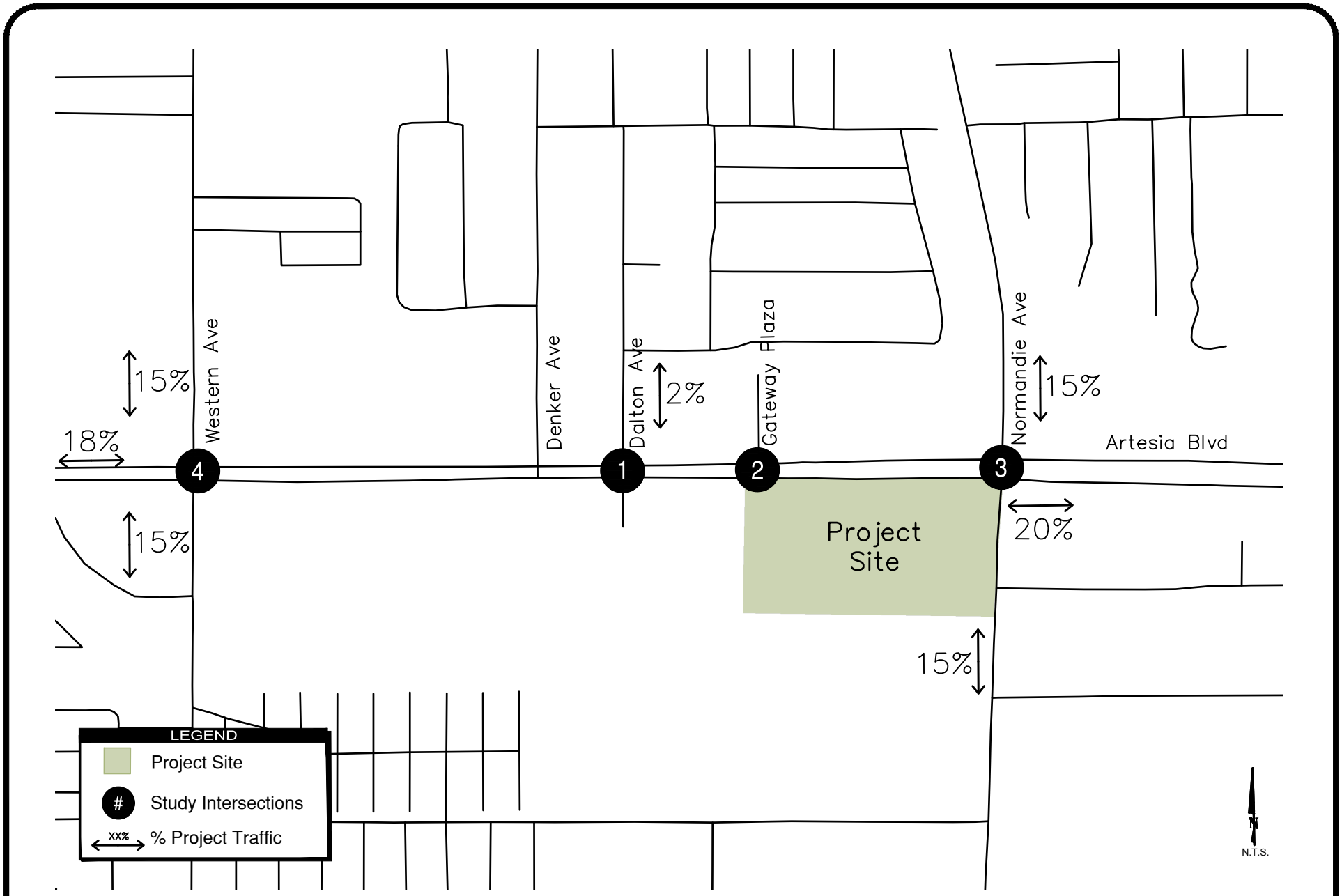


FIGURE 5 - Project Trip Distribution for Passenger Vehicles
1450 Artesia Boulevard

Kimley»Horn

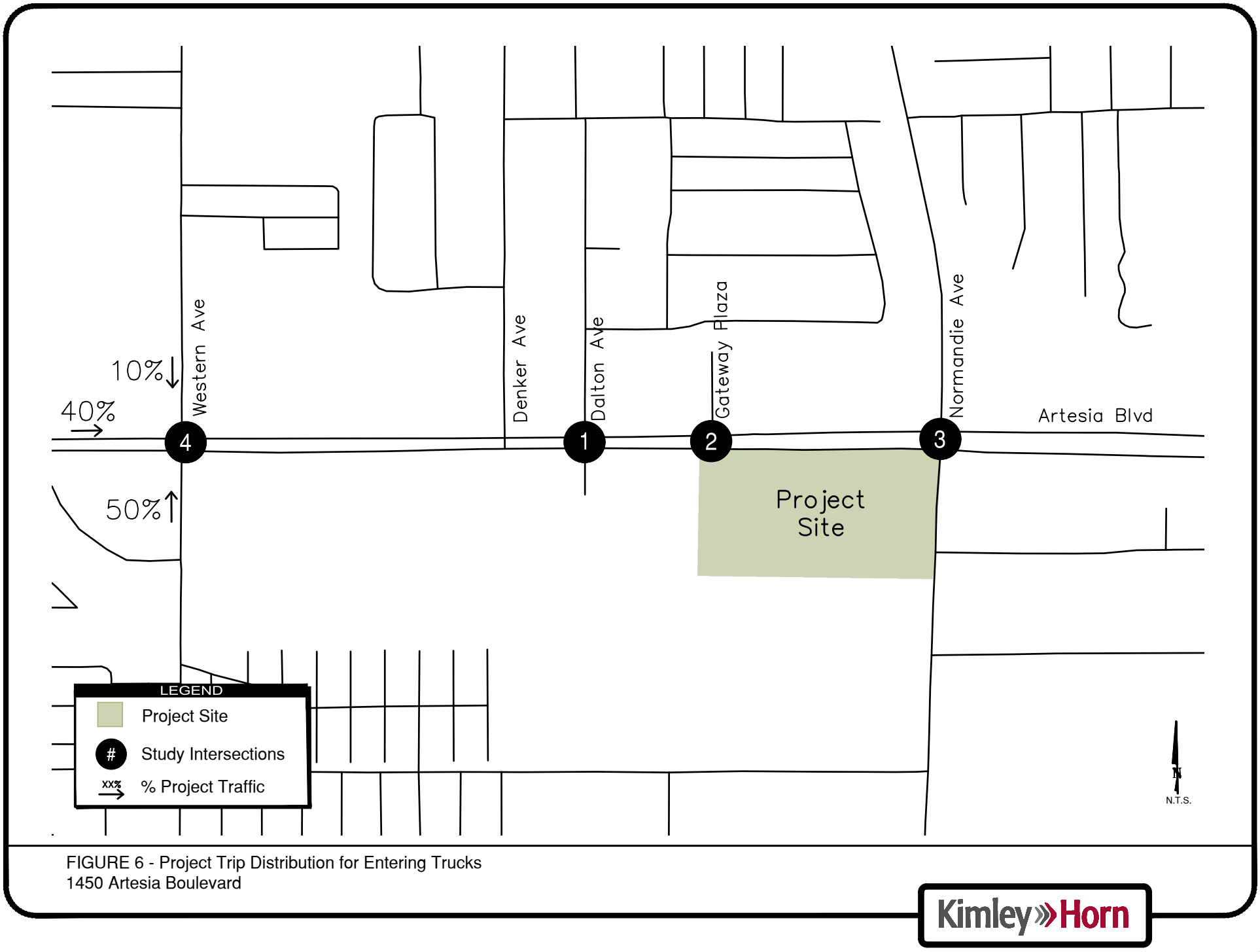


FIGURE 6 - Project Trip Distribution for Entering Trucks
1450 Artesia Boulevard

Kimley»Horn

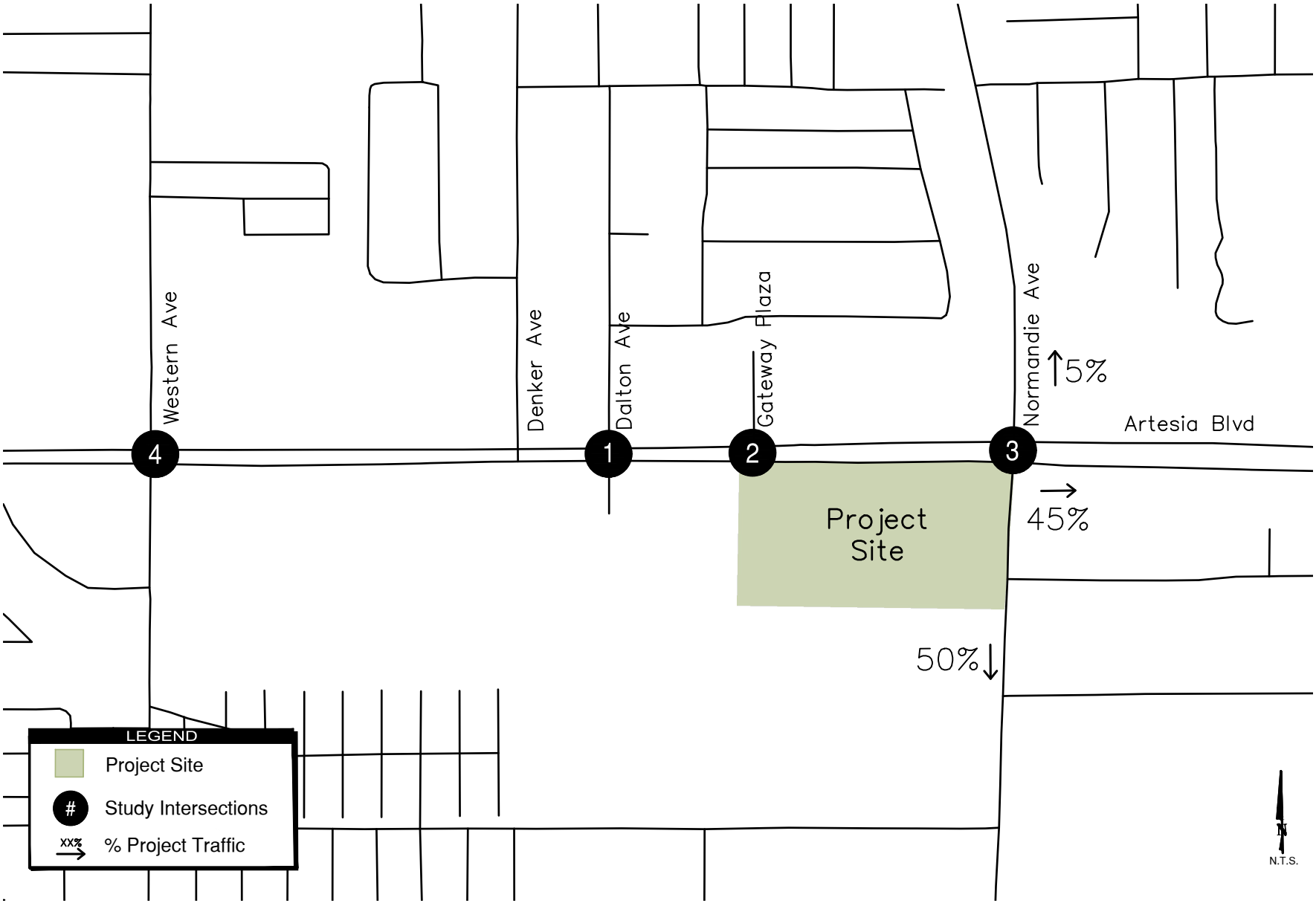
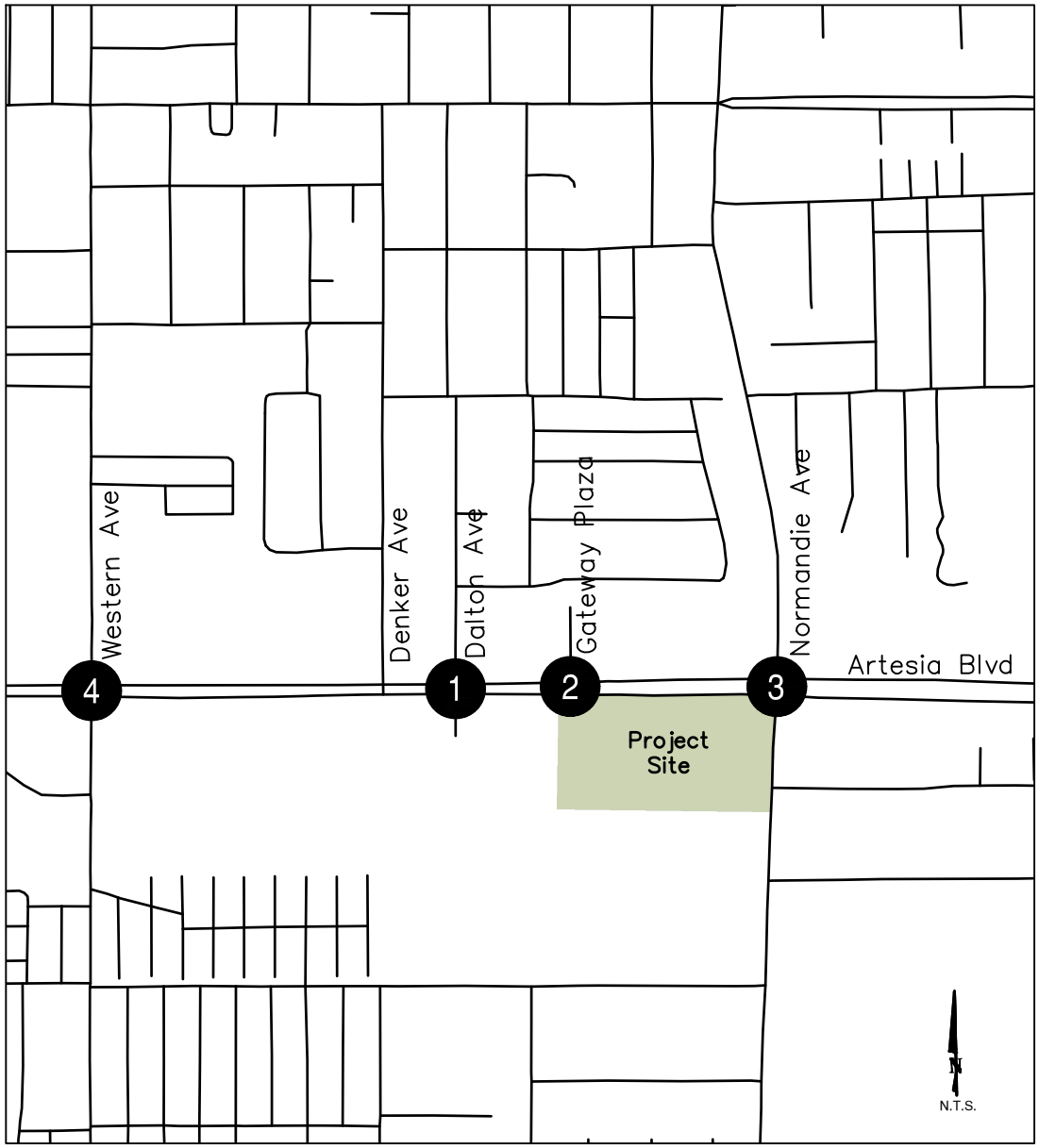
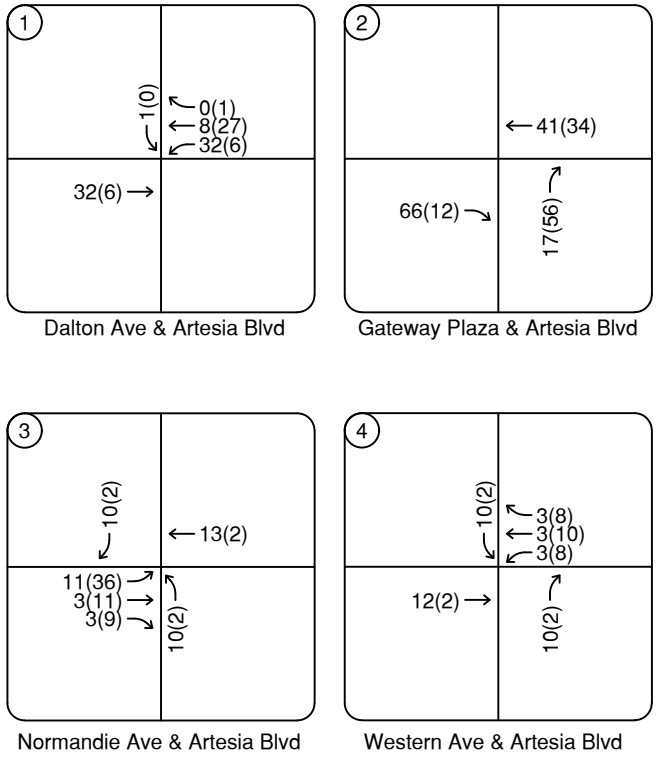


FIGURE 7 - Project Trip Distribution for Exiting Trucks
1450 Artesia Boulevard

Kimley»Horn





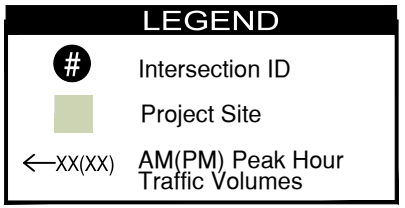


FIGURE 8 - Peak-Hour Project Trips
1450 Artesia Boulevard

Kimley»Horn

5.0 OPENING YEAR (2025) CONDITIONS

Project opening year is estimated to occur in Year 2025. Near-term future (i.e., Opening Year (2025)) traffic forecasts have been developed to evaluate conditions for the anticipated Project opening year. Opening Year (2025) Conditions traffic forecast volumes were developed using the methodology described in Section 2.3, Analysis Methodology above.

5.1 OPENING YEAR (2025) WITHOUT PROJECT CONDITIONS

As discussed above, future year forecasts for Opening Year (2025) were developed using the "build-up" process, starting with adding a background growth factor to existing peak hour volumes. In addition to ambient growth, traffic from cumulative projects in the Project vicinity were added to the Opening Year (2025) forecasts to develop Opening Year (2025) cumulative conditions. Information regarding cumulative projects was obtained from the cities of Gardena, Torrance, and Los Angeles. A summary of cumulative projects within 1.0 mile of the Project site is provided in **Table 6**. The locations of cumulative projects are shown in **Figure 9**.

Kimley-Horn developed cumulative projects trip distribution and assignment based on LA County CMP[11] trip distribution percentages. Cumulative projects traffic volumes were compiled for each of the study intersections and are shown in **Figure 10**.

[11] 2010 Congestion Management Program, Los Angeles County Metropolitan Transportation Authority. Available at: https://planning.lacity.org/eir/conventioncntr/DEIR/files/references/2010%20Congestion%20Management%20Plan.pdf (Accessed November 2022)

Table 6: Summary of Cumulative Projects

ID	City	Project Location	Size	Trip Generation					
				AM Trips			PM Trips		
				In	Out	Total	In	Out	Total
A	Gardena	1515 West 178th Street (Melia 178th Street Project)	114 DU	11	35	46	37	22	59
B	Gardena	16911 South Normandie Avenue	327 DU (Apts.) 75 DU (townhomes)	38	122	160	129	76	205
C	Gardena	1348 West 168th Street (Normandie Courtyard Project)	9 DU	1	3	4	3	2	5
D	Gardena	1333 West 168th Street	3 DU	0	1	1	1	1	2
E	Gardena	1341 West Gardena Boulevard	14 DU 3,385 SF Retail, Office	6	5	11	5	7	12
F	Los Angeles	812 West 165th Place	360 Students	107	87	194	28	30	58
Total				***163***	***253***	***416***	***203***	***138***	***341***

Notes:
DU = dwelling units; SF = square feet

Opening Year (2025) Without Project Conditions

The ambient growth and the Project-related traffic volumes from the cumulative projects were added to the existing peak hour volumes to develop Opening Year (2025) Without Project Conditions peak hour volume forecasts. The resulting peak hour volumes are shown in **Figure 11**.

The results of the Opening Year (2025) Without Project Conditions intersection analysis are summarized in **Table 7.** LOS analysis reports for the Opening Year (2025) Without Project Conditions are included in **Appendix D**.

Table 7. Opening Year (2025) Without Project Conditions Intersection Level of Service

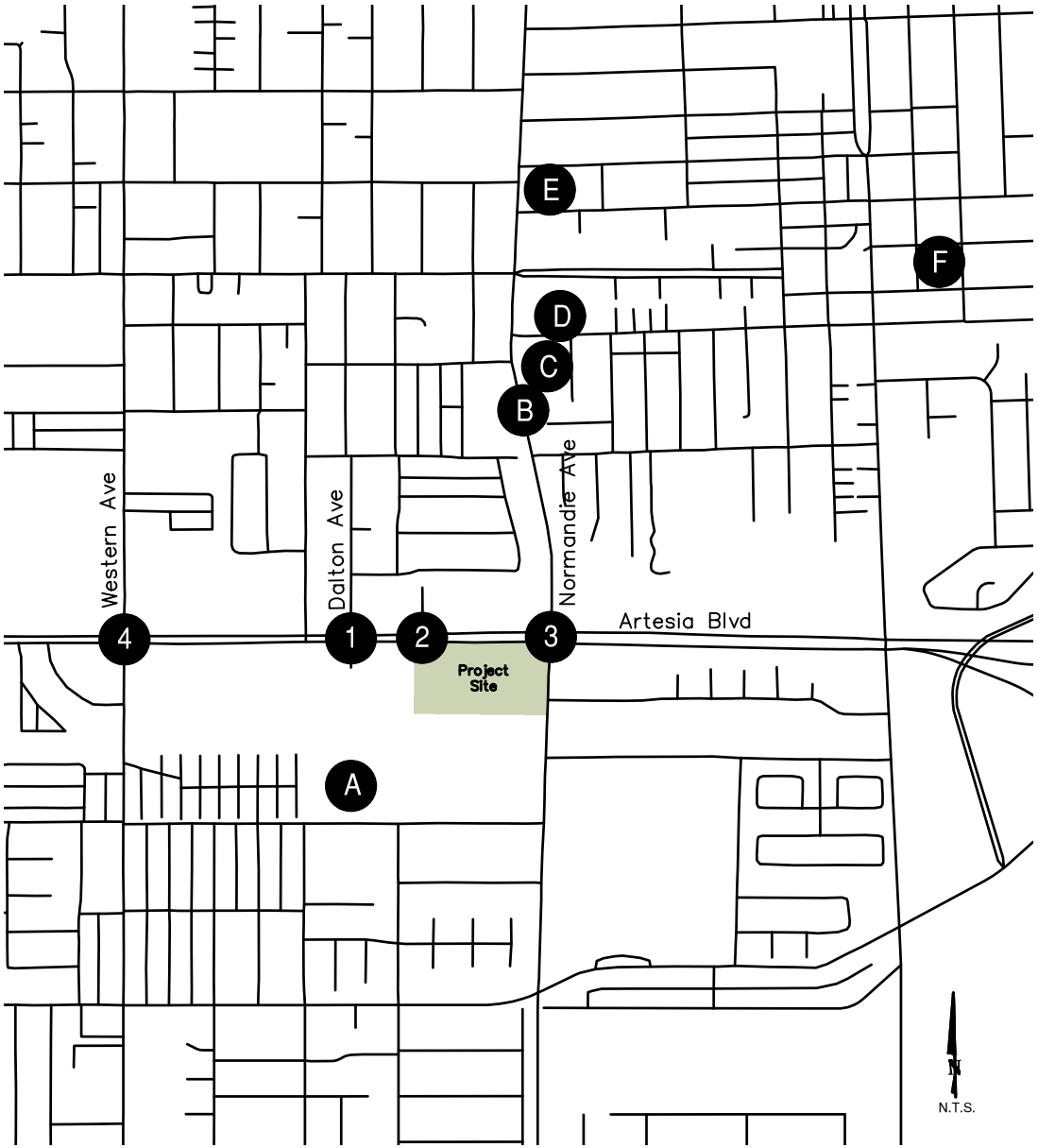
	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay	V/C	LOS	Delay	V/C	LOS
1	Dalton Avenue & Artesia Boulevard	Signal	8.3	-	A	11.6	-	B
2	Gateway Plaza & Artesia Boulevard	TWSC	148.6	**-**	**F**	793.9	**-**	**F**
3	Normandie Avenue & Artesia Boulevard	Signal	44.8	-	D	45.4	-	D
4	Western Avenue & Artesia Boulevard*	Signal	-	0.83	D	-	0.89	D

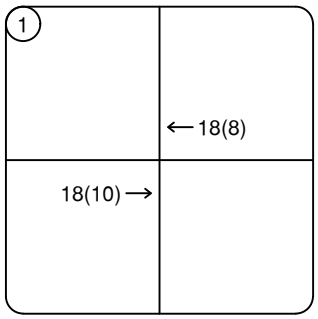
Bold values indicate intersection is operating at unsatisfactory LOS
TWSC – Two-Way Stop Control
* Western Avenue & Artesia Boulevard intersection is analyzed using ICU methodology.

As shown in **Table 7**, study intersections would operate at similar LOS as under Existing (2022) Conditions. All signalized intersections are projected to operate at LOS D or better during AM and PM peak hours under Opening Year (2025) Without Project Conditions. Similar to Existing (2022) Conditions, the unsignalized intersection of Gateway Plaza and Artesia Boulevard is projected to operate at LOS F during AM and PM peak hours under Opening Year (2025) Without Project Conditions.

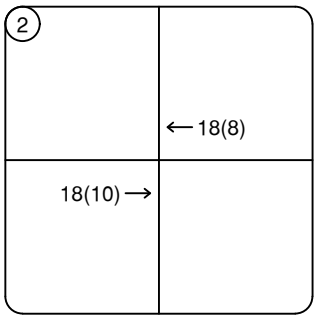
FIGURE 9 - Cumulative Projects
1450 Artesia Boulevard

Kimley»Horn

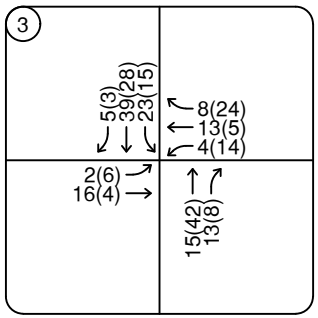




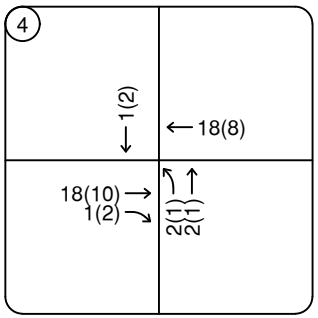
Dalton Ave & Artesia Blvd



Gateway Plaza & Artesia Blvd



Normandie Ave & Artesia Blvd



Western Ave & Artesia Blvd

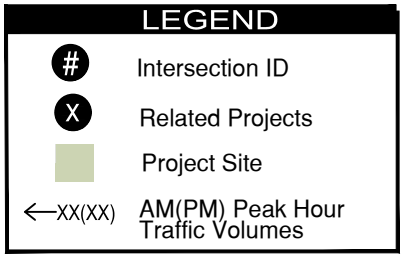
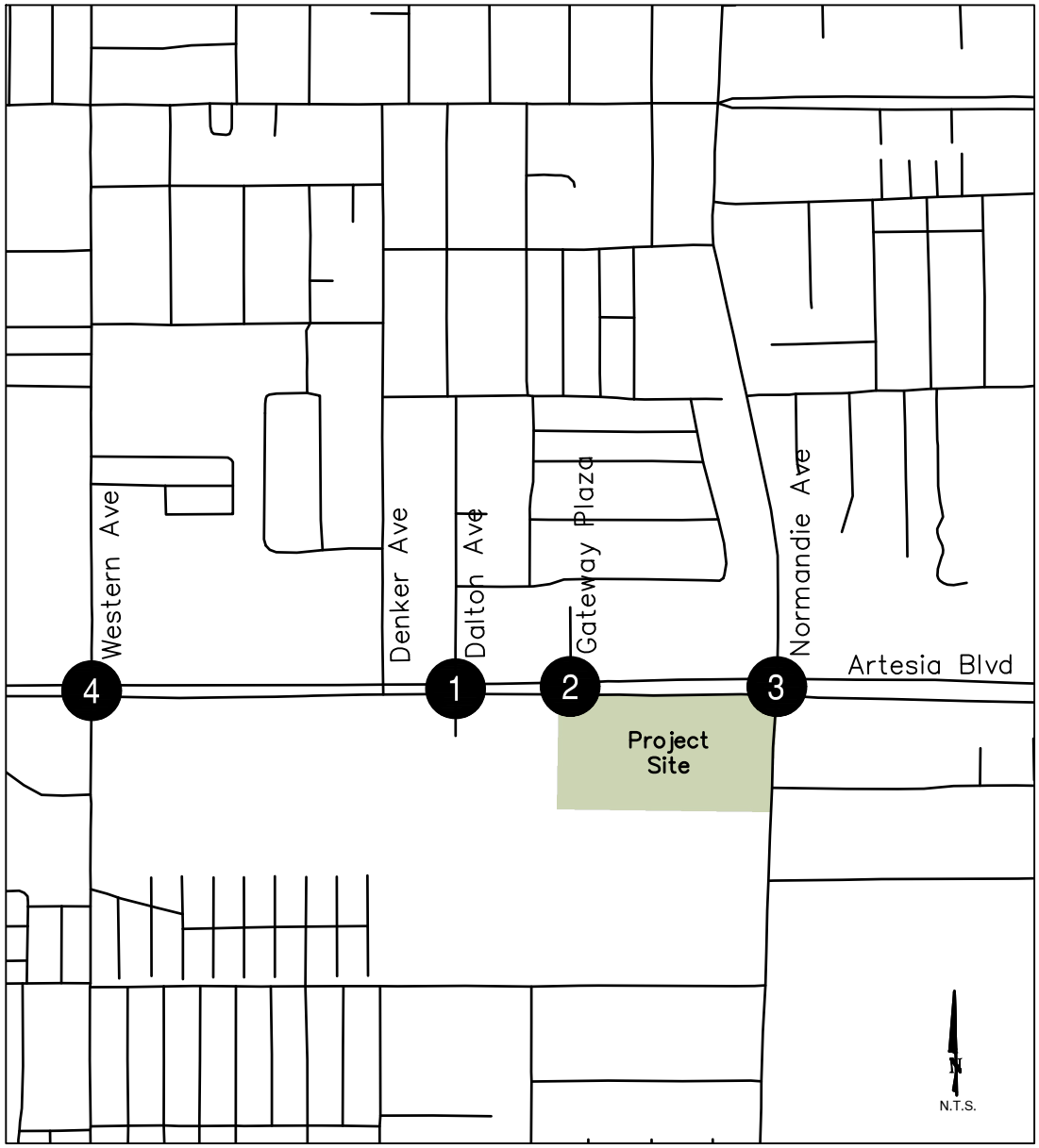
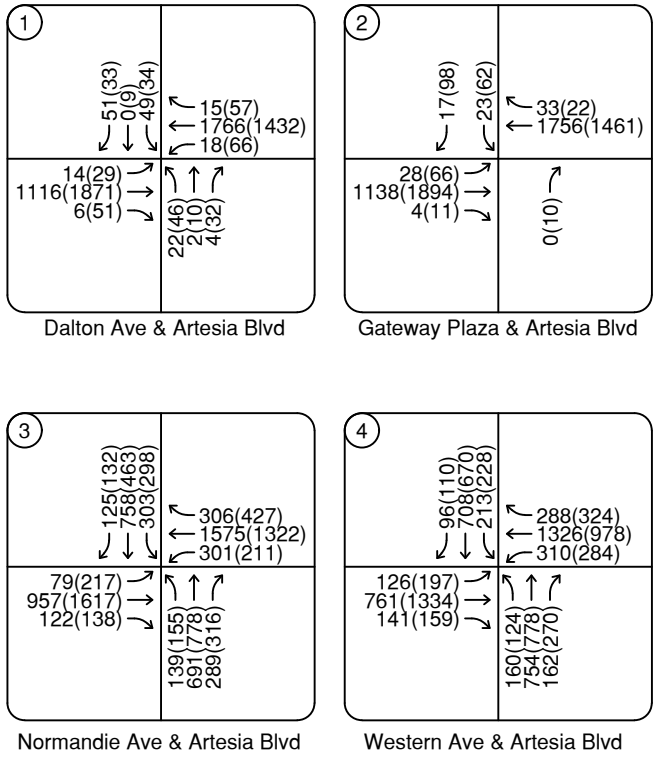


FIGURE 10 - Cumulative Projects Traffic Volumes
1450 Artesia Boulevard

Kimley»Horn





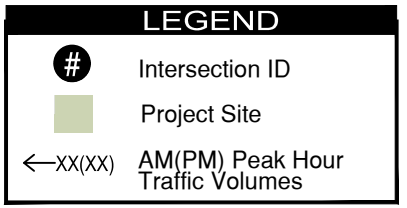


FIGURE 11 - Opening Year (2025) Intersection Volumes
1450 Artesia Boulevard

5.2 OPENING YEAR (2025) WITH PROJECT CONDITIONS

Project-related peak hour traffic volumes were added to the Opening Year (2025) Without Project Conditions forecast traffic volumes to develop Opening Year (2025) With Project Conditions forecast traffic volumes. The resulting peak hour traffic volumes for Opening Year (2025) With Project Conditions are shown in **Figure 12**. **Figure 13** shows the Opening Year (2025) With Project Conditions proposed lane geometry and control type.

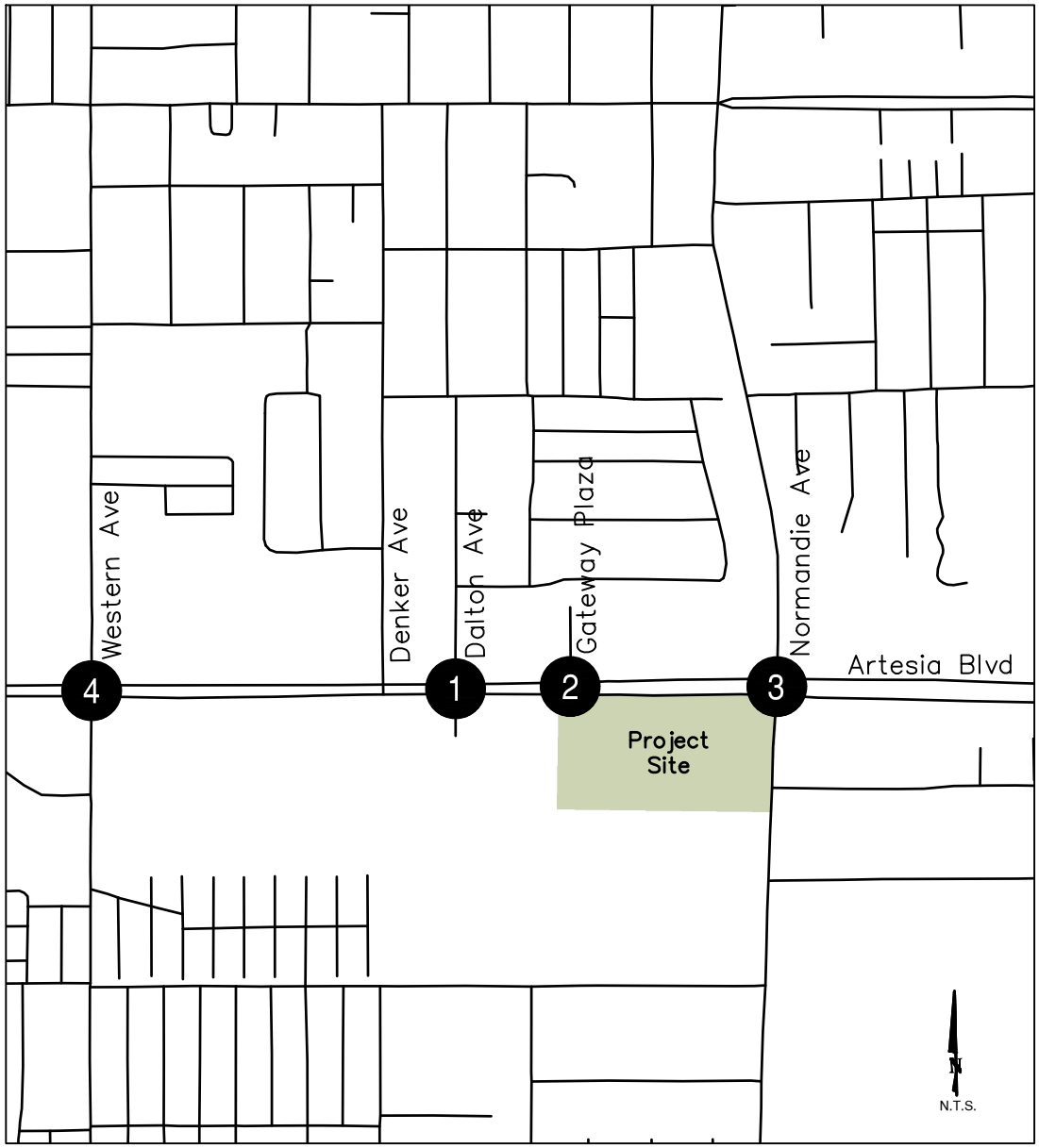
The results of the Opening Year (2025) With Project Conditions intersection analysis are summarized in **Table 8**. LOS analysis reports for the Opening Year (2025) With Project Conditions are included in **Appendix E**.

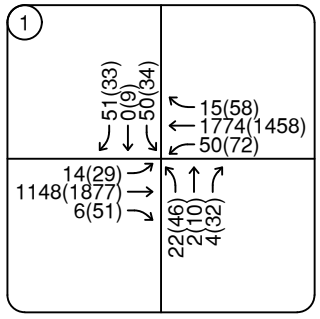
Table 8. Opening Year (2025) With Project Conditions Intersection Level of Service

	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay	V/C	LOS	Delay	V/C	LOS
1	Dalton Avenue & Artesia Boulevard	Signal	8.3	-	A	11.6	-	B
2	Gateway Plaza & Artesia Boulevard	TWSC	164.9	-	**F**	873.3	-	**F**
3	Normandie Avenue & Artesia Boulevard	Signal	44.8	-	D	45.4	-	D
4	Western Avenue & Artesia Boulevard*	Signal	-	0.83	D	-	0.90	D

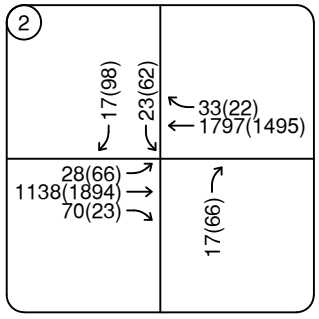
Bold values indicate intersection is operating at unsatisfactory LOS
TWSC – Two-Way Stop Control
* Western Avenue & Artesia Boulevard intersection is analyzed using ICU methodology.

As shown in **Table 8**, intersections would operate at similar LOS as under Existing (2022) Conditions and Opening Year (2025) Without Project Conditions. All signalized intersections are forecast to operate at LOS D or better during AM and PM peak hours under Opening Year (2025) With Project Conditions. Similar to the Existing (2022) Conditions and Opening Year (2025) Without Project Conditions, the unsignalized intersection of Gateway Plaza and Artesia Boulevard is forecast to operate at LOS F under Opening Year (2025) With Project Conditions.

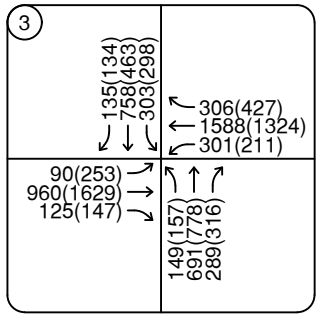




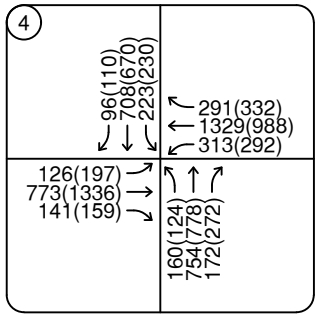
Dalton Ave & Artesia Blvd



Gateway Plaza & Artesia Blvd



Normandie Ave & Artesia Blvd



Western Ave & Artesia Blvd

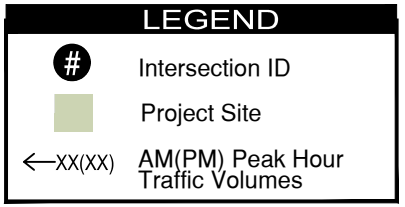
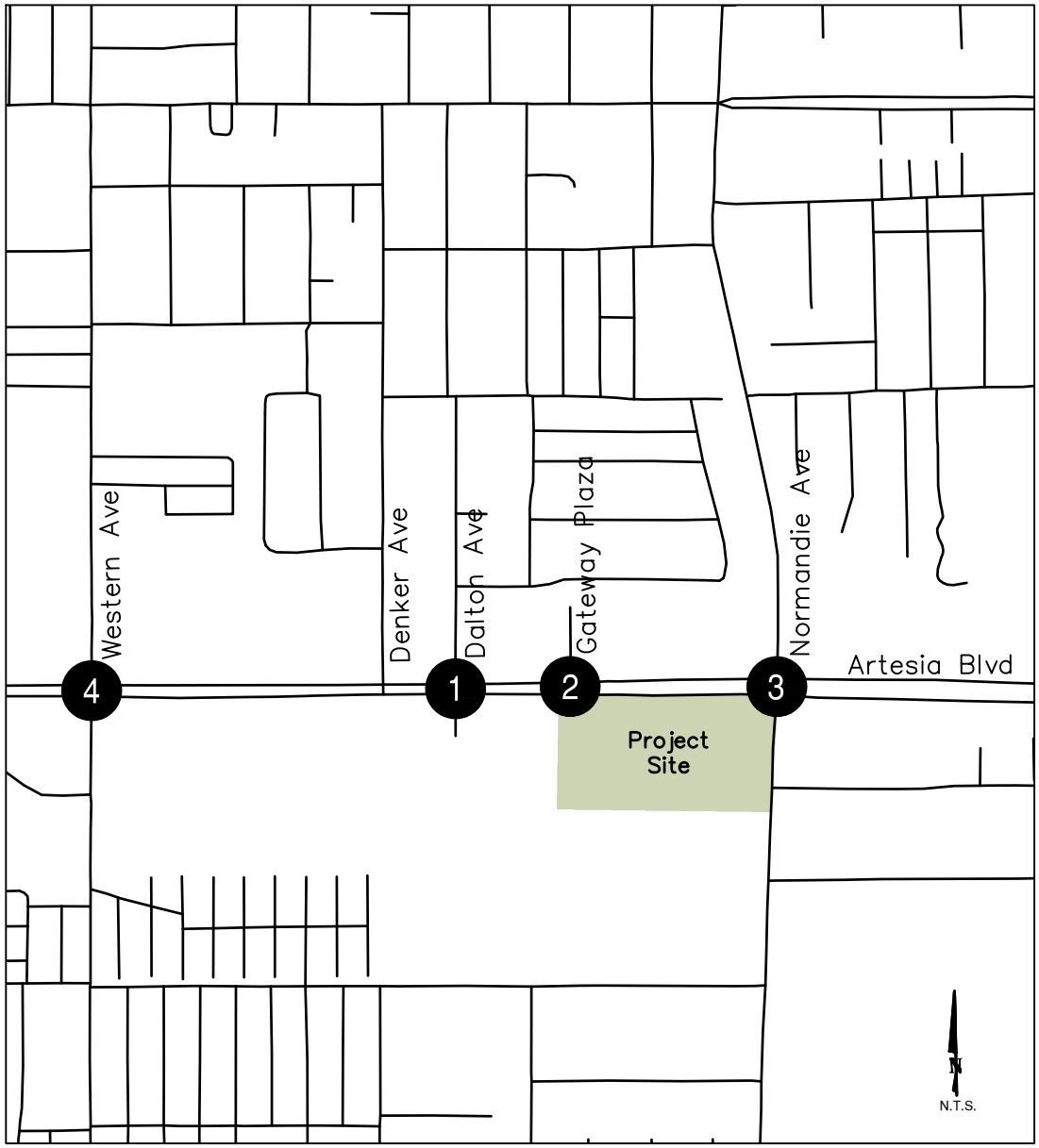
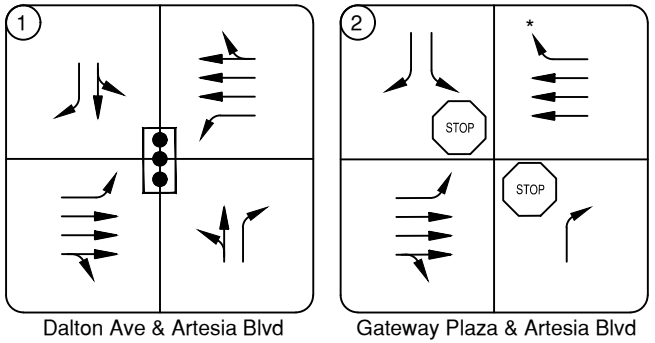
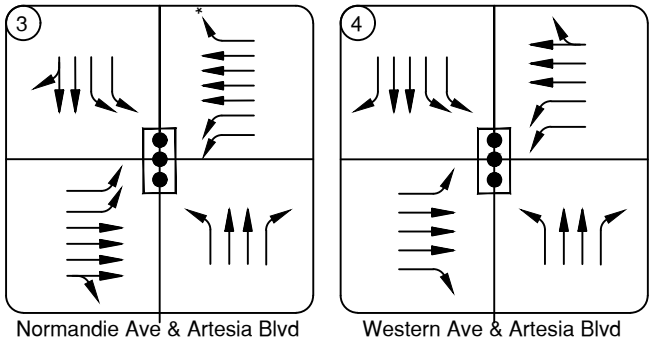


FIGURE 12 - Opening Year (2025) with Project Intersection Volumes
1450 Artesia Boulevard

Kimley»Horn







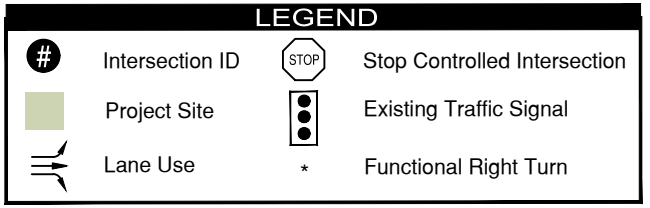


FIGURE 13 - Proposed (2025) Lane Geometry and Control Type
1450 Artesia Boulevard

Kimley»Horn

5.3 RECOMMENDED IMPROVEMENTS

Table 9 shows Opening Year (2025) Conditions LOS comparison under With and Without Project Conditions. Based on the performance criteria presented in the City's LTA Procedures and Torrance TCA Guidelines (see Section 2.4 above), the Project does not require improvements at the signalized intersections. For the unsignalized intersection, the City's LTA Procedures do not provide any analysis criteria. The City's LTA Procedures refer to the potential to install traffic signals at unsignalized intersections where traffic volumes are high enough to meet traffic signal warrants; see following Traffic Signal Warrant Analysis.

5.3.1 TRAFFIC SIGNAL WARRANT ANALYSIS

Kimley-Horn conducted the *1450 Artesia Boulevard - Traffic Signal Warrant Analysis* for the unsignalized intersection of Gateway Plaza and Artesia Boulevard; see **Appendix F**. The analysis was reviewed and approved by the City. The traffic signal warrant analysis was completed for Existing (2022) Conditions and Opening Year (2025) With Project Conditions. The results indicate that Signal Warrant 2, which is based on 4-hour vehicular volumes, was met under Existing (2022) Conditions. The Signal Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. It is noted that per the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), the satisfaction of a traffic signal warrant shall not in and of itself require installation of a traffic control signal. Considering that the traffic signal warrant is met under Existing (2022) Conditions (i.e., without the proposed Project), and the proposed Project is not anticipated to significantly increase traffic volumes at the study intersection or result in satisfaction of additional signal warrants, Kimley-Horn, in consultation with the City, recommends that a traffic control signal be not considered at this intersection. Based on the subsequent discussions with the City, it has been determined that this intersection would continue to be unsignalized and the Project site driveway would be a right-in-right-out driveway.

Table 9: Opening Year (2025) Conditions Intersection Level of Service Comparison

	Intersection	AM Peak Hour							PM Peak Hour						
		Without Project			With Project			Change Delay / V/C	Without Project			With Project			Change Delay / V/C
		Delay	V/C	LOS	Delay	V/C	LOS		Delay	V/C	LOS	Delay	V/C	LOS	
1	Dalton Avenue & Artesia Boulevard	8.3	-	A	9.3	-	A	1.0	11.2	-	B	11.9	-	B	0.7
2	Gateway Plaza & Artesia Boulevard	148.6	**-**	**F**	164.9	**-**	**F**	16.3	793.9	**-**	**F**	873.3	**-**	**F**	79.4
3	Normandie Avenue & Artesia Boulevard	44.8	-	D	45.8	-	D	1.0	41.9	-	D	46.5	-	D	4.6
4	Western Avenue & Artesia Boulevard*	-	0.83	D	-	0.83	D	0.0	-	0.89	D	-	0.90	D	0.01

Bold values indicate intersection is operating at unsatisfactory LOS

* Western Avenue & Artesia Boulevard intersection is analyzed using ICU methodology.

6.0 NON-MOTORIZED MODES ANALYSIS

6.1 EFFECTS ON ACTIVE TRANSPORTATION

There are existing sidewalks along the Artesia Boulevard Project frontage and within a continuous and complete pedestrian network in the surrounding areas. The Project would not conflict with any existing pedestrian facilities in the study area.

A Class III bicycle route exists along Normandie Avenue east of the Project site (i.e., between 170th Street and 182nd Street). The facility is identified in both the Gardena Circulation Plan and The South Bay Bicycle Master Plan. The Project does not propose access driveways on Normandie Avenue, thus, the Project would not conflict with these two adopted plans relative to transportation.

6.2 EFFECTS ON TRANSIT

The Project site is served by transit service provided by LA Metro, GTrans, and Torrance Transit. The bus stops within 0.25 mile of the Project site are the following:

- LA Metro Route 344 and Torrance Transit Line 13: On the northeast and southwest corners of the intersection of Artesia Boulevard at Normandie Avenue;
- GTrans Line 4: On the east side of Normandie Avenue north of Artesia Boulevard; and
- GTrans Line 4: On the east side of Normandie Avenue south of 177th Street.

The Project does not propose access driveways near any of four existing nearby bus stops. Therefore, the Project would not affect access to these stops. Additionally, because the Project's employment generation would be nominal, the Project is not expected to significantly increase transit demand. Therefore, the Project is not expected to significantly affect operation of these transit services.

7.0 CONCLUSION

This report documents the results of the LTA completed for the proposed mixed-use Project at 1450 Artesia Boulevard in the City of Gardena. The following summarizes our findings and conclusions:

- The LTA was conducted pursuant to City of Gardena's LTA Procedures and City of Torrance TCA Guidelines. The LTA includes an analysis of four study intersections including three signalized intersections and one unsignalized intersection.
- All study intersections are within the City of Gardena, except Intersection 4 (Western Avenue and Artesia Boulevard), which is owned and maintained by the City of Torrance.
- The Project is estimated to generate approximately 725 new ADT, include 86 new trips during the AM peak hour and 85 new trips during the PM peak hour. When the trips generated by the existing land uses (to be removed) are subtracted from the proposed Project trip generation estimates, the Project site would generate net additional 578 daily trips, including 83 AM peak hour trips and 68 PM peak hour trips.
- Weekday peak hour intersection analysis was conducted for three scenarios: Existing (2022) Conditions; Opening Year (2025) Without Project Conditions; and Opening Year (2025) With Project Conditions.
- Under Existing (2022) Conditions, Opening Year (2025) Without Project Conditions, and Opening Year (2025) With Project Conditions, all intersections operate at LOS D or better during the AM and PM peak periods, except the unsignalized intersection of Gateway Plaza and Artesia Boulevard.
- Under all scenarios including the Existing (2022) Conditions, the Gateway Plaza and Artesia Boulevard intersection would operate at LOS F. Due to high volumes on Artesia Boulevard during peak hours, the left turn movement from Gateway Plaza to eastbound Artesia Boulevard witnesses longer delays.
- Based on the City's LTA Procedures and Torrance TCA Guidelines, the Project does not require improvements at the signalized intersections based on the level of service analysis.
- A signal warrant analysis at the intersection of Artesia Boulevard and Gateway Plaza Driveway/Proposed Site Driveway was completed for Existing (2022) Conditions and Opening Year (2025) With Project Conditions. The results indicate that Signal Warrant 2 is met based on 4-hour vehicular volumes. It is noted that per CA MUTCD, the satisfaction of a traffic signal warrant shall not in itself require the installation of a traffic control signal. Considering that the traffic signal warrant is met under Existing (2022) Conditions (i.e., without the proposed Project), and the proposed Project is not anticipated to significantly increase traffic volumes at the study intersection or result in satisfaction of additional signal warrants, Kimley-Horn, in consultation with the City, recommends that a traffic control signal be not considered at this intersection.
- The Project would not conflict with adopted plans and policies related to active transportation, as the Project would not affect existing pedestrian and bicycle facilities.
- The Project is served by transit service provided by LA Metro, GTrans, and Torrance Transit. The Project is not expected to affect the transit service operations or access to the transit stops.

APPENDIX

- Appendix A: Local Transportation Assessment – Scoping Agreement
- Appendix B: Traffic Count Data
- Appendix C: Existing (2022) Conditions Synchro Reports
- Appendix D: Opening Year (2025) Without Project Conditions Synchro Reports
- Appendix E: Opening Year (2025) With Project Conditions Synchro Reports
- Appendix F: Traffic Signal Warrant Analysis Memorandum

APPENDIX A

Local Transportation Assessment – Scoping Agreement

Kimley»Horn

TECHNICAL MEMORANDUM

To:	Amanda Acuna, Senior Planner, City of Gardena
From:	Sowmya Chandrasekhar, PE, TE, PTOE Rita Garcia, Project Manager
Copy:	Brian Sorensen, Insite Property Group
Date:	October 24, 2022
Subject:	1450 Artesia Boulevard Local Transportation Assessment – Scoping Agreement

INTRODUCTION

This document summarizes the scope of the Local Transportation Assessment (LTA) to be conducted by Kimley-Horn and Associates, Inc. ("Kimley-Horn") for the proposed 1450 Artesia Boulevard Project ("Project"). The LTA will be conducted per Chapter 5 - Local Transportation Assessment Procedures of the City of Gardena Transportation Analysis Updates (June 2020)

PROJECT DESCRIPTION

The Project site consists of six parcels (APNs 6106-036-010,[1] -012, -034, 035, -036, and -037) totaling approximately 6.33 acres situated west of Normandie Avenue, at 1450 Artesia Boulevard. It is noted, APN 6106-036-010 is an approximately 0.23-acre parcel, which is currently occupied by two single-family residences. Because it is unknown if this property will be acquired prior to Project construction, for a conservative approach, the property is included in the Project site and existing uses are assumed will remain.

Insite Property Group proposes a mixed-use development comprised of a 268,000-gross-square-foot (GSF) building with associated surface parking (approximately 124 off-street parking spaces), along with landscape and circulation improvements. The proposed building would contain a self-storage use (four levels totaling 186,000 GSF with 1,480 storage units), an industrial use (one level totaling 72,000 GSF plus ten loading docks), and an office/retail use (a mezzanine totaling 10,000 GSF). It is noted, to provide a conservative analysis, the Project's proposed 72,000 GSF of industrial uses includes 10,000 GSF, to account for the potential future acquisition of the 0.23-acre parcel.

[1] This parcel is the existing non-conforming residential use at the Project site's southwest corner. At City direction (03/25/22 Meeting), this parcel will be included in the Specific Plan area and environmental analyses.

Two commercial uses (i.e., a U-Haul dealer and sandblasting service) totaling approximately 12,064 GSF (circa 1950) with associated surface parking currently occupy the Project site's northern portion and five single-family residential dwelling units (DU) occupy the southern portion. The Project proposes to remove all onsite uses (except two DU would remain) and improvements and replace these with the proposed mixed-use development.

STUDY AREA

Per City's LTA procedures, any intersection to which the proposed project is expected to add 50 peak hour trips (AM or PM) should be considered a study intersection. Hence, based on review of the Project area, site, and access points, the following four study area intersections were identified for analysis of weekday peak-hour operations:

- Dalton Avenue & Artesia Boulevard – Signalized
- Gateway Plaza & Artesia Boulevard – Unsignalized
- Normandie Avenue and Artesia Boulevard – Signalized
- Western Avenue & Artesia Boulevard – Signalized

It is noted that the unsignalized study intersection of Gateway Plaza and Artesia Boulevard is currently a three-legged intersection with stop-control on the driveway approach. The Project site driveway at Artesia Boulevard is proposed as the fourth leg on the south side of this intersection. A directional median opening currently provides eastbound left-turn in and southbound left-turn out to and from Gateway Plaza. Per the traffic signal warrant analysis conducted by Kimley-Horn (Technical Memorandum, June 2, 2022) and subsequent discussions with the City, it has been determined that this intersection will continue to be unsignalized and the Project site driveway will be a right-in-right-out driveway.

Figure 1 illustrates the study area and Project site location in a regional setting. All study intersections are within the City of Gardena. The Project's Conceptual Site Plan is shown in **Figure 2**.

Peak periods (7 to 9 AM and 4 to 6 PM) turning movement counts were collected at the four study area intersections in May 2022 and August 2022. The AM and PM peak hours correspond to the peak hours of the adjacent street system. Twenty-four-hour bidirectional traffic volumes were also collected at each approach to the unsignalized study intersection at Gateway Plaza and Artesia Boulevard.

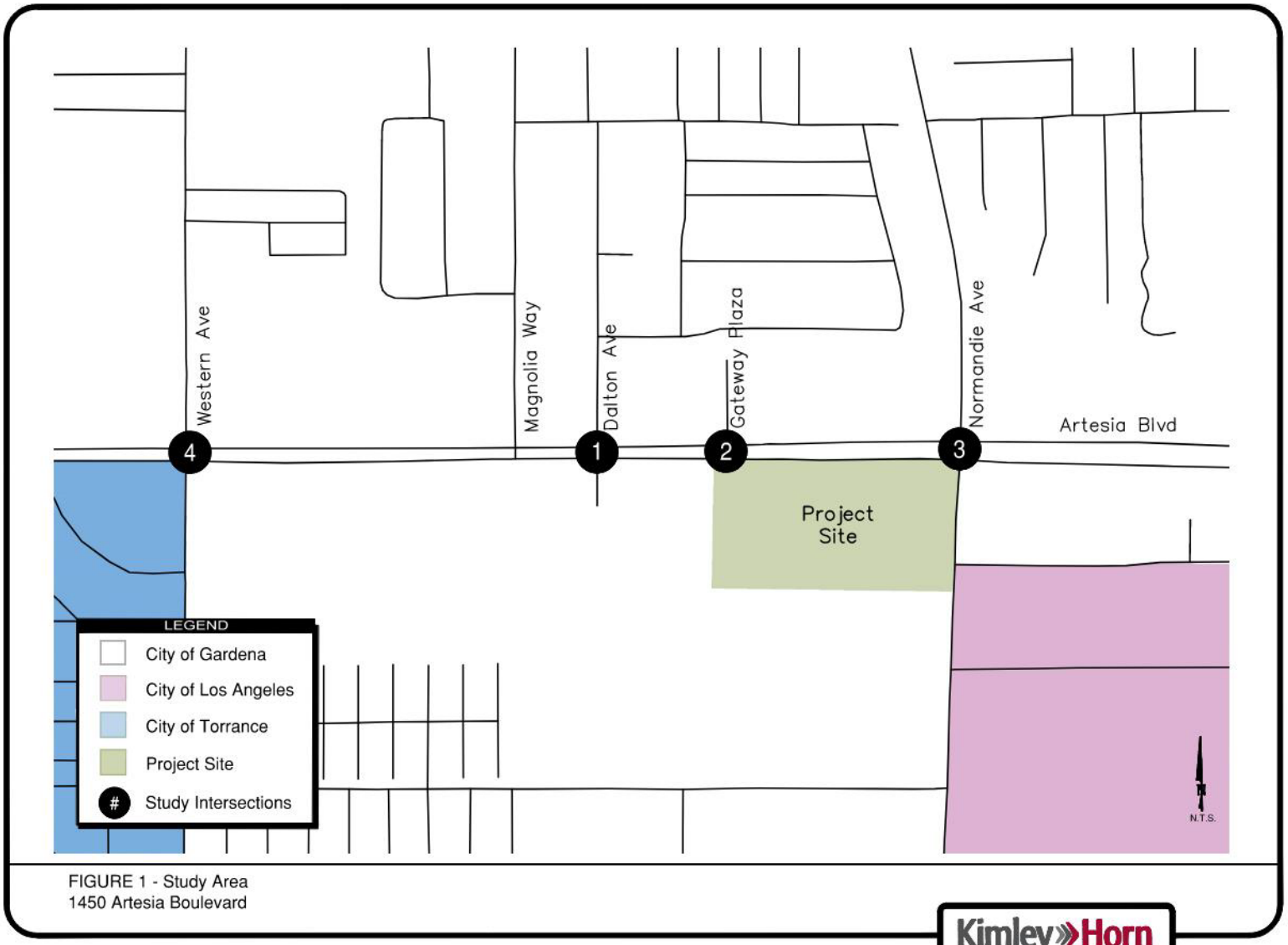


FIGURE 1 - Study Area
1450 Artesia Boulevard

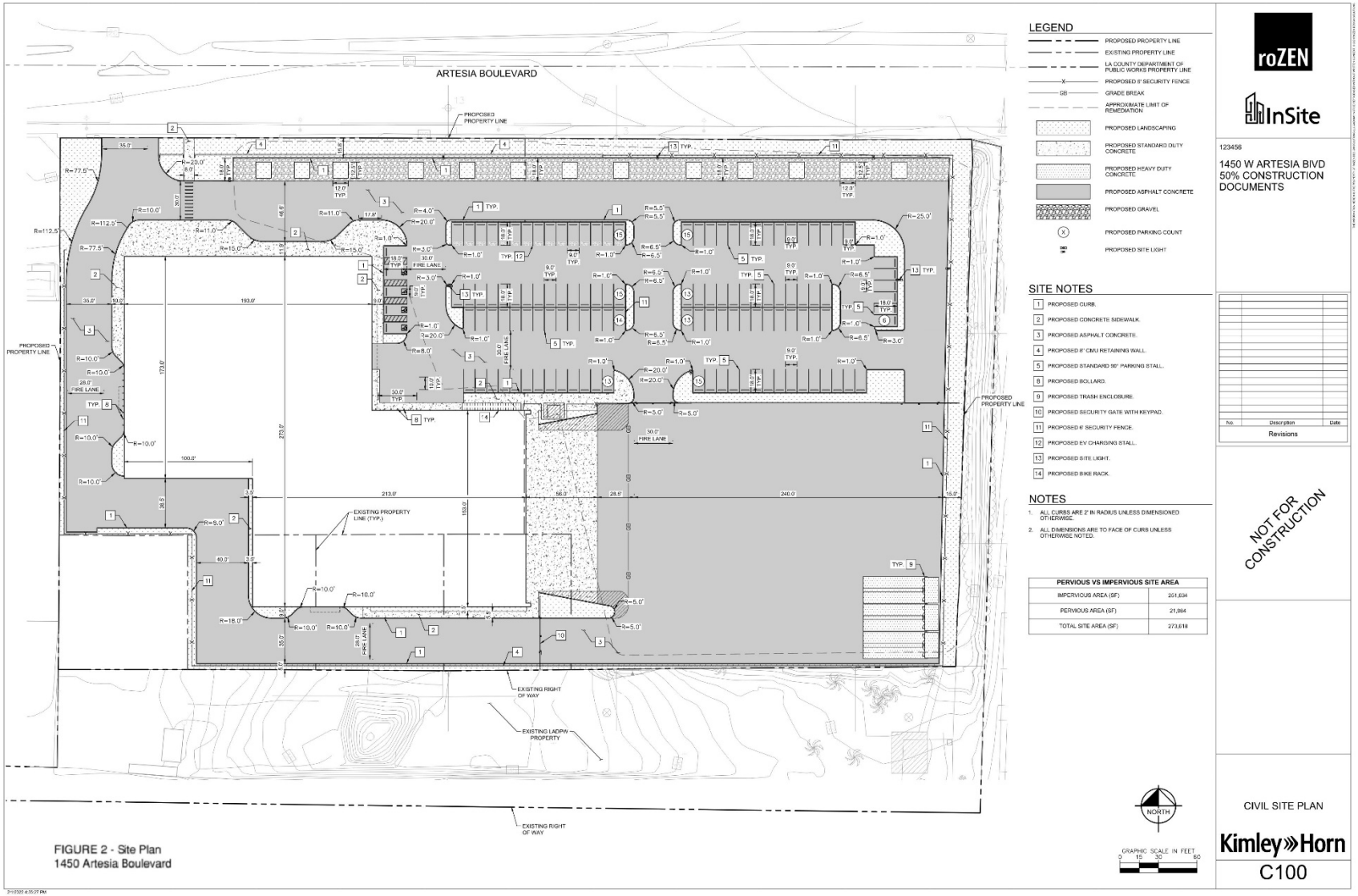


FIGURE 2 - Site Plan
1450 Artesia Boulevard

TRIP GENERATION

EXISTING LAND USES

The northern portion of the Project site is currently occupied by two commercial uses, a U-Haul dealer and sandblasting service, with four commercial buildings totaling approximately 12,064 GSF. Five single-family residential dwelling units (DU) occupy the southern portion of the Project site. The Project proposes to remove all onsite uses (except two DU would remain) and improvements and replace these with the proposed mixed-use development. Therefore, the trips currently associated with the Project site would be taken as a trip credit to offset the new trips that would be generated by the proposed Project.

Trip generation estimates for the existing land uses were developed by collecting AM and PM peak hour traffic count data at the two existing site driveways along Artesia Boulevard. Traffic count data was collected at the two driveways on Tuesday, May 3, 2022. A summary of the existing AM and PM peak hour site trips are provided in **Table 1**.

Table 1: Existing Land Uses Trip Generation – based on Traffic Counts

Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Existing (U-Haul Dealer, Sandblasting Service and Single-Family Detached Housing)	12.064 5	KSF DU	166	3	0	3	10	9	19

Table 2 summarizes the existing land use trip generation credit considering all onsite uses, except two DU, will be removed.

Table 2: Existing Land Uses Trip Credit for Removed Land Uses

Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Existing (U-Haul Dealer, Sandblasting Service and Single-Family Detached Housing)	12.064 3	KSF DU	147	3	0	3	9	8	17

PROJECT TRAFFIC

Weekday daily, and AM and PM peak hour trips were estimated for the Project using the trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. The ITE Land Use Code, trip generation rates, and estimated trips that would be generated by the Project are presented in **Table 3** for the year 2025 when the site will be fully operational.

Table 3: Project Trip Generation

ITE Code	Land Use	Size	Units	Daily Trips	AM Peak			PM Peak		
					In	Out	Total	In	Out	Total
Trip Generation Rates*										
110	General Light Industrial	-	KSF	4.870	0.651	0.089	0.74	0.091	0.559	0.65
151	Mini-Warehouse	-	Storage Units (100s)	17.960	0.617	0.593	1.21	0.840	0.840	1.68
710	General Office Building	-	KSF	10.840	1.338	0.182	1.52	0.245	1.195	1.44
Trip Generation Estimates										
110	General Light Industrial	72.00	KSF	351	47	6	53	7	40	47
151	Mini-Warehouse	14.80	Storage Units (100s)	266	9	9	18	12	12	24
710	General Office Building	10.00	KSF	108	13	2	15	2	12	14
Total Proposed Project Trips				**725**	**69**	**17**	**86**	**21**	**64**	**85**
Net Difference (Proposed Minus Existing)				**578**	**66**	**17**	**83**	**12**	**56**	**68**

**Source: 11th Edition ITE Trip Generation Manual.*

As shown in **Table 3**, the Project is forecast to generate 725 daily trips, including 86 AM peak hour trips and 85 PM peak hour trips. When the trips generated by the existing land uses (to be removed) are subtracted from the proposed Project trip generation estimates, the Project site will generate net additional 578 daily trips, including 83 AM peak hour trips and 68 PM peak hour trips.

PROJECT TRIP DISTRIBUTION

Trip distribution assumptions for the Project trips were developed based on the existing roadway system and land uses in the Project vicinity. As noted previously, the Project site driveway will allow right-in-right-out operations only. It is anticipated that while passenger vehicles would be able to make U-turns at nearest signalized intersections where this movement is allowed, trucks would use a reasonable path along the grid roadway network such that no U-turns would be required. Hence, trip distribution for passenger vehicles and trucks are shown separately. **Figure 3** shows the Project area, study intersections, and trip distribution estimates for passenger vehicles. **Figures 4** and **5** show the trip distribution for entering and exiting trucks, respectively, based on access to the regional roadway facilities.

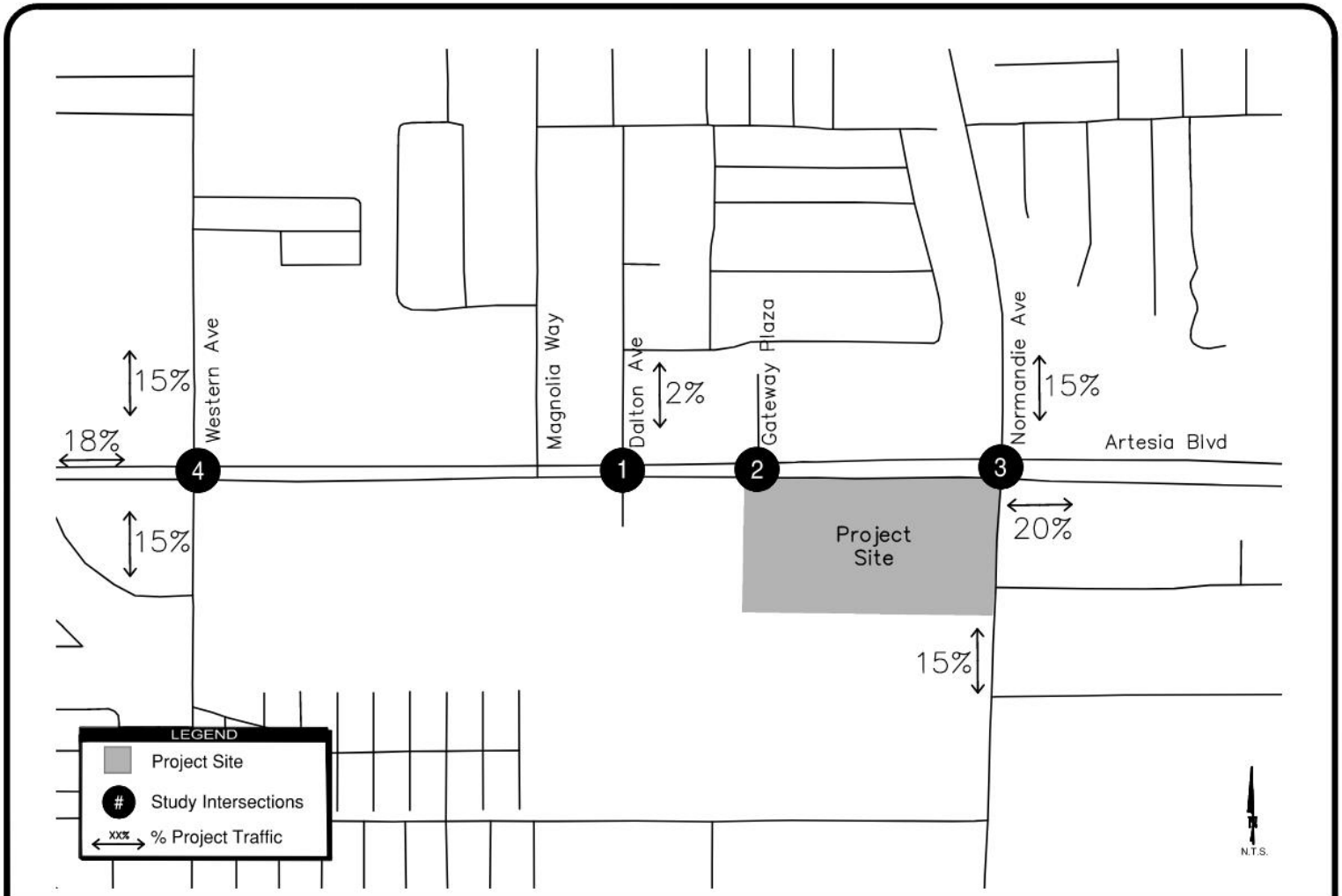


FIGURE 3 - Project Trip Distribution for Passenger Vehicles
1450 Artesia Boulevard

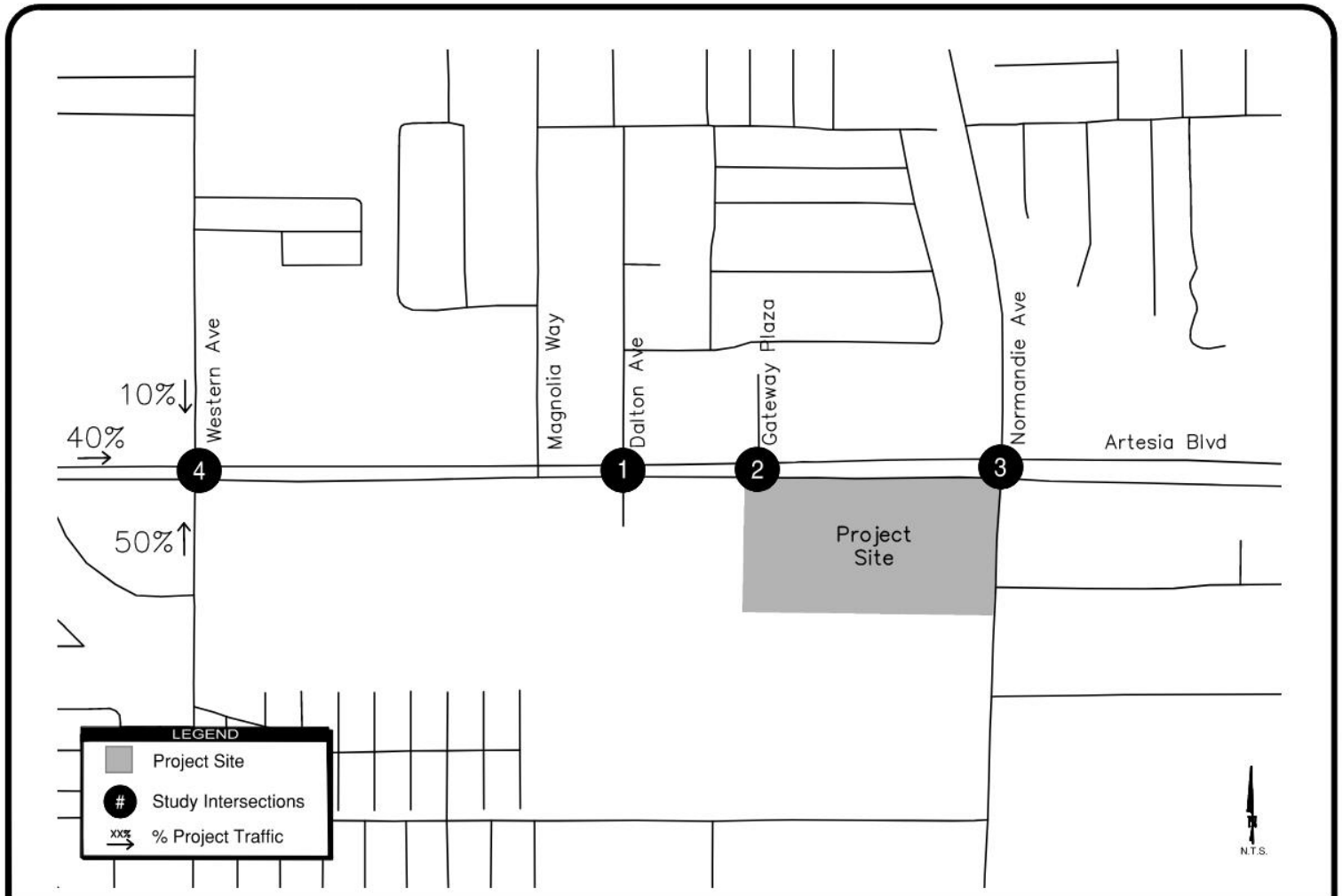


FIGURE 4 - Project Trip Distribution for Entering Trucks
1450 Artesia Boulevard

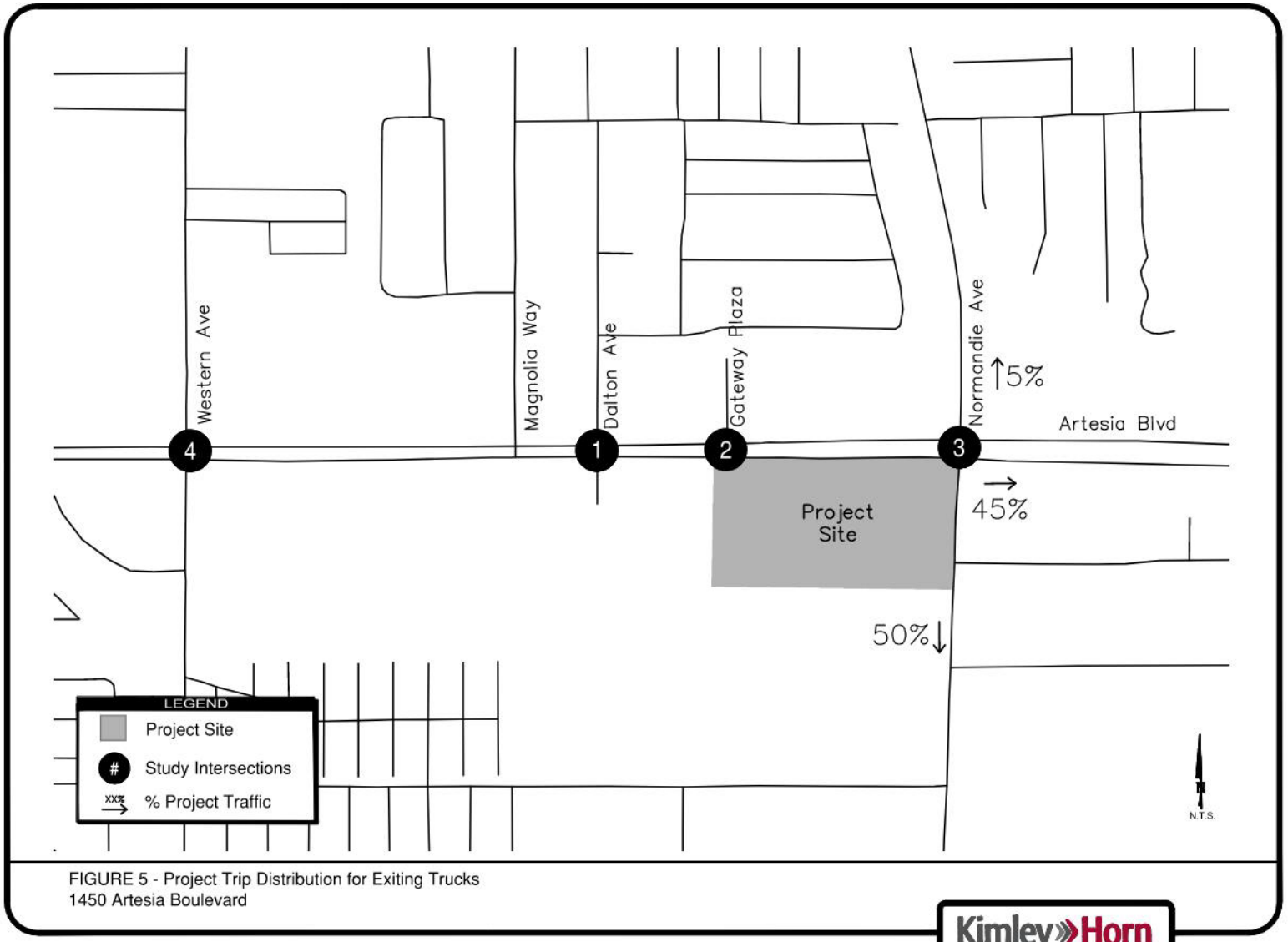


FIGURE 5 - Project Trip Distribution for Exiting Trucks
1450 Artesia Boulevard

APPENDIX B

TRAFFIC COUNT DATA

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 3, 22

LOCATION: Gardena
NORTH & SOUTH: Dalton
EAST & WEST: Artesia

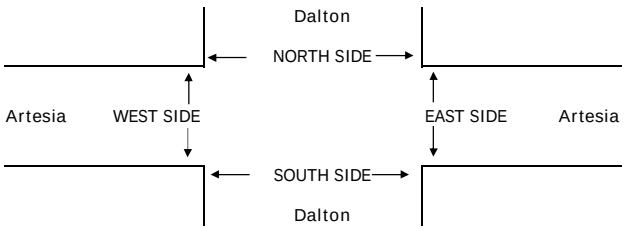
PROJECT #: SC3402
LOCATION #: 1
CONTROL: SIGNAL

NOTES: Queue WB AM

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

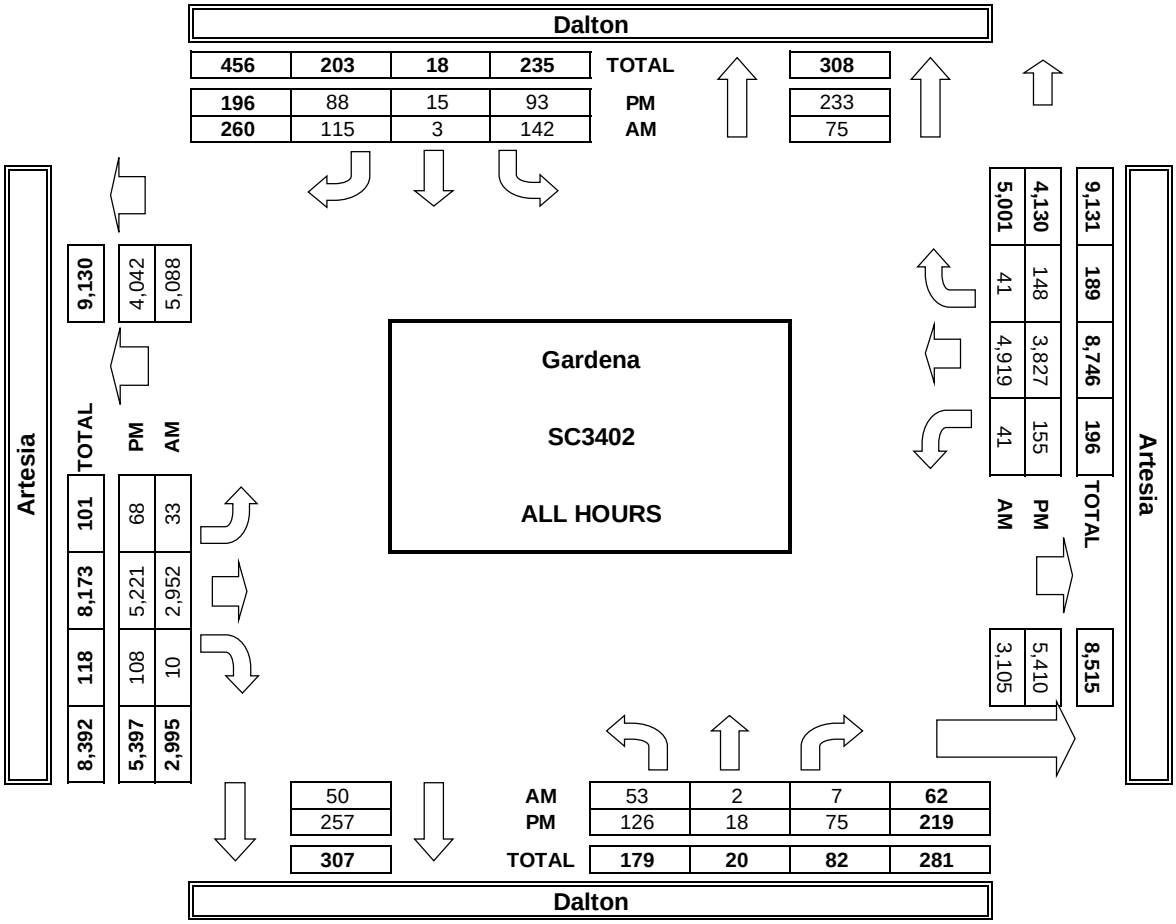
		NORTHBOUND Dalton			SOUTHBOUND Dalton			EASTBOUND Artesia			WESTBOUND Artesia				U-TURNS				
	LANES:	NL 1	NT 0	NR 1	SL 0	ST 1	SR 0	EL 1	ET 3	ER 0	WL 1	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	4	0	1	11	0	3	1	175	0	3	396	6	600	0	0	0	0	0
	7:15 AM	3	0	0	15	0	8	1	235	0	2	374	3	641	0	0	0	0	0
	7:30 AM	4	0	0	9	0	8	3	243	1	1	417	4	690	0	0	1	0	1
	7:45 AM	6	1	1	13	1	7	3	257	1	2	422	2	716	0	0	0	0	0
	8:00 AM	3	0	1	13	2	12	5	261	1	5	414	4	721	0	0	0	1	1
	8:15 AM	5	0	0	15	0	14	3	248	1	6	381	3	676	0	0	0	1	1
	8:30 AM	4	0	1	12	0	13	4	268	1	3	457	4	767	0	0	0	0	0
	8:45 AM	8	1	1	14	0	14	4	280	2	7	413	4	748	0	0	0	1	1
	9:00 AM	5	0	1	12	0	10	3	254	1	4	408	2	700	0	0	0	0	0
	9:15 AM	4	0	0	9	0	12	2	263	1	3	418	4	716	0	0	0	1	1
	9:30 AM	3	0	1	10	0	8	3	242	0	3	425	2	697	0	0	0	0	0
	9:45 AM	4	0	0	9	0	6	1	226	1	2	394	3	646	0	0	0	0	0
	VOLUMES	53	2	7	142	3	115	33	2,952	10	41	4,919	41	8,318	0	0	1	4	5
	APPROACH %	85%	3%	11%	55%	1%	44%	1%	99%	0%	1%	98%	1%						
	APP/DEPART	62	/	75	260	/	50	2,995	/	3,105	5,001	/	5,088	0					
	BEGIN PEAK HR		8:30 AM																
	VOLUMES	21	1	3	47	0	49	13	1,065	5	17	1,696	14	2,931					
	APPROACH %	84%	4%	12%	49%	0%	51%	1%	98%	0%	1%	98%	1%						
	PEAK HR FACTOR		0.625			0.857			0.947			0.930		0.955					
	APP/DEPART	25	/	28	96	/	20	1,083	/	1,117	1,727	/	1,766	0					
PM	3:00 PM	9	1	4	5	1	7	5	419	5	10	281	12	759	0	0	0	0	0
	3:15 PM	11	1	5	9	0	6	2	429	11	9	304	10	797	0	0	0	1	1
	3:30 PM	8	1	6	8	1	5	3	446	9	11	286	14	798	0	0	0	2	2
	3:45 PM	12	2	8	5	2	8	4	425	7	12	297	11	793	0	0	0	1	1
	4:00 PM	14	1	9	7	0	6	2	400	6	7	324	12	788	0	0	0	0	0
	4:15 PM	7	1	4	7	1	6	7	428	10	17	312	13	813	0	0	0	1	1
	4:30 PM	13	2	3	6	1	9	6	431	4	13	323	9	820	0	0	0	3	3
	4:45 PM	12	1	8	5	0	8	5	472	14	13	357	16	911	0	0	0	2	2
	5:00 PM	12	3	8	12	3	8	8	438	13	17	328	15	865	0	0	1	3	4
	5:15 PM	8	1	7	6	4	8	3	411	12	17	330	12	819	0	0	0	4	4
	5:30 PM	12	4	8	10	1	8	12	485	10	17	367	12	946	0	0	0	3	3
	5:45 PM	8	0	5	13	1	9	11	437	7	12	318	12	833	0	0	0	1	1
	VOLUMES	126	18	75	93	15	88	68	5,221	108	155	3,827	148	9,942	0	0	1	21	22
	APPROACH %	58%	8%	34%	47%	8%	45%	1%	97%	2%	4%	93%	4%						
	APP/DEPART	219	/	233	196	/	257	5,397	/	5,410	4,130	/	4,042	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	44	9	31	33	8	32	28	1,806	49	64	1,382	55	3,541					
	APPROACH %	52%	11%	37%	45%	11%	44%	1%	96%	3%	4%	92%	4%						
	PEAK HR FACTOR		0.875			0.793			0.929			0.948		0.936					
	APP/DEPART	84	/	91	73	/	109	1,883	/	1,882	1,501	/	1,459	0					

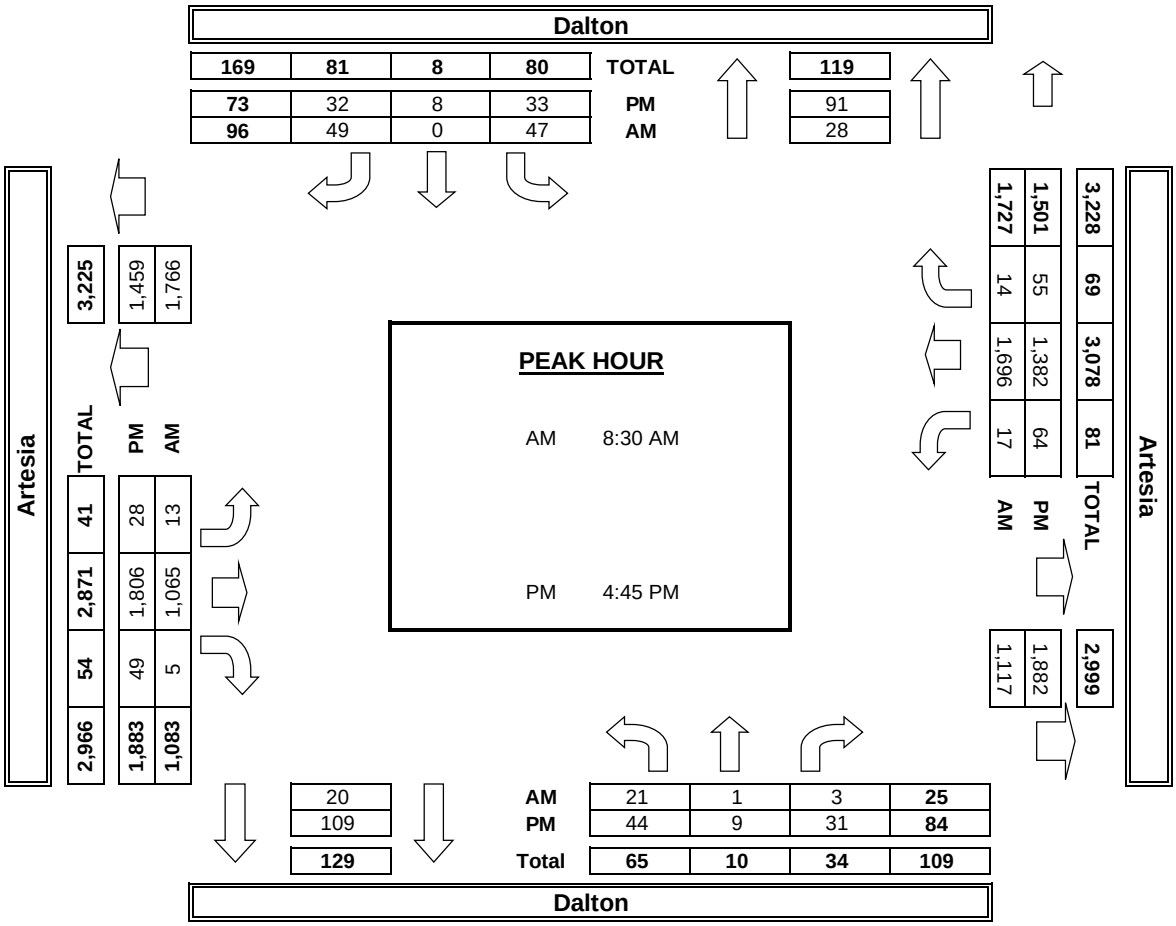


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	7:15 AM	1	2	0	0	3	1	0	0	0	1	0	2	0	0	2
	7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	7:45 AM	2	0	1	0	3	1	0	1	0	2	1	0	0	0	1
	8:00 AM	4	1	0	0	5	3	0	0	0	3	1	1	0	0	2
	8:15 AM	3	2	2	0	7	3	1	2	0	6	0	1	0	0	1
	8:30 AM	1	3	1	4	9	1	3	1	4	9	0	0	0	0	0
	8:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	9:00 AM	1	1	1	0	3	0	1	1	0	2	1	0	0	0	1
	9:15 AM	1	0	1	0	2	1	0	1	0	2	0	0	0	0	0
	9:30 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	9:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	TOTAL	16	10	6	5	37	13	5	6	5	29	3	5	0	0	8
	AM BEGIN PEAK HR			8:30 AM			3	4	3	4	14	1	0	0	0	1
PM	3:00 PM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	3:15 PM	2	1	0	1	4	2	1	0	1	4	0	0	0	0	0
	3:30 PM	1	1	1	2	5	1	1	1	2	5	0	0	0	0	0
	3:45 PM	2	1	1	0	4	2	0	1	0	3	0	1	0	0	1
	4:00 PM	1	0	0	2	3	1	0	0	1	2	0	0	0	1	1
	4:15 PM	4	1	1	2	8	3	1	1	2	7	1	0	0	0	1
	4:30 PM	1	0	1	2	4	1	0	1	2	4	0	0	0	0	0
	4:45 PM	4	1	0	4	9	4	1	0	4	9	0	0	0	0	0
	5:00 PM	3	4	3	1	11	3	2	3	1	9	0	2	0	0	2
	5:15 PM	3	1	2	0	6	3	0	2	0	5	0	1	0	0	1
	5:30 PM	0	3	3	0	6	0	2	3	0	5	0	1	0	0	1
	5:45 PM	3	1	0	2	6	2	1	0	2	5	1	0	0	0	1
	TOTAL	25	14	12	17	68	23	9	12	16	60	2	5	0	1	8
	PM BEGIN PEAK HR			4:45 PM			10	5	8	5	28	0	4	0	0	4

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 3, 22

LOCATION: Gardena
NORTH & SOUTH: Gateway Plaza
EAST & WEST: Artesia

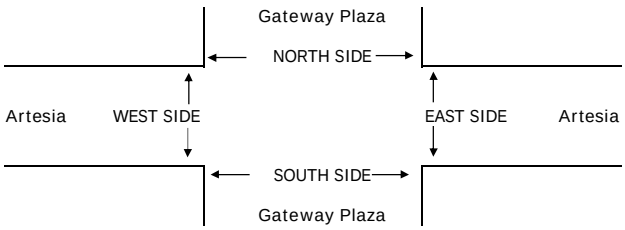
PROJECT #: SC3403
LOCATION #: 2
CONTROL: STOP S

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

Add U-Turns to Left Turns

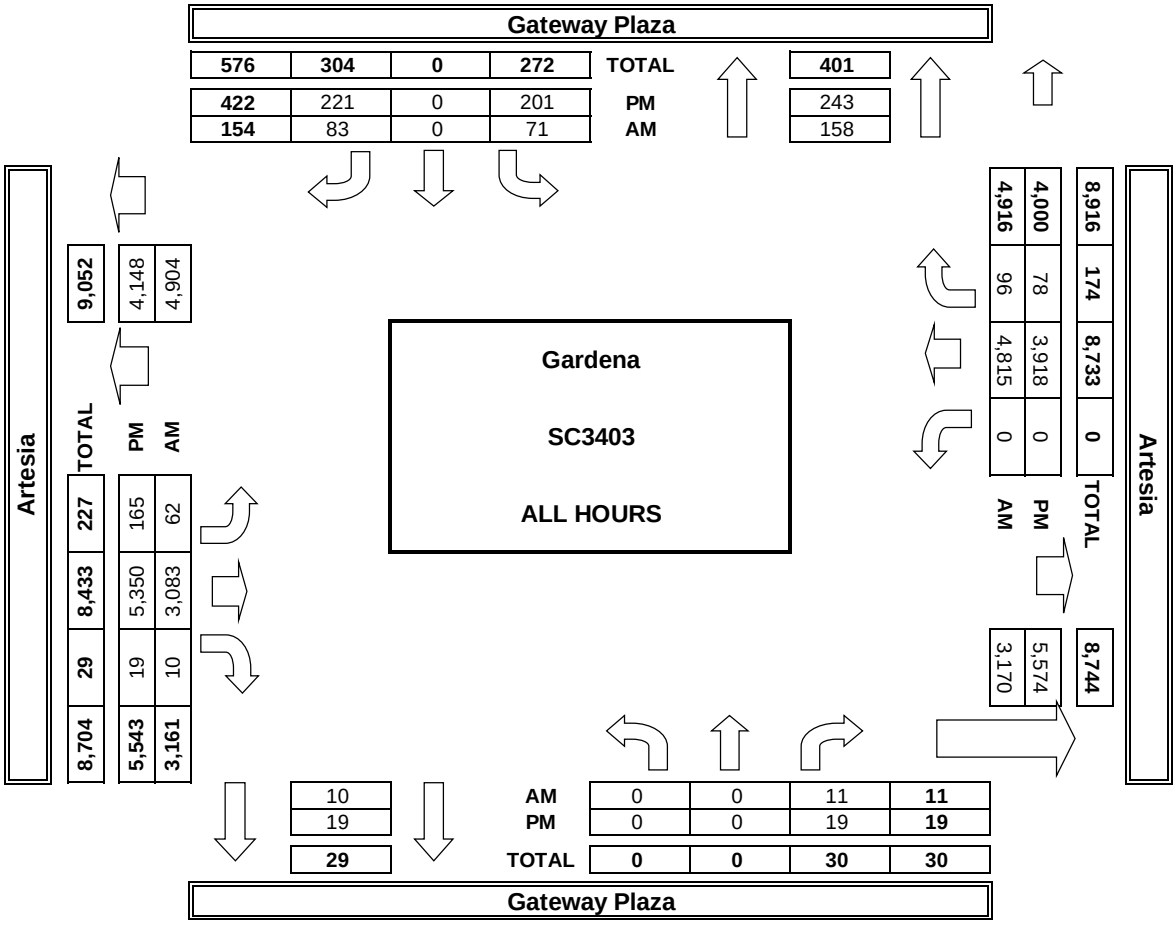
		NORTHBOUND Gateway Plaza			SOUTHBOUND Gateway Plaza			EASTBOUND Artesia			WESTBOUND Artesia				U-TURNS				
	LANES:	NL X	NT X	NR 0	SL 1	ST X	SR 1	EL 1	ET 3	ER 0	WL X	WT 4	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	3	3	0	2	2	188	0	0	362	3	563	0	0	1	0	1
	7:15 AM	0	0	0	3	0	4	2	251	1	0	362	6	629	0	0	0	0	0
	7:30 AM	0	0	2	0	0	5	3	244	0	0	414	2	670	0	0	0	1	1
	7:45 AM	0	0	0	2	0	2	3	284	1	0	453	5	750	0	0	0	0	0
	8:00 AM	0	0	0	6	0	7	6	274	0	0	409	7	709	0	0	0	0	0
	8:15 AM	0	0	0	8	0	2	10	264	0	0	378	13	675	0	0	3	0	3
	8:30 AM	0	0	0	6	0	5	8	265	2	0	446	7	739	0	0	0	2	2
	8:45 AM	0	0	2	10	0	9	10	289	1	0	402	13	736	0	0	0	1	1
	9:00 AM	0	0	0	3	0	11	4	250	1	0	413	10	692	0	0	0	0	0
	9:15 AM	0	0	2	9	0	13	6	263	2	0	401	9	705	0	0	1	0	1
	9:30 AM	0	0	1	15	0	17	7	259	1	0	423	8	731	0	0	0	0	0
	9:45 AM	0	0	1	6	0	6	1	252	1	0	352	13	632	0	0	1	1	2
	VOLUMES	0	0	11	71	0	83	62	3,083	10	0	4,815	96	8,242	0	0	6	5	11
	APPROACH %	0%	0%	100%	46%	0%	54%	2%	98%	0%	0%	98%	2%						
	APP/DEPART	11	/	158	154	/	10	3,161	/	3,170	4,916	/	4,904	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	0	0	22	0	16	27	1,087	3	0	1,686	32	2,878					
	APPROACH %	0%	0%	0%	58%	0%	42%	2%	97%	0%	0%	98%	2%						
	PEAK HR FACTOR		0.000			0.731			0.972			0.939		0.959					
	APP/DEPART	0	/	59	38	/	3	1,120	/	1,111	1,720	/	1,705	0					
PM	3:00 PM	0	0	0	18	0	18	10	428	1	0	300	7	782	0	0	2	0	2
	3:15 PM	0	0	4	16	0	18	10	450	1	0	308	6	813	0	0	0	0	0
	3:30 PM	0	0	1	16	0	16	13	453	3	0	290	7	799	0	0	2	0	2
	3:45 PM	0	0	1	10	0	13	13	423	1	0	297	5	763	0	0	0	0	0
	4:00 PM	0	0	2	24	0	10	16	440	0	0	331	9	832	0	0	1	0	1
	4:15 PM	0	0	0	16	0	18	11	431	1	0	317	9	803	0	0	1	1	2
	4:30 PM	0	0	0	26	0	14	12	443	1	0	326	8	830	0	0	1	0	1
	4:45 PM	0	0	1	14	0	25	19	473	3	0	363	6	904	0	0	0	2	2
	5:00 PM	0	0	2	13	0	26	15	441	2	0	332	5	836	0	0	1	1	2
	5:15 PM	0	0	5	12	0	21	13	428	2	0	340	5	826	0	0	0	0	0
	5:30 PM	0	0	1	21	0	23	17	486	3	0	375	5	931	0	0	0	0	0
	5:45 PM	0	0	2	15	0	19	16	454	1	0	339	6	852	0	0	1	0	1
	VOLUMES	0	0	19	201	0	221	165	5,350	19	0	3,918	78	9,984	0	0	9	4	13
	APPROACH %	0%	0%	100%	48%	0%	52%	3%	97%	0%	0%	98%	2%						
	APP/DEPART	19	/	243	422	/	19	5,543	/	5,574	4,000	/	4,148	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	0	0	9	60	0	95	64	1,828	10	0	1,410	21	3,501					
	APPROACH %	0%	0%	100%	39%	0%	61%	3%	96%	1%	0%	98%	1%						
	PEAK HR FACTOR		0.450			0.881			0.940			0.943		0.940					
	APP/DEPART	9	/	85	155	/	10	1,903	/	1,900	1,434	/	1,506	0					

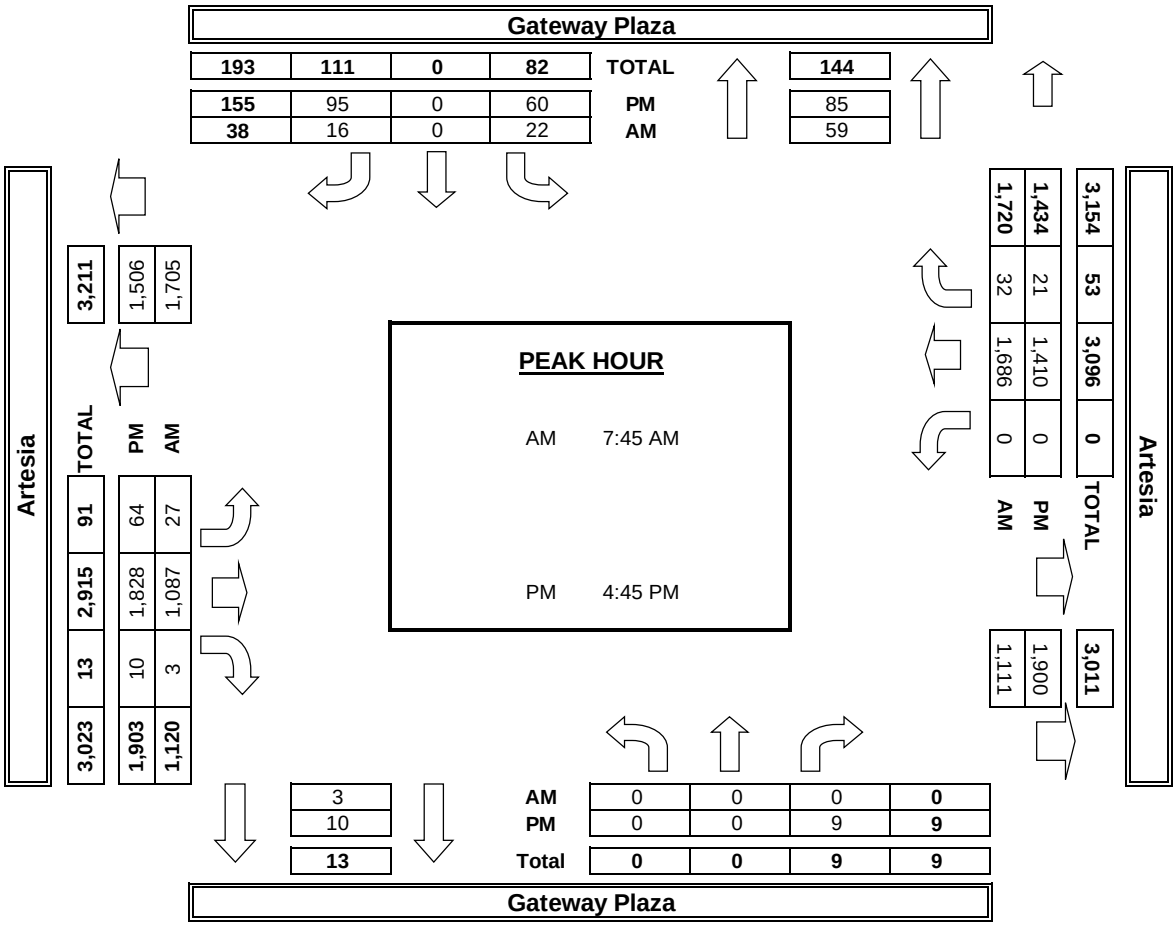


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	7:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	7:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:00 AM	4	1	0	0	5	4	0	0	0	4	0	1	0	0	1
	8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:30 AM	3	0	0	1	4	3	0	0	0	3	0	0	0	1	1
	8:45 AM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
	9:00 AM	2	0	0	1	3	1	0	0	1	2	1	0	0	0	1
	9:15 AM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	9:30 AM	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	18	2	0	4	24	14	0	0	3	17	4	2	0	1	7
	AM BEGIN PEAK HR	7:45 AM					9	0	0	0	9	0	1	0	1	2
PM	3:00 PM	2	1	0	0	3	1	1	0	0	2	1	0	0	0	1
	3:15 PM	1	3	0	0	4	1	3	0	0	4	0	0	0	0	0
	3:30 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	3:45 PM	6	8	0	0	14	6	8	0	0	14	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	4:30 PM	1	2	0	0	3	0	2	0	0	2	1	0	0	0	1
	4:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:00 PM	7	1	0	0	8	7	0	0	0	7	0	1	0	0	1
	5:15 PM	1	3	0	0	4	1	1	0	0	2	0	2	0	0	2
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	5:45 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	TOTAL	22	21	0	0	43	18	17	0	0	35	4	4	0	0	8
	PM BEGIN PEAK HR	4:45 PM					9	1	0	0	10	0	4	0	0	4

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 3, 22

LOCATION: Gardena
NORTH & SOUTH: Normandie
EAST & WEST: Artesia

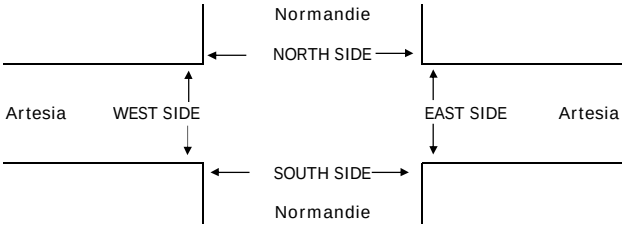
PROJECT #: SC3403
LOCATION #: 3
CONTROL: SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — N / W / E / S

Add U-Turns to Left Turns

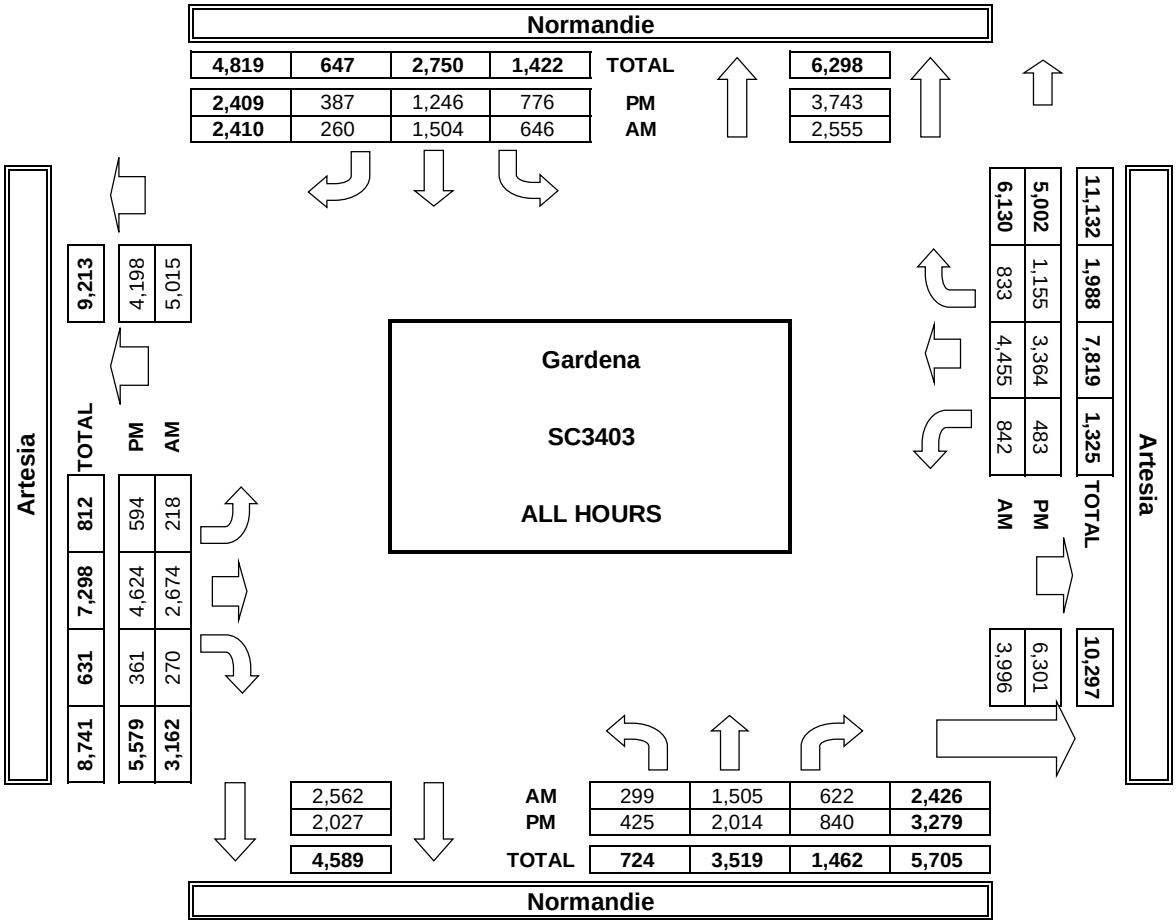
		NORTHBOUND Normandie			SOUTHBOUND Normandie			EASTBOUND Artesia			WESTBOUND Artesia				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 2	ST 2	SR 0	EL 2	ET 4	ER 0	WL 2	WT 4	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	13	76	31	42	78	16	9	179	8	96	317	68	933	0	0	1	5	6
	7:15 AM	21	77	53	41	101	14	12	232	13	76	385	115	1,140	0	0	0	3	3
	7:30 AM	24	115	47	60	142	10	14	201	18	96	367	66	1,160	0	0	0	5	5
	7:45 AM	28	141	55	71	193	27	10	230	23	76	368	91	1,313	0	0	0	9	9
	8:00 AM	34	167	69	95	185	29	19	236	33	56	383	77	1,383	0	0	0	4	4
	8:15 AM	41	195	84	54	182	30	25	222	38	66	352	52	1,341	0	0	0	6	6
	8:30 AM	31	153	59	51	137	30	20	225	24	90	413	69	1,302	0	0	0	7	7
	8:45 AM	23	124	47	54	102	28	32	246	30	55	381	73	1,195	0	0	0	4	4
	9:00 AM	26	131	52	45	110	23	21	221	27	67	378	64	1,165	0	0	0	3	3
	9:15 AM	22	118	45	50	98	18	26	226	22	55	370	59	1,109	0	0	0	2	2
	9:30 AM	17	106	39	40	85	20	17	233	15	52	388	52	1,064	0	0	0	4	4
	9:45 AM	19	102	41	43	91	15	13	223	19	57	353	47	1,023	0	0	0	2	2
	VOLUMES	299	1,505	622	646	1,504	260	218	2,674	270	842	4,455	833	14,128	0	0	1	54	55
	APPROACH %	12%	62%	26%	27%	62%	11%	7%	85%	9%	14%	73%	14%						
	APP/DEPART	2,426	/	2,555	2,410	/	2,562	3,162	/	3,996	6,130	/	5,015	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	134	656	267	271	697	116	74	913	118	288	1,516	289	5,339					
	APPROACH %	13%	62%	25%	25%	64%	11%	7%	83%	11%	14%	72%	14%						
	PEAK HR FACTOR		0.826			0.877			0.959			0.915		0.965					
	APP/DEPART	1,057	/	1,019	1,084	/	1,077	1,105	/	1,477	2,093	/	1,766	0					
PM	3:00 PM	32	153	66	58	94	26	38	379	23	30	257	97	1,253	0	0	1	3	4
	3:15 PM	28	164	61	68	99	33	50	390	29	38	261	83	1,304	0	0	2	4	6
	3:30 PM	35	158	65	57	103	28	54	384	25	38	241	101	1,289	0	0	2	3	5
	3:45 PM	26	162	72	65	96	35	43	371	30	35	248	88	1,271	0	0	1	6	7
	4:00 PM	31	168	69	74	101	29	51	364	24	26	260	110	1,307	0	0	1	2	3
	4:15 PM	39	160	69	59	112	37	48	416	28	50	279	81	1,378	0	0	3	7	10
	4:30 PM	39	174	69	69	106	40	57	377	25	40	253	100	1,349	0	0	2	7	9
	4:45 PM	24	159	78	69	102	35	54	417	27	51	374	92	1,482	0	0	1	7	8
	5:00 PM	42	196	78	76	106	24	38	340	41	32	291	85	1,349	0	1	3	6	10
	5:15 PM	46	187	74	67	117	34	60	403	29	58	283	104	1,462	0	1	3	7	11
	5:30 PM	38	172	68	62	97	32	52	405	36	50	330	110	1,452	0	0	2	7	9
	5:45 PM	45	161	71	52	113	34	49	378	44	35	287	104	1,373	0	0	1	4	5
	VOLUMES	425	2,014	840	776	1,246	387	594	4,624	361	483	3,364	1,155	16,269	0	2	22	63	87
	APPROACH %	13%	61%	26%	32%	52%	16%	11%	83%	6%	10%	67%	23%						
	APP/DEPART	3,279	/	3,743	2,409	/	2,027	5,579	/	6,301	5,002	/	4,198	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	150	714	298	274	422	125	204	1,565	133	191	1,278	391	5,745					
	APPROACH %	13%	61%	26%	33%	51%	15%	11%	82%	7%	10%	69%	21%						
	PEAK HR FACTOR		0.919			0.942			0.955			0.899		0.969					
	APP/DEPART	1,162	/	1,302	821	/	719	1,902	/	2,162	1,860	/	1,562	0					

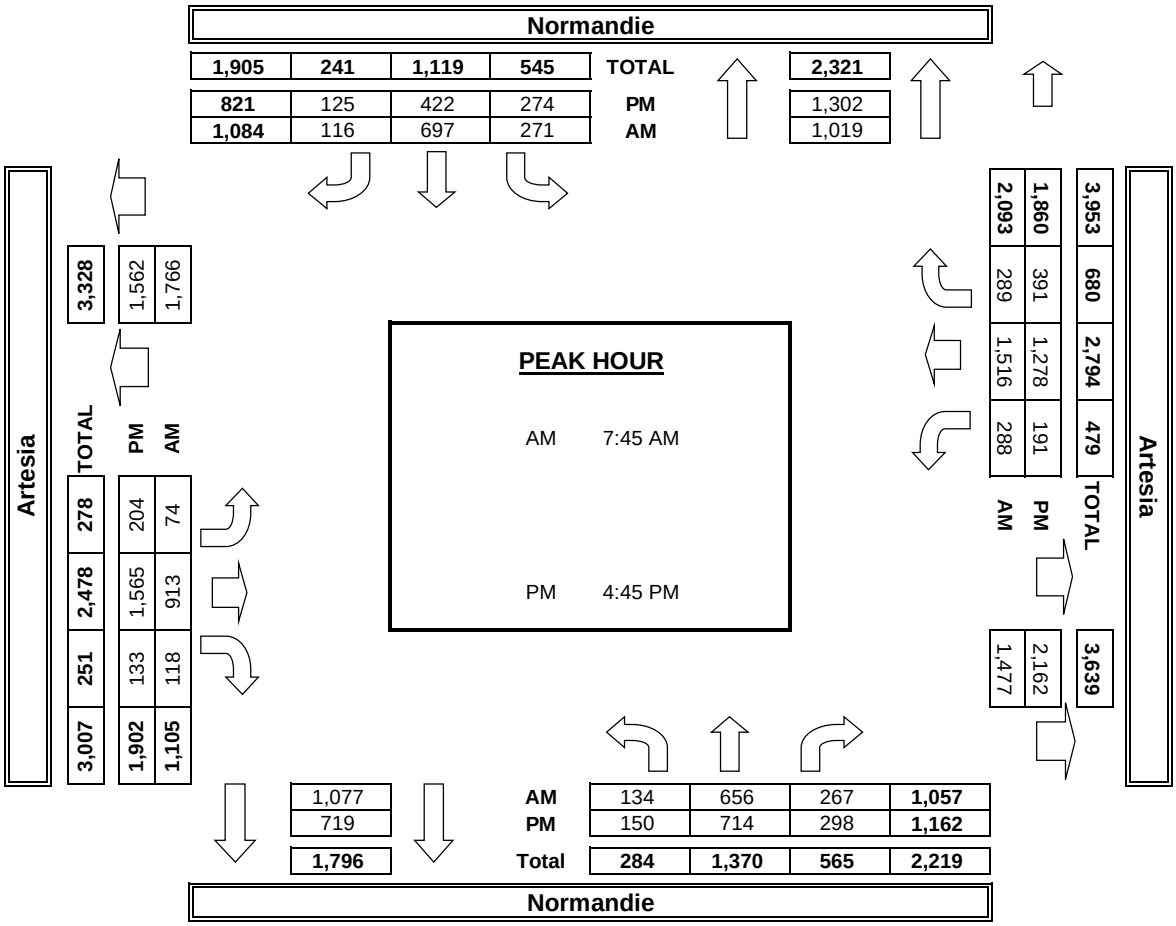


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	2	1	0	5	2	1	0	0	3	0	1	1	0	2
	7:15 AM	0	2	4	0	6	0	0	3	0	3	0	2	1	0	3
	7:30 AM	2	1	3	1	7	2	0	3	0	5	0	1	0	1	2
	7:45 AM	3	0	5	0	8	3	0	5	0	8	0	0	0	0	0
	8:00 AM	4	3	9	1	17	4	2	8	1	15	0	1	1	0	2
	8:15 AM	1	1	13	0	15	1	1	11	0	13	0	0	2	0	2
	8:30 AM	4	3	2	0	9	3	2	2	0	7	1	1	0	0	2
	8:45 AM	1	4	5	1	11	1	3	3	1	8	0	1	2	0	3
	9:00 AM	1	2	4	0	7	1	2	4	0	7	0	0	0	0	0
	9:15 AM	2	1	1	1	5	2	0	1	1	4	0	1	0	0	1
	9:30 AM	1	1	3	0	5	1	1	2	0	4	0	0	1	0	1
	9:45 AM	1	1	2	0	4	1	1	2	0	4	0	0	0	0	0
	TOTAL	22	21	52	4	99	21	13	44	3	81	1	8	8	1	18
	AM BEGIN PEAK HR			7:45 AM			11	5	26	1	43	1	2	3	0	6
PM	3:00 PM	1	1	3	0	5	1	1	3	0	5	0	0	0	0	0
	3:15 PM	2	0	4	1	7	2	0	4	1	7	0	0	0	0	0
	3:30 PM	3	2	7	0	12	3	1	7	0	11	0	1	0	0	1
	3:45 PM	1	2	5	0	8	1	2	5	0	8	0	0	0	0	0
	4:00 PM	2	1	6	0	9	2	1	6	0	9	0	0	0	0	0
	4:15 PM	2	3	9	2	16	2	3	9	2	16	0	0	0	0	0
	4:30 PM	2	4	7	0	13	2	4	7	0	13	0	0	0	0	0
	4:45 PM	2	2	5	0	9	2	2	4	0	8	0	0	1	0	1
	5:00 PM	7	1	11	1	20	7	0	10	1	18	0	1	1	0	2
	5:15 PM	4	3	6	0	13	4	1	5	0	10	0	2	1	0	3
	5:30 PM	2	1	2	0	5	2	0	2	0	4	0	1	0	0	1
	5:45 PM	2	1	6	1	10	1	1	2	1	5	1	0	4	0	5
	TOTAL	30	21	71	5	127	29	16	64	5	114	1	5	7	0	13
	PM BEGIN PEAK HR			4:45 PM			15	3	21	1	40	0	4	3	0	7

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Aug 30, 22

LOCATION: Gardena
NORTH & SOUTH: Western
EAST & WEST: Artesia

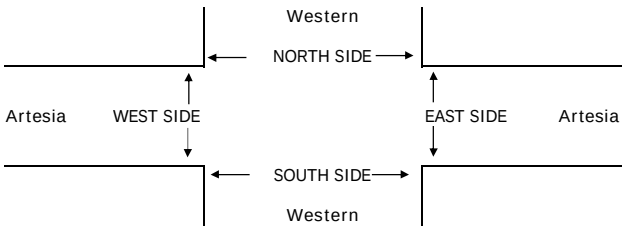
PROJECT #: SC3402
LOCATION #: 4
CONTROL: SIGNAL

NOTES: Queue EB PM

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

☑ Add U-Turns to Left Turns

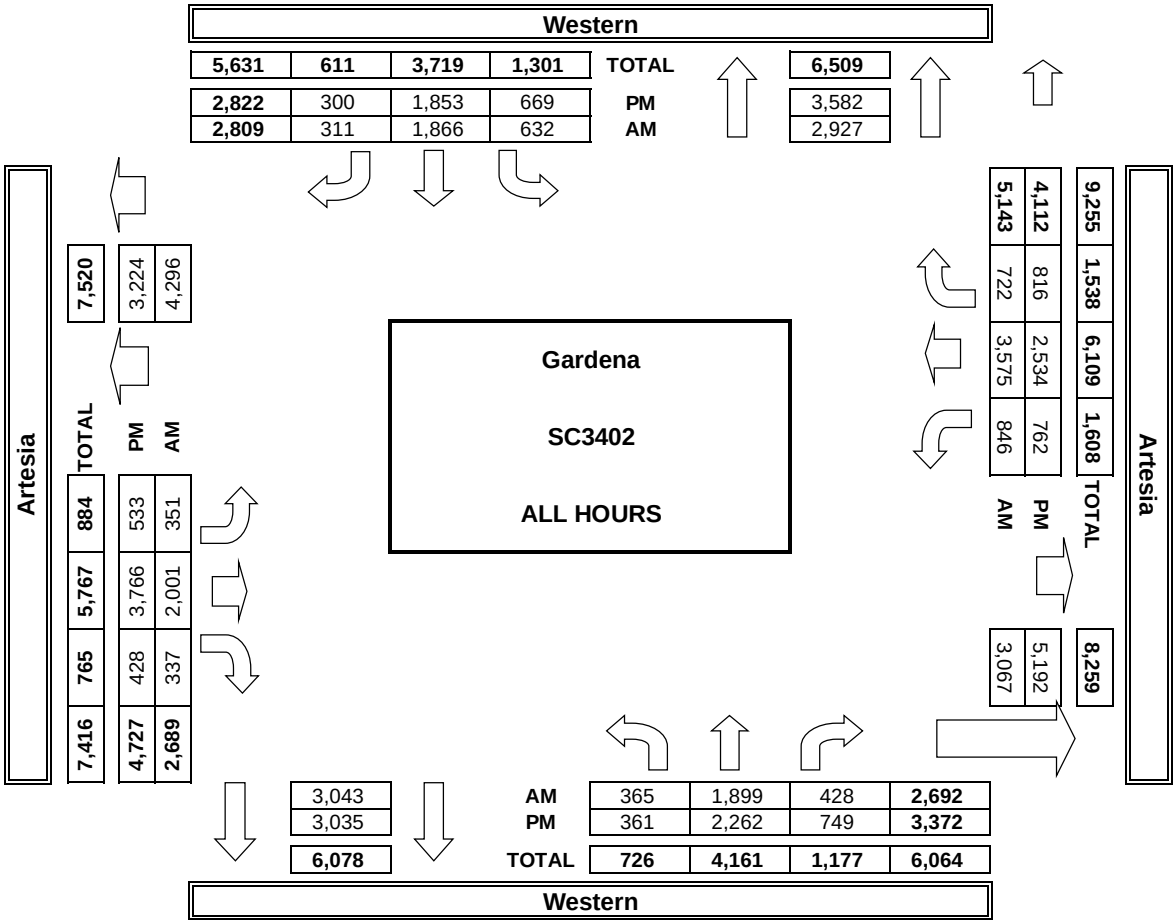
		NORTHBOUND Western			SOUTHBOUND Western			EASTBOUND Artesia			WESTBOUND Artesia				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 2	ST 2	SR 1	EL 1	ET 3	ER 1	WL 2	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	12	109	24	46	132	18	10	116	9	48	346	28	898	0	0	1	0	1
	7:15 AM	19	119	29	51	129	14	25	179	11	46	382	45	1,049	0	0	2	0	2
	7:30 AM	32	188	34	52	185	17	21	152	20	48	317	72	1,138	0	0	4	0	4
	7:45 AM	34	146	35	55	177	23	29	184	22	78	315	61	1,159	0	0	2	1	3
	8:00 AM	33	155	55	81	182	24	16	195	29	64	346	63	1,243	0	0	2	0	2
	8:15 AM	42	210	33	55	209	23	26	172	30	75	270	66	1,211	0	0	1	0	1
	8:30 AM	38	194	33	37	148	26	35	186	36	80	333	67	1,213	0	0	9	0	9
	8:45 AM	40	170	36	33	147	20	45	168	40	81	320	83	1,183	0	0	8	0	8
	9:00 AM	33	149	38	62	144	47	35	187	32	82	295	74	1,178	0	0	6	1	7
	9:15 AM	19	190	42	54	154	41	47	162	46	73	192	56	1,076	0	0	3	2	5
	9:30 AM	33	122	29	56	134	38	33	156	31	104	200	47	983	0	0	3	2	5
	9:45 AM	30	147	40	50	125	20	29	144	31	67	259	60	1,002	0	0	4	0	4
	VOLUMES	365	1,899	428	632	1,866	311	351	2,001	337	846	3,575	722	13,333	0	0	45	6	51
	APPROACH %	14%	71%	16%	22%	66%	11%	13%	74%	13%	16%	70%	14%						
	APP/DEPART	2,692	/	2,927	2,809	/	3,043	2,689	/	3,067	5,143	/	4,296	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	153	729	157	206	686	93	122	721	135	300	1,269	279	4,850					
	APPROACH %	15%	70%	15%	21%	70%	9%	12%	74%	14%	16%	69%	15%						
	PEAK HR FACTOR		0.911			0.858			0.951			0.955		0.975					
	APP/DEPART	1,039	/	1,110	985	/	1,121	978	/	1,084	1,848	/	1,535	0					
PM	3:00 PM	28	192	70	70	148	26	43	235	27	61	145	31	1,076	0	0	0	0	0
	3:15 PM	35	183	45	48	136	20	38	273	44	69	215	63	1,169	0	0	2	1	3
	3:30 PM	26	160	60	70	164	16	48	306	41	63	184	66	1,204	0	0	2	0	2
	3:45 PM	27	236	70	50	152	28	51	353	31	42	175	67	1,282	0	0	3	0	3
	4:00 PM	21	191	69	50	143	29	40	304	33	73	211	71	1,235	0	0	1	1	2
	4:15 PM	38	196	74	57	154	27	51	338	39	53	236	74	1,337	0	0	6	1	7
	4:30 PM	31	176	48	44	151	28	29	363	31	69	209	72	1,251	0	0	3	0	3
	4:45 PM	36	174	51	59	157	20	42	309	30	57	218	58	1,211	0	0	1	2	3
	5:00 PM	27	184	64	38	175	32	49	294	45	63	250	66	1,287	0	0	4	0	4
	5:15 PM	23	188	60	51	154	19	48	307	42	71	223	97	1,283	0	0	1	1	2
	5:30 PM	34	183	66	71	137	26	39	349	35	68	224	73	1,305	0	0	3	2	5
	5:45 PM	35	199	72	61	182	29	55	335	30	73	244	78	1,393	0	0	3	0	3
	VOLUMES	361	2,262	749	669	1,853	300	533	3,766	428	762	2,534	816	15,033	0	0	29	8	37
	APPROACH %	11%	67%	22%	24%	66%	11%	11%	80%	9%	19%	62%	20%						
	APP/DEPART	3,372	/	3,582	2,822	/	3,035	4,727	/	5,192	4,112	/	3,224	0					
	BEGIN PEAK HR		5:00 PM																
	VOLUMES	119	754	262	221	648	106	191	1,285	152	275	941	314	5,268					
	APPROACH %	10%	66%	23%	23%	66%	11%	12%	79%	9%	18%	62%	21%						
	PEAK HR FACTOR		0.927			0.896			0.962			0.968		0.945					
	APP/DEPART	1,135	/	1,248	975	/	1,072	1,628	/	1,771	1,530	/	1,177	0					

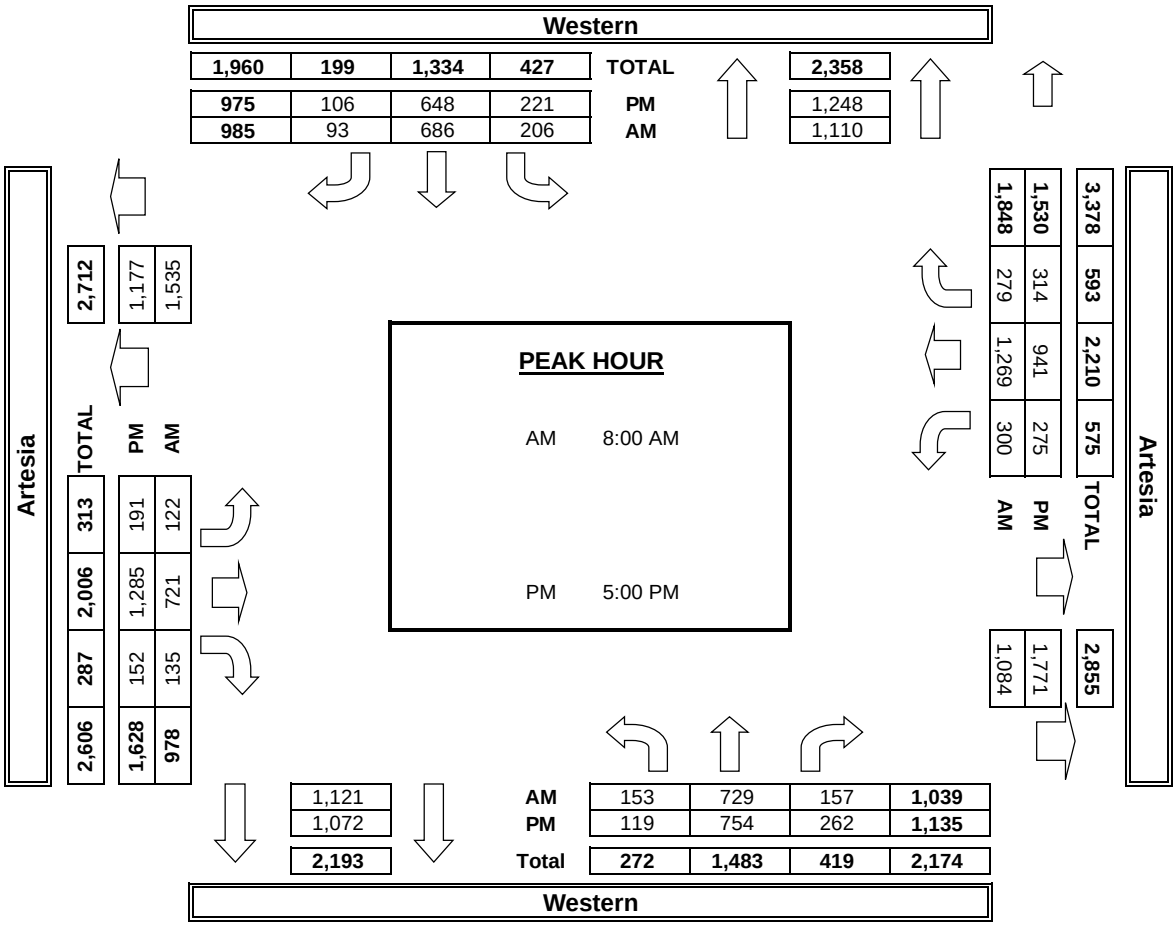


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	5	3	3	6	17	5	2	2	6	15	0	1	1	0	2
	7:15 AM	2	6	1	7	16	2	4	1	5	12	0	2	0	2	4
	7:30 AM	1	1	1	1	4	1	0	0	1	2	0	1	1	0	2
	7:45 AM	8	2	6	2	18	8	1	5	2	16	0	1	1	0	2
	8:00 AM	5	0	1	2	8	4	0	1	1	6	1	0	0	1	2
	8:15 AM	2	0	7	2	11	2	0	5	2	9	0	0	2	0	2
	8:30 AM	2	0	5	1	8	1	0	3	1	5	1	0	2	0	3
	8:45 AM	2	1	1	1	5	2	1	1	1	5	0	0	0	0	0
	9:00 AM	2	0	1	1	4	2	0	1	1	4	0	0	0	0	0
	9:15 AM	0	3	7	0	10	0	3	7	0	10	0	0	0	0	0
	9:30 AM	2	0	4	0	6	1	0	3	0	4	1	0	1	0	2
	9:45 AM	2	2	2	0	6	2	2	2	0	6	0	0	0	0	0
	TOTAL	33	18	39	23	113	30	13	31	20	94	3	5	8	3	19
	AM BEGIN PEAK HR			8:00 AM			9	1	10	5	25	2	0	4	1	7
PM	3:00 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	3:15 PM	3	2	3	3	11	3	2	2	3	10	0	0	1	0	1
	3:30 PM	2	3	0	4	9	2	2	0	3	7	0	1	0	1	2
	3:45 PM	0	1	7	2	10	0	1	6	1	8	0	0	1	1	2
	4:00 PM	4	3	8	3	18	4	2	7	1	14	0	1	1	2	4
	4:15 PM	2	5	1	3	11	1	5	1	2	9	1	0	0	1	2
	4:30 PM	1	5	3	1	10	0	3	3	0	6	1	2	0	1	4
	4:45 PM	4	0	2	4	10	4	0	2	4	10	0	0	0	0	0
	5:00 PM	7	2	6	4	19	7	0	4	4	15	0	2	2	0	4
	5:15 PM	5	2	2	6	15	5	0	0	5	10	0	2	2	1	5
	5:30 PM	2	0	5	2	9	1	0	5	1	7	1	0	0	1	2
	5:45 PM	1	3	4	8	16	1	2	4	6	13	0	1	0	2	3
	TOTAL	32	26	41	40	139	29	17	34	30	110	3	9	7	10	29
	PM BEGIN PEAK HR			5:00 PM			14	2	13	16	45	1	5	4	4	14

AimTD LLC

TURNING MOVEMENT COUNTS

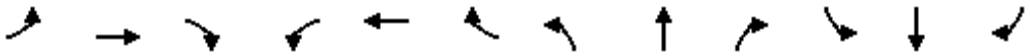




APPENDIX C

EXISTING (2022) CONDITIONS SYNCHRO REPORTS

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1065	5	17	1696	14	21	1	3	47	0	49
Future Volume (veh/h)	13	1065	5	17	1696	14	21	1	3	47	0	49
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		0.98	0.99		0.99	0.99		0.99
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	14	1121	5	18	1785	15	22	1	3	49	0	52
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	22	3999	18	27	3994	34	180	7	160	105	12	78
Arrive On Green	0.01	0.76	0.76	0.02	0.76	0.76	0.10	0.10	0.10	0.10	0.00	0.10
Sat Flow, veh/h	1781	5247	23	1781	5221	44	1193	68	1566	597	121	762
Grp Volume(v), veh/h	14	727	399	18	1164	636	23	0	3	101	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1866	1781	1702	1861	1262	0	1566	1480	0	0
Q Serve(g_s), s	0.9	7.8	7.8	1.2	14.7	14.7	0.0	0.0	0.2	5.8	0.0	0.0
Cycle Q Clear(g_c), s	0.9	7.8	7.8	1.2	14.7	14.7	2.1	0.0	0.2	7.9	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.96		1.00	0.49		0.51
Lane Grp Cap(c), veh/h	22	2595	1422	27	2604	1424	187	0	160	195	0	0
V/C Ratio(X)	0.63	0.28	0.28	0.67	0.45	0.45	0.12	0.00	0.02	0.52	0.00	0.00
Avail Cap(c_a), veh/h	96	2595	1422	111	2604	1424	383	0	385	408	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	59.0	4.3	4.3	58.8	5.0	5.0	49.3	0.0	48.5	51.9	0.0	0.0
Incr Delay (d2), s/veh	10.5	0.3	0.5	10.3	0.6	1.0	0.3	0.0	0.0	2.1	0.0	0.0
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	0.5	2.1	2.4	0.6	4.0	4.6	0.7	0.0	0.1	3.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	4.6	4.8	69.1	5.6	6.1	49.6	0.0	48.5	54.0	0.0	0.0
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1140			1818			26			101	
Approach Delay, s/veh		5.5			6.4			49.5			54.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	97.0		16.7	6.0	97.3		16.7				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	7.5	68.5		29.5	6.5	69.5		29.5				
Max Q Clear Time (g_c+I1), s	3.2	9.8		9.9	2.9	16.7		4.1				
Green Ext Time (p_c), s	0.0	13.6		0.5	0.0	28.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		8.0
HCM 6th LOS		A

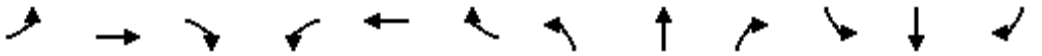
Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	1087	3	0	1686	32	0	0	0	22	0	16
Future Vol, veh/h	27	1087	3	0	1686	32	0	0	0	22	0	16
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	1132	3	0	1756	33	0	0	0	23	0	17

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1798	0	0	-	-	0			2291	-	904
Stage 1	-	-	-	-	-	-			1782	-	-
Stage 2	-	-	-	-	-	-			509	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	158	-	-	0	-	-			65	0	240
Stage 1	-	-	-	0	-	-			78	0	-
Stage 2	-	-	-	0	-	-			519	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	157	-	-	-	-	-			52	0	238
Mov Cap-2 Maneuver	-	-	-	-	-	-			52	0	-
Stage 1	-	-	-	-	-	-			64	0	-
Stage 2	-	-	-	-	-	-			514	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	78.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	157	-	-	-	-	52	238
HCM Lane V/C Ratio	0.179	-	-	-	-	0.441	0.07
HCM Control Delay (s)	32.9	-	-	-	-	120.3	21.3
HCM Lane LOS	D	-	-	-	-	F	C
HCM 95th %tile Q(veh)	0.6	-	-	-	-	1.6	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	913	118	288	1516	289	134	656	267	271	697	116
Future Volume (veh/h)	74	913	118	288	1516	289	134	656	267	271	697	116
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.96	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	76	941	122	297	1563	298	138	676	275	279	719	120
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	212	2011	257	356	2113	403	164	991	424	334	863	144
Arrive On Green	0.06	0.35	0.35	0.10	0.39	0.39	0.09	0.28	0.28	0.10	0.28	0.28
Sat Flow, veh/h	3456	5804	742	3456	5445	1038	1781	3554	1519	3456	3047	508
Grp Volume(v), veh/h	76	780	283	297	1385	476	138	676	275	279	419	420
Grp Sat Flow(s),veh/h/ln	1728	1609	1721	1728	1609	1657	1781	1777	1519	1728	1777	1778
Q Serve(g_s), s	2.5	15.1	15.4	10.1	29.6	29.6	9.1	20.3	19.1	9.5	26.6	26.6
Cycle Q Clear(g_c), s	2.5	15.1	15.4	10.1	29.6	29.6	9.1	20.3	19.1	9.5	26.6	26.6
Prop In Lane	1.00		0.43	1.00		0.63	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	212	1671	596	356	1873	643	164	991	424	334	503	504
V/C Ratio(X)	0.36	0.47	0.47	0.83	0.74	0.74	0.84	0.68	0.65	0.83	0.83	0.83
Avail Cap(c_a), veh/h	230	1671	596	487	1873	643	199	1158	495	371	572	572
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	54.0	30.6	30.7	52.8	31.5	31.5	53.6	38.5	38.1	53.3	40.3	40.3
Incr Delay (d2), s/veh	0.4	0.9	2.7	6.6	2.7	7.5	19.7	1.8	3.4	12.6	10.4	10.4
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	1.1	5.8	6.6	4.6	11.4	12.6	5.0	9.0	7.4	4.7	12.9	12.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	31.5	33.4	59.4	34.2	39.0	73.3	40.4	41.5	65.9	50.7	50.8
LnGrp LOS	D	C	C	E	C	D	E	D	D	E	D	D
Approach Vol, veh/h		1139			2158			1089			1118	
Approach Delay, s/veh		33.5			38.7			44.8			54.5	
Approach LOS		C			D			D			D	

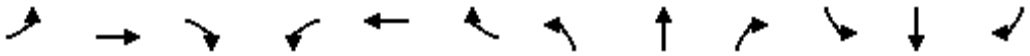
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.9	47.1	15.6	39.5	12.9	52.1	16.1	39.0
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	16.9	30.1	13.4	38.6	8.0	39.0	12.9	39.1
Max Q Clear Time (g_c+I1), s	12.1	17.4	11.1	28.6	4.5	31.6	11.5	22.3
Green Ext Time (p_c), s	0.3	7.4	0.0	5.3	0.0	6.6	0.1	7.9

Intersection Summary	
HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	1806	49	64	1382	55	44	9	31	33	8	32
Future Volume (veh/h)	28	1806	49	64	1382	55	44	9	31	33	8	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.98	0.98		0.98
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	30	1921	52	68	1470	59	47	10	33	35	9	34
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	3640	98	87	3728	150	178	33	182	94	33	65
Arrive On Green	0.02	0.71	0.71	0.05	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	5107	138	1781	5034	202	1050	280	1553	433	278	549
Grp Volume(v), veh/h	30	1280	693	68	994	535	57	0	33	78	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1841	1781	1702	1832	1330	0	1553	1259	0	0
Q Serve(g_s), s	2.0	20.8	20.8	4.5	12.8	12.8	0.0	0.0	2.3	3.2	0.0	0.0
Cycle Q Clear(g_c), s	2.0	20.8	20.8	4.5	12.8	12.8	4.9	0.0	2.3	8.1	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.11	0.82		1.00	0.45		0.44
Lane Grp Cap(c), veh/h	38	2426	1312	87	2521	1357	211	0	182	191	0	0
V/C Ratio(X)	0.80	0.53	0.53	0.78	0.39	0.39	0.27	0.00	0.18	0.41	0.00	0.00
Avail Cap(c_a), veh/h	111	2426	1312	171	2521	1357	369	0	356	356	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.5	7.9	7.9	56.4	5.7	5.7	48.8	0.0	47.7	50.3	0.0	0.0
Incr Delay (d2), s/veh	13.1	0.8	1.5	5.6	0.5	0.9	0.7	0.0	0.5	1.4	0.0	0.0
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	1.0	6.4	7.3	2.1	3.7	4.2	1.6	0.0	0.9	2.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	8.8	9.5	62.0	6.2	6.6	49.5	0.0	48.2	51.7	0.0	0.0
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		2003			1597			90			78	
Approach Delay, s/veh		9.9			8.7			49.0			51.7	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.4	91.0		18.6	7.0	94.4		18.6				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	11.5	66.5		27.5	7.5	70.5		27.5				
Max Q Clear Time (g_c+I1), s	6.5	22.8		10.1	4.0	14.8		6.9				
Green Ext Time (p_c), s	0.0	28.5		0.3	0.0	22.1		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		11.2	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	11.7

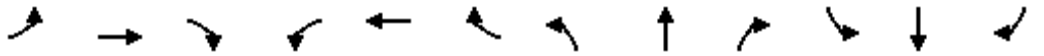
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	1828	10	0	1410	21	0	0	9	60	0	95
Future Vol, veh/h	64	1828	10	0	1410	21	0	0	9	60	0	95
Conflicting Peds, #/hr	9	0	1	1	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	1945	11	0	1500	22	0	0	10	64	0	101

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1531	0	0	-	-	0			2434	-	770
Stage 1	-	-	-	-	-	-			1520	-	-
Stage 2	-	-	-	-	-	-			914	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	215	-	-	0	-	-			~ 54	0	295
Stage 1	-	-	-	0	-	-			115	0	-
Stage 2	-	-	-	0	-	-			318	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	213	-	-	-	-	-			~ 36	0	292
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 36	0	-
Stage 1	-	-	-	-	-	-			78	0	-
Stage 2	-	-	-	-	-	-			315	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	250.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	213	-	-	-	-	36	292
HCM Lane V/C Ratio	0.32	-	-	-	-	1.773	0.346
HCM Control Delay (s)	29.6	-	-	-	-	$ 610.7	23.7
HCM Lane LOS	D	-	-	-	-	F	C
HCM 95th %tile Q(veh)	1.3	-	-	-	-	6.9	1.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1565	133	191	1278	391	150	714	298	274	422	125
Future Volume (veh/h)	204	1565	133	191	1278	391	150	714	298	274	422	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.96	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	210	1613	137	197	1318	403	155	736	307	282	435	129
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	265	2236	190	252	1787	545	183	1018	438	337	762	224
Arrive On Green	0.08	0.37	0.37	0.07	0.36	0.36	0.10	0.29	0.29	0.10	0.28	0.28
Sat Flow, veh/h	3456	6077	516	3456	4907	1497	1781	3554	1528	3456	2707	796
Grp Volume(v), veh/h	210	1281	469	197	1296	425	155	736	307	282	284	280
Grp Sat Flow(s),veh/h/ln	1728	1609	1767	1728	1609	1579	1781	1777	1528	1728	1777	1726
Q Serve(g_s), s	7.2	27.4	27.4	6.7	28.0	28.1	10.3	22.4	21.5	9.6	16.4	16.7
Cycle Q Clear(g_c), s	7.2	27.4	27.4	6.7	28.0	28.1	10.3	22.4	21.5	9.6	16.4	16.7
Prop In Lane	1.00		0.29	1.00		0.95	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	265	1776	650	252	1757	575	183	1018	438	337	500	486
V/C Ratio(X)	0.79	0.72	0.72	0.78	0.74	0.74	0.85	0.72	0.70	0.84	0.57	0.58
Avail Cap(c_a), veh/h	297	1776	650	279	1757	575	278	1158	498	371	500	486
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	54.5	32.6	32.6	54.7	33.2	33.2	52.9	38.5	38.2	53.2	36.9	37.0
Incr Delay (d2), s/veh	10.7	2.6	6.8	10.6	2.8	8.3	9.2	2.4	4.8	13.0	2.1	2.3
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	3.4	10.6	12.4	3.2	10.9	11.6	5.0	9.9	8.5	4.7	7.3	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.2	35.2	39.4	65.3	36.0	41.5	62.1	41.0	43.0	66.2	39.0	39.3
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1960			1918			1198			846	
Approach Delay, s/veh		39.4			40.2			44.2			48.1	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	49.7	16.8	39.3	14.7	49.2	16.2	39.9
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	9.7	37.3	18.7	33.3	10.3	36.7	12.9	39.1
Max Q Clear Time (g_c+I1), s	8.7	29.4	12.3	18.7	9.2	30.1	11.6	24.4
Green Ext Time (p_c), s	0.0	6.8	0.1	4.5	0.0	5.8	0.1	7.9

Intersection Summary	
HCM 6th Ctrl Delay	41.9
HCM 6th LOS	D

4 Western Ave at Artesia Blvd

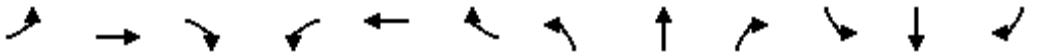
Existing (2022)

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C		PM PEAK HOUR VOL	PM PEAK HOUR V/C	
NBL	1	1600	153	0.10	*	119	0.07	
NBT	2	3200	729	0.23		754	0.24	*
NBR	1	1600	157	0.10		262	0.16	
SBL	2	2880	206	0.07		221	0.08	*
SBT	2	3200	686	0.21	*	648	0.20	
SBR	1	1600	93	0.06		106	0.07	
EBL	1	1600	122	0.08	*	191	0.12	
EBT	3	4800	721	0.15		1285	0.27	*
EBR	1	1600	135	0.08		152	0.10	
WBL	2	2880	300	0.10		275	0.10	*
WBT	2.5	4000	1269	0.32	*	941	0.24	
WBR	0.5	800	279	0.35		314	0.39	
Right Turn Adjustment				0.00			0.08	
Clearance Interval				0.1			0.1	
TOTAL CAPACITY UTILIZATION				0.81			0.87	

APPENDIX D

OPENING YEAR (2025) CONDITIONS SYNCHRO REPORTS

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1116	6	18	1766	15	22	2	4	49	0	51
Future Volume (veh/h)	14	1116	6	18	1766	15	22	2	4	49	0	51
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		0.98	0.99		0.99	0.99		0.99
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	15	1175	6	19	1859	16	23	2	4	52	0	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	3970	20	28	3966	34	179	13	167	109	12	79
Arrive On Green	0.01	0.76	0.76	0.02	0.76	0.76	0.11	0.11	0.11	0.11	0.00	0.11
Sat Flow, veh/h	1781	5243	27	1781	5220	45	1139	125	1567	600	117	745
Grp Volume(v), veh/h	15	763	418	19	1212	663	25	0	4	106	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1865	1781	1702	1861	1263	0	1567	1462	0	0
Q Serve(g_s), s	1.0	8.4	8.4	1.3	15.9	16.0	0.0	0.0	0.3	6.2	0.0	0.0
Cycle Q Clear(g_c), s	1.0	8.4	8.4	1.3	15.9	16.0	2.2	0.0	0.3	8.4	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.92		1.00	0.49		0.51
Lane Grp Cap(c), veh/h	23	2578	1413	28	2586	1414	192	0	167	200	0	0
V/C Ratio(X)	0.64	0.30	0.30	0.68	0.47	0.47	0.13	0.00	0.02	0.53	0.00	0.00
Avail Cap(c_a), veh/h	111	2578	1413	111	2586	1414	383	0	385	406	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.9	4.6	4.6	58.8	5.4	5.4	48.9	0.0	48.0	51.7	0.0	0.0
Incr Delay (d2), s/veh	10.4	0.3	0.5	10.3	0.6	1.1	0.3	0.0	0.1	2.2	0.0	0.0
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	0.5	2.3	2.6	0.6	4.4	5.0	0.7	0.0	0.1	3.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	4.9	5.1	69.1	6.0	6.5	49.2	0.0	48.1	53.9	0.0	0.0
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1196			1894			29			106	
Approach Delay, s/veh		5.7			6.8			49.0			53.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	96.4		17.3	6.1	96.7		17.3				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	7.5	68.5		29.5	7.5	68.5		29.5				
Max Q Clear Time (g_c+I1), s	3.3	10.4		10.4	3.0	18.0		4.2				
Green Ext Time (p_c), s	0.0	14.6		0.5	0.0	29.0		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		8.3
HCM 6th LOS		A

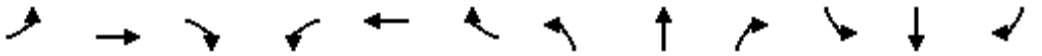
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	1138	4	0	1756	33	0	0	0	23	0	17
Future Vol, veh/h	28	1138	4	0	1756	33	0	0	0	23	0	17
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1185	4	0	1829	34	0	0	0	24	0	18

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1872	0	0	-	-	0			2387	-	941
Stage 1	-	-	-	-	-	-			1855	-	-
Stage 2	-	-	-	-	-	-			532	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	145	-	-	0	-	-			58	0	227
Stage 1	-	-	-	0	-	-			70	0	-
Stage 2	-	-	-	0	-	-			505	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	144	-	-	-	-	-			46	0	225
Mov Cap-2 Maneuver	-	-	-	-	-	-			46	0	-
Stage 1	-	-	-	-	-	-			55	0	-
Stage 2	-	-	-	-	-	-			500	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	95
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	144	-	-	-	-	46	225
HCM Lane V/C Ratio	0.203	-	-	-	-	0.521	0.079
HCM Control Delay (s)	36.2	-	-	-	-	148.6	22.4
HCM Lane LOS	E	-	-	-	-	F	C
HCM 95th %tile Q(veh)	0.7	-	-	-	-	1.9	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	957	122	301	1575	306	139	691	289	303	758	125
Future Volume (veh/h)	79	957	122	301	1575	306	139	691	289	303	758	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.96	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	81	987	126	310	1624	315	143	712	298	312	781	129
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	215	1910	241	369	2025	393	169	1014	434	360	899	148
Arrive On Green	0.06	0.33	0.33	0.11	0.37	0.37	0.10	0.29	0.29	0.10	0.29	0.29
Sat Flow, veh/h	3456	5815	733	3456	5427	1053	1781	3554	1520	3456	3052	504
Grp Volume(v), veh/h	81	817	296	310	1444	495	143	712	298	312	455	455
Grp Sat Flow(s),veh/h/ln	1728	1609	1723	1728	1609	1654	1781	1777	1520	1728	1777	1779
Q Serve(g_s), s	2.7	16.4	16.7	10.6	32.1	32.1	9.5	21.5	20.9	10.7	29.1	29.1
Cycle Q Clear(g_c), s	2.7	16.4	16.7	10.6	32.1	32.1	9.5	21.5	20.9	10.7	29.1	29.1
Prop In Lane	1.00		0.43	1.00		0.64	1.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	215	1585	566	369	1801	617	169	1014	434	360	523	524
V/C Ratio(X)	0.38	0.52	0.52	0.84	0.80	0.80	0.84	0.70	0.69	0.87	0.87	0.87
Avail Cap(c_a), veh/h	230	1585	566	498	1801	617	203	1158	495	360	561	562
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	54.0	32.6	32.7	52.6	33.6	33.6	53.4	38.3	38.1	52.9	40.1	40.1
Incr Delay (d2), s/veh	0.4	1.2	3.4	7.1	3.9	10.6	20.2	2.1	4.4	18.7	14.0	14.0
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	1.2	6.3	7.3	4.8	12.5	14.0	5.2	9.5	8.2	5.5	14.5	14.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	33.8	36.1	59.7	37.5	44.2	73.6	40.4	42.5	71.6	54.2	54.2
LnGrp LOS	D	C	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1194			2249			1153			1222	
Approach Delay, s/veh		35.7			42.0			45.1			58.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	44.9	15.9	40.8	13.0	50.3	17.0	39.8
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	17.3	30.1	13.7	37.9	8.0	39.4	12.5	39.1
Max Q Clear Time (g_c+I1), s	12.6	18.7	11.5	31.1	4.7	34.1	12.7	23.5
Green Ext Time (p_c), s	0.3	7.1	0.0	4.1	0.0	4.9	0.0	8.0

Intersection Summary	
HCM 6th Ctrl Delay	44.8
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1871	51	66	1432	57	46	10	32	34	9	33
Future Volume (veh/h)	29	1871	51	66	1432	57	46	10	32	34	9	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.98	0.98		0.98
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	31	1990	54	70	1523	61	49	11	34	36	10	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	3615	98	89	3706	148	178	35	188	94	34	65
Arrive On Green	0.02	0.71	0.71	0.05	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	5107	138	1781	5035	202	1021	287	1554	419	282	533
Grp Volume(v), veh/h	31	1325	719	70	1030	554	60	0	34	81	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1841	1781	1702	1832	1308	0	1554	1233	0	0
Q Serve(g_s), s	2.1	22.4	22.5	4.7	13.7	13.7	0.0	0.0	2.4	3.4	0.0	0.0
Cycle Q Clear(g_c), s	2.1	22.4	22.5	4.7	13.7	13.7	5.3	0.0	2.4	8.7	0.0	0.0
Prop In Lane	1.00		0.08	1.00		0.11	0.82		1.00	0.44		0.43
Lane Grp Cap(c), veh/h	39	2409	1303	89	2506	1349	213	0	188	193	0	0
V/C Ratio(X)	0.79	0.55	0.55	0.78	0.41	0.41	0.28	0.00	0.18	0.42	0.00	0.00
Avail Cap(c_a), veh/h	111	2409	1303	171	2506	1349	354	0	343	340	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.4	8.4	8.4	56.3	6.0	6.0	48.6	0.0	47.4	50.2	0.0	0.0
Incr Delay (d2), s/veh	12.5	0.9	1.7	5.5	0.5	0.9	0.7	0.0	0.5	1.5	0.0	0.0
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	1.1	7.0	7.9	2.2	4.0	4.5	1.7	0.0	0.9	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.0	9.3	10.1	61.8	6.5	6.9	49.3	0.0	47.8	51.6	0.0	0.0
LnGrp LOS	E	A	B	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		2075			1654			94			81	
Approach Delay, s/veh		10.5			9.0			48.8			51.6	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.5	90.4		19.0	7.1	93.8		19.0				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	11.5	67.5		26.5	7.5	71.5		26.5				
Max Q Clear Time (g_c+I1), s	6.7	24.5		10.7	4.1	15.7		7.3				
Green Ext Time (p_c), s	0.0	29.5		0.3	0.0	23.4		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			11.6									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	14.9

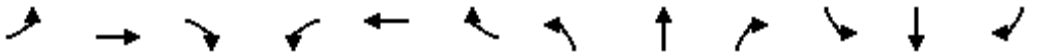
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	1894	11	0	1461	22	0	0	10	62	0	98
Future Vol, veh/h	66	1894	11	0	1461	22	0	0	10	62	0	98
Conflicting Peds, #/hr	9	0	1	1	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	2015	12	0	1554	23	0	0	11	66	0	104

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1586	0	0	-	-	0			2521	-	798
Stage 1	-	-	-	-	-	-			1575	-	-
Stage 2	-	-	-	-	-	-			946	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	202	-	-	0	-	-			~ 49	0	282
Stage 1	-	-	-	0	-	-			106	0	-
Stage 2	-	-	-	0	-	-			305	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	200	-	-	-	-	-			~ 31	0	280
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 31	0	-
Stage 1	-	-	-	-	-	-			68	0	-
Stage 2	-	-	-	-	-	-			302	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	$ 323.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	200	-	-	-	-	31	280
HCM Lane V/C Ratio	0.351	-	-	-	-	2.128	0.372
HCM Control Delay (s)	32.4	-	-	-	-	$ 793.9	25.3
HCM Lane LOS	D	-	-	-	-	F	D
HCM 95th %tile Q(veh)	1.5	-	-	-	-	7.6	1.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	217	1617	138	211	1322	427	155	778	316	298	463	132
Future Volume (veh/h)	217	1617	138	211	1322	427	155	778	316	298	463	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	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	224	1667	142	218	1363	440	160	802	326	307	477	136
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	2096	178	272	1665	537	188	1057	455	360	809	229
Arrive On Green	0.08	0.34	0.34	0.08	0.34	0.34	0.11	0.30	0.30	0.10	0.30	0.30
Sat Flow, veh/h	3456	6075	517	3456	4832	1559	1781	3554	1530	3456	2733	774
Grp Volume(v), veh/h	224	1324	485	218	1361	442	160	802	326	307	309	304
Grp Sat Flow(s),veh/h/ln	1728	1609	1767	1728	1609	1565	1781	1777	1530	1728	1777	1730
Q Serve(g_s), s	7.7	29.7	29.7	7.4	30.9	30.9	10.6	24.6	22.8	10.5	17.8	18.0
Cycle Q Clear(g_c), s	7.7	29.7	29.7	7.4	30.9	30.9	10.6	24.6	22.8	10.5	17.8	18.0
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	274	1665	609	272	1662	539	188	1057	455	360	526	512
V/C Ratio(X)	0.82	0.80	0.80	0.80	0.82	0.82	0.85	0.76	0.72	0.85	0.59	0.59
Avail Cap(c_a), veh/h	274	1665	609	274	1662	539	284	1158	498	360	526	512
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	54.4	35.5	35.5	54.4	35.9	35.9	52.8	38.3	37.6	52.9	36.0	36.1
Incr Delay (d2), s/veh	16.5	4.0	10.3	14.4	4.6	13.1	9.6	3.2	5.4	17.0	2.3	2.5
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	3.9	11.8	14.0	3.7	12.3	13.2	5.2	11.0	9.1	5.4	8.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.9	39.5	45.8	68.8	40.5	49.0	62.4	41.5	43.1	69.8	38.3	38.5
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		2033			2021			1288			920	
Approach Delay, s/veh		44.5			45.4			44.5			48.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	46.9	17.1	41.0	15.0	46.8	17.0	41.2
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	9.5	37.9	19.1	32.5	9.5	37.9	12.5	39.1
Max Q Clear Time (g_c+I1), s	9.4	31.7	12.6	20.0	9.7	32.9	12.5	26.6
Green Ext Time (p_c), s	0.0	5.5	0.1	4.5	0.0	4.5	0.0	7.6

Intersection Summary	
HCM 6th Ctrl Delay	45.4
HCM 6th LOS	D

4 Western Ave at Artesia Blvd

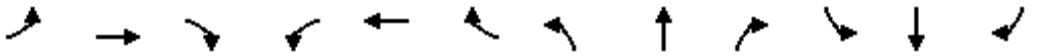
Opening Year (2025) Without Project

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1600	160	0.10	*	124	0.08	
NBT	2	3200	754	0.24		778	0.24	*
NBR	1	1600	162	0.10		270	0.17	
SBL	2	2880	213	0.07		228	0.08	*
SBT	2	3200	708	0.22	*	670	0.21	
SBR	1	1600	96	0.06		110	0.07	
EBL	1	1600	126	0.08	*	197	0.12	
EBT	3	4800	761	0.16		1334	0.28	*
EBR	1	1600	141	0.09		159	0.10	
WBL	2	2880	310	0.11		284	0.10	*
WBT	2.5	4000	1326	0.33	*	978	0.24	
WBR	0.5	800	288	0.36		324	0.41	
Right Turn Adjustment				0.00			0.09	
Clearance Interval				0.1			0.1	
TOTAL CAPACITY UTILIZATION				0.83			0.89	

APPENDIX E

OPENING YEAR (2025) PLUS PROJECT CONDITIONS SYNCHRO REPORTS

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1148	6	50	1774	15	22	2	4	50	0	51
Future Volume (veh/h)	14	1148	6	50	1774	15	22	2	4	50	0	51
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		0.98	0.99		0.99	0.99		0.99
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	15	1208	6	53	1867	16	23	2	4	53	0	54
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	23	3847	19	68	3962	34	179	13	168	110	12	79
Arrive On Green	0.01	0.73	0.73	0.04	0.76	0.76	0.11	0.11	0.11	0.11	0.00	0.11
Sat Flow, veh/h	1781	5244	26	1781	5220	45	1137	124	1567	607	115	736
Grp Volume(v), veh/h	15	784	430	53	1217	666	25	0	4	107	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1866	1781	1702	1861	1261	0	1567	1458	0	0
Q Serve(g_s), s	1.0	9.6	9.6	3.5	16.1	16.1	0.0	0.0	0.3	6.4	0.0	0.0
Cycle Q Clear(g_c), s	1.0	9.6	9.6	3.5	16.1	16.1	2.2	0.0	0.3	8.5	0.0	0.0
Prop In Lane	1.00		0.01	1.00		0.02	0.92		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	23	2498	1369	68	2583	1412	193	0	168	201	0	0
V/C Ratio(X)	0.64	0.31	0.31	0.78	0.47	0.47	0.13	0.00	0.02	0.53	0.00	0.00
Avail Cap(c_a), veh/h	111	2498	1369	171	2583	1412	383	0	385	406	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.9	5.5	5.5	57.2	5.4	5.4	48.8	0.0	48.0	51.7	0.0	0.0
Incr Delay (d2), s/veh	10.4	0.3	0.6	6.8	0.6	1.1	0.3	0.0	0.1	2.2	0.0	0.0
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	0.5	2.8	3.2	1.7	4.5	5.1	0.7	0.0	0.1	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	5.9	6.1	64.0	6.0	6.6	49.1	0.0	48.0	53.8	0.0	0.0
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		1229			1936			29			107	
Approach Delay, s/veh		6.7			7.8			48.9			53.8	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	93.5		17.4	6.1	96.6		17.4				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	11.5	64.5		29.5	7.5	68.5		29.5				
Max Q Clear Time (g_c+I1), s	5.5	11.6		10.5	3.0	18.1		4.2				
Green Ext Time (p_c), s	0.0	15.0		0.5	0.0	29.2		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		9.3	
HCM 6th LOS		A	

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	1138	70	0	1797	33	0	0	17	23	0	17
Future Vol, veh/h	28	1138	70	0	1797	33	0	0	17	23	0	17
Conflicting Peds, #/hr	9	0	0	0	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	1185	73	0	1872	34	0	0	18	24	0	18

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1915	0	0	-	-	0			2430	-	962
Stage 1	-	-	-	-	-	-			1898	-	-
Stage 2	-	-	-	-	-	-			532	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	138	-	-	0	-	-			55	0	220
Stage 1	-	-	-	0	-	-			66	0	-
Stage 2	-	-	-	0	-	-			505	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	137	-	-	-	-	-			43	0	218
Mov Cap-2 Maneuver	-	-	-	-	-	-			43	0	-
Stage 1	-	-	-	-	-	-			52	0	-
Stage 2	-	-	-	-	-	-			500	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	104.6
HCM LOS			F

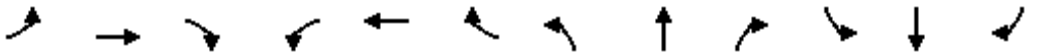
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	137	-	-	-	-	43	218
HCM Lane V/C Ratio	0.213	-	-	-	-	0.557	0.081
HCM Control Delay (s)	38.2	-	-	-	-	164.9	23
HCM Lane LOS	E	-	-	-	-	F	C
HCM 95th %tile Q(veh)	0.8	-	-	-	-	2	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	960	125	301	1588	306	149	691	289	303	758	135
Future Volume (veh/h)	90	960	125	301	1588	306	149	691	289	303	758	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.96	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	93	990	129	310	1637	315	154	712	298	312	781	139
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1878	242	369	1994	384	181	1031	441	360	883	157
Arrive On Green	0.06	0.32	0.32	0.11	0.37	0.37	0.10	0.29	0.29	0.10	0.29	0.29
Sat Flow, veh/h	3456	5799	746	3456	5435	1046	1781	3554	1521	3456	3014	536
Grp Volume(v), veh/h	93	822	297	310	1453	499	154	712	298	312	460	460
Grp Sat Flow(s),veh/h/ln	1728	1609	1720	1728	1609	1655	1781	1777	1521	1728	1777	1773
Q Serve(g_s), s	3.1	16.7	17.0	10.6	32.7	32.7	10.2	21.3	20.8	10.7	29.7	29.7
Cycle Q Clear(g_c), s	3.1	16.7	17.0	10.6	32.7	32.7	10.2	21.3	20.8	10.7	29.7	29.7
Prop In Lane	1.00		0.43	1.00		0.63	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	220	1562	557	369	1771	607	181	1031	441	360	520	519
V/C Ratio(X)	0.42	0.53	0.53	0.84	0.82	0.82	0.85	0.69	0.68	0.87	0.88	0.88
Avail Cap(c_a), veh/h	230	1562	557	498	1771	607	215	1158	496	360	549	548
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	54.1	33.1	33.2	52.6	34.4	34.4	53.0	37.8	37.6	52.9	40.5	40.5
Incr Delay (d2), s/veh	0.5	1.3	3.6	7.1	4.4	11.8	20.8	2.0	4.1	18.7	16.1	16.2
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	1.3	6.4	7.4	4.8	12.9	14.5	5.6	9.4	8.1	5.5	15.0	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	34.3	36.8	59.7	38.8	46.2	73.9	39.8	41.7	71.6	56.6	56.7
LnGrp LOS	D	C	D	E	D	D	E	D	D	E	E	E
Approach Vol, veh/h		1212			2262			1164			1232	
Approach Delay, s/veh		36.5			43.3			44.8			60.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	44.4	16.7	40.6	13.1	49.5	17.0	40.3
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	17.3	30.1	14.5	37.1	8.0	39.4	12.5	39.1
Max Q Clear Time (g_c+I1), s	12.6	19.0	12.2	31.7	5.1	34.7	12.7	23.3
Green Ext Time (p_c), s	0.3	7.0	0.0	3.5	0.0	4.3	0.0	8.0

Intersection Summary	
HCM 6th Ctrl Delay	45.8
HCM 6th LOS	D

HCM 6th Signalized Intersection Summary
1: Artesia Blvd & Dalton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	1877	51	72	1458	58	46	10	32	34	9	33
Future Volume (veh/h)	29	1877	51	72	1458	58	46	10	32	34	9	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	0.99		0.98	0.98		0.98
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	31	1997	54	77	1551	62	49	11	34	36	10	35
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	3591	97	98	3707	148	178	35	188	94	34	65
Arrive On Green	0.02	0.70	0.70	0.05	0.74	0.74	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	5107	138	1781	5035	201	1021	287	1554	419	282	533
Grp Volume(v), veh/h	31	1330	721	77	1048	565	60	0	34	81	0	0
Grp Sat Flow(s),veh/h/ln	1781	1702	1841	1781	1702	1833	1308	0	1554	1233	0	0
Q Serve(g_s), s	2.1	22.8	22.9	5.1	14.1	14.1	0.0	0.0	2.4	3.4	0.0	0.0
Cycle Q Clear(g_c), s	2.1	22.8	22.9	5.1	14.1	14.1	5.3	0.0	2.4	8.7	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.11	0.82		1.00	0.44		0.43
Lane Grp Cap(c), veh/h	39	2393	1295	98	2506	1349	213	0	188	193	0	0
V/C Ratio(X)	0.79	0.56	0.56	0.79	0.42	0.42	0.28	0.00	0.18	0.42	0.00	0.00
Avail Cap(c_a), veh/h	102	2393	1295	189	2506	1349	354	0	343	340	0	0
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	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.4	8.7	8.7	56.0	6.0	6.0	48.6	0.0	47.4	50.2	0.0	0.0
Incr Delay (d2), s/veh	12.6	0.9	1.7	5.1	0.5	1.0	0.7	0.0	0.5	1.5	0.0	0.0
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	1.1	7.2	8.2	2.4	4.2	4.6	1.7	0.0	0.9	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.0	9.6	10.4	61.2	6.6	7.0	49.3	0.0	47.8	51.6	0.0	0.0
LnGrp LOS	E	A	B	E	A	A	D	A	D	D	A	A
Approach Vol, veh/h		2082			1690			94			81	
Approach Delay, s/veh		10.8			9.2			48.8			51.6	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	89.9		19.0	7.1	93.8		19.0				
Change Period (Y+Rc), s	4.5	5.5		4.5	4.5	5.5		4.5				
Max Green Setting (Gmax), s	12.7	66.3		26.5	6.9	72.1		26.5				
Max Q Clear Time (g_c+I1), s	7.1	24.9		10.7	4.1	16.1		7.3				
Green Ext Time (p_c), s	0.0	28.8		0.3	0.0	24.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			11.9									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	16.1

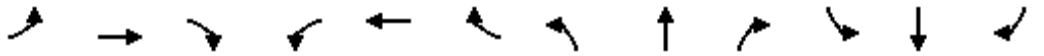
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	1894	23	0	1495	22	0	0	66	62	0	98
Future Vol, veh/h	66	1894	23	0	1495	22	0	0	66	62	0	98
Conflicting Peds, #/hr	9	0	1	1	0	9	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	215	-	-	-	-	-	-	-	0	0	-	0
Veh in Median Storage, #	-	0	-	-	0	-	1082	494	976	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	2015	24	0	1590	23	0	0	70	66	0	104

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	1622	0	0	-	-	0			2557	-	816
Stage 1	-	-	-	-	-	-			1611	-	-
Stage 2	-	-	-	-	-	-			946	-	-
Critical Hdwy	5.34	-	-	-	-	-			5.74	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	-	-
Follow-up Hdwy	3.12	-	-	-	-	-			3.82	-	3.92
Pot Cap-1 Maneuver	194	-	-	0	-	-			~ 46	0	275
Stage 1	-	-	-	0	-	-			101	0	-
Stage 2	-	-	-	0	-	-			305	0	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	192	-	-	-	-	-			~ 29	0	273
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 29	0	-
Stage 1	-	-	-	-	-	-			~ 64	0	-
Stage 2	-	-	-	-	-	-			302	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	$ 354.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	192	-	-	-	-	29	273
HCM Lane V/C Ratio	0.366	-	-	-	-	2.274	0.382
HCM Control Delay (s)	34.2	-	-	-	-	$ 873.3	26.1
HCM Lane LOS	D	-	-	-	-	F	D
HCM 95th %tile Q(veh)	1.6	-	-	-	-	7.8	1.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	253	1629	147	211	1324	427	157	778	316	298	463	134
Future Volume (veh/h)	253	1629	147	211	1324	427	157	778	316	298	463	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	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	261	1679	152	218	1365	440	162	802	326	307	477	138
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	302	2101	190	262	1625	523	190	1057	455	360	803	231
Arrive On Green	0.09	0.35	0.35	0.08	0.34	0.34	0.11	0.30	0.30	0.10	0.29	0.29
Sat Flow, veh/h	3456	6040	547	3456	4834	1557	1781	3554	1530	3456	2723	782
Grp Volume(v), veh/h	261	1341	490	218	1363	442	162	802	326	307	310	305
Grp Sat Flow(s),veh/h/ln	1728	1609	1761	1728	1609	1565	1781	1777	1530	1728	1777	1729
Q Serve(g_s), s	8.9	30.1	30.1	7.5	31.3	31.4	10.7	24.6	22.8	10.5	17.9	18.1
Cycle Q Clear(g_c), s	8.9	30.1	30.1	7.5	31.3	31.4	10.7	24.6	22.8	10.5	17.9	18.1
Prop In Lane	1.00		0.31	1.00		0.99	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	302	1678	612	262	1622	526	190	1057	455	360	524	510
V/C Ratio(X)	0.86	0.80	0.80	0.83	0.84	0.84	0.85	0.76	0.72	0.85	0.59	0.60
Avail Cap(c_a), veh/h	302	1678	612	262	1622	526	286	1158	498	360	524	510
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	54.0	35.3	35.4	54.7	36.8	36.9	52.7	38.3	37.6	52.9	36.1	36.2
Incr Delay (d2), s/veh	21.0	4.1	10.5	18.8	5.4	14.9	9.7	3.2	5.4	17.0	2.4	2.6
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	4.7	11.9	14.1	3.9	12.6	13.6	5.3	11.0	9.1	5.4	8.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.0	39.4	45.8	73.5	42.3	51.8	62.4	41.5	43.1	69.8	38.5	38.8
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		2092			2023			1290			922	
Approach Delay, s/veh		45.4			47.7			44.5			49.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	47.2	17.3	40.9	16.0	45.8	17.0	41.2
Change Period (Y+Rc), s	5.5	5.5	4.5	5.5	5.5	5.5	4.5	5.5
Max Green Setting (Gmax), s	9.1	38.3	19.3	32.3	10.5	36.9	12.5	39.1
Max Q Clear Time (g_c+I1), s	9.5	32.1	12.7	20.1	10.9	33.4	12.5	26.6
Green Ext Time (p_c), s	0.0	5.5	0.1	4.4	0.0	3.2	0.0	7.6

Intersection Summary	
HCM 6th Ctrl Delay	46.5
HCM 6th LOS	D

4 Western Ave at Artesia Blvd

Opening Year (2025) With Project

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C		PM PEAK HOUR VOL	PM PEAK HOUR V/C	
NBL	1	1600	160	0.10		124	0.08	
NBT	2	3200	754	0.24		778	0.24	*
NBR	1	1600	172	0.11		272	0.17	
SBL	2	2880	223	0.08		230	0.08	*
SBT	2	3200	708	0.22		670	0.21	
SBR	1	1600	96	0.06		110	0.07	
EBL	1	1600	126	0.08	*	197	0.12	
EBT	3	4800	773	0.16		1336	0.28	*
EBR	1	1600	141	0.09		159	0.10	
WBL	2	2880	313	0.11		292	0.10	*
WBT	2.5	4000	1,329	0.33	*	988	0.25	
WBR	0.5	800	291	0.36		332	0.42	
Right Turn Adjustment				0.00			0.10	
Clearance Interval				0.1			0.1	
TOTAL CAPACITY UTILIZATION				0.83			0.90	

APPENDIX F

TRAFFIC SIGNAL WARRANT ANALYSIS

Kimley»Horn

DRAFT TECHNICAL MEMORANDUM

To: Amanda Acuna, Senior Planner, City of Gardena

From: Sowmya Chandrasekhar, P.E., T.E., PTOE
Angelo Pastelin, EIT
Spencer Nick
Kimley-Horn and Associates, Inc. (Kimley-Horn)

CC: Rita Garcia, Kimley-Horn
Brian Sorensen, Insite Property Group

Date: June 2, 2022

Subject: 1450 Artesia Blvd – Traffic Signal Warrant Analysis

INTRODUCTION

This technical memorandum summarizes the traffic signal warrant analysis conducted for the intersection of Gateway Plaza Driveway and Artesia Boulevard, which is currently a three-legged intersection ("study intersection"). The site driveway of a new development at 1450 Artesia Boulevard is proposed as the fourth leg on the south side of the study intersection. The proposed development will be a mixed-use facility which will include industrial, self-storage, and office/retail use. The study intersection, shown in **Figure 1**, is one of the two access points for traffic entering and exiting Gateway Plaza.

Figure 1: Project Location

Within the study area, Artesia Boulevard is primarily a six-lane divided roadway with a posted speed limit of 45 miles per hour (mph). At the study intersection, a directional median opening currently provides eastbound left-turn in and southbound left-turn out to and from Gateway Plaza. The Gateway Plaza Driveway approach is currently stop-controlled with exclusive lanes for left and right turns.

METHODOLOGY

The signal warrant analysis was based on criteria outlined in Chapter 4C of the 2014 California Manual for Uniform Traffic Control Devices (CA MUTCD). The nine (9) signal warrants provided in the CA MUTCD are listed below:

- Warrant 1: Eight-Hour Vehicular Volume
- Warrant 2: Four-Hour Vehicular Volume
- Warrant 3: Peak Hour
- Warrant 4: Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience
- Warrant 8: Roadway Network
- Warrant 9: Intersection near a Grade Crossing

Warrants 1, 2, and 7 were deemed as applicable to evaluate the need for traffic signal at the study intersection. It is noted that for the vehicular volume warrants, 70 percent volume requirements were used since the major street, Artesia Blvd, has a posted speed limit of 45 mph.

DATA COLLECTION

Traffic Counts

Intersection turning movement and 24-hour approach traffic counts were collected at the study intersection on Tuesday, May 3, 2022. The turning movement data was collected during the AM (7 to 10 AM) and PM (3 to 6 PM) peak periods. The traffic data is summarized in **Appendix A.**

Collision Data

Collision data was obtained from Statewide Integrated Traffic Records System (SWITRS) for a six-year period between January 1, 2016 and December 31, 2021. A total of four collisions occurred at or in the immediate vicinity of the study intersection between 2016 and 2021 as summarized in **Table 1**. The signal warrant based on collision data (Warrant 7) is considered to be met if there are a minimum of five (5) collisions, of types susceptible to correction by a signal, in twelve months. The highest number of crashes in a twelve-month period was two in the year 2019.

Table 1: Collisions by Year

Year	No. of Collisions at Artesia Blvd/Gateway Plaza Drwy
2016	0
2017	1
2018	1
2019	2
2020	0
2021	0
Total	**4**

ANALYSIS

Existing Conditions (Year 2022)

A detailed review of the traffic counts was completed to understand the peak periods and level of traffic volumes. A traffic signal warrant analysis was conducted at the intersection of Artesia Boulevard and Gateway Plaza Driveway under the existing conditions based on the 24-hour approach counts. Existing conditions represent the conditions of the intersection without incorporating any project trips in or out of the proposed development. A summary of signal warrants 1 through 9 are shown in **Table 2** and signal warrant analysis form included in **Appendix B**.

Table 2: Summary of Signal Warrants - Existing Conditions (2022)

Warrant	Warrant Met			Comments
	Yes	No	N/A	
1: Eight-Hour Vehicular Volume		✖		Condition A and B are not 100% satisfied and neither A or B are 70% satisfied
2: Four-Hour Vehicular Volume	✖			Warrant met criteria for 70% volume level
3: Peak Hour Vehicular Volume			✖	Driveway does not meet the condition of discharging large numbers of vehicles in a short time
4: Pedestrian Volume			✖	Intersection did not necessitate pedestrian volume warrant
5: School Crossing			✖	Intersection is not near a school crossing
6: Coordinated Signal System			✖	Intersection is less than 1,000 feet distance from adjacent signalized intersections at Normandie Ave and Dalton Ave
7: Crash Experience		✖		Did not meet minimum collision criteria
8: Roadway Network			✖	Driveway is not a major route
9: Intersection Near a Grade Crossing			✖	No grade crossing on the approach (driveway) controlled by stop sign

For existing conditions, only signal warrants 1, 2, and 7 were analyzed because the other warrants (3 to 6, 8 and 9) were not applicable to the study intersection. Signal warrant 1 was not satisfied based on the 8-hour intersection volumes. Neither condition A or B was 100 percent satisfied and conditions A and B did not meet the 70 percent volume level criteria. Based on signal warrant 2, a signal is warranted at this location because the four-hour 70 percent intersection volumes exceeded the minimum requirements. Warrant 7 was not satisfied because the intersection did not meet the minimum crash requirements. The minimum is five crashes in a 12-month period and a total number of four collisions occurred between the years 2016 and 2021.

Future Conditions with Project (2025)

Trip generation and trip distribution calculations were conducted in order to perform the signal warrant analysis for proposed site to account for the impact of the site on existing conditions at the expected completion of its construction. Project trip generation was calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Land use was designated as general light industrial, mini-warehouse, and general office building. Based on the ITE rates, the total project trips are estimated to be 679 daily.

The proposed site is anticipated to be constructed by the year 2025. Hence, a growth factor of one percent per year was applied to the existing traffic volumes to account for future growth within the study area. This factor is consistent with the rate of growth of background traffic observed and used for traffic analysis in the City of Gardena.

The growth rates were compounded over a three-year period (2022 to 2025) and applied to existing traffic volumes to obtain the future (2025) background (without project) traffic volumes. The hourly project trips were then added to the background traffic volumes to obtain the future volumes with project and used in the signal warrant analysis. A summary of signal warrants 1 through 9 are shown in **Table 3** and signal warrant analysis form included in **Appendix C**.

Table 3: Summary of Signal Warrants - Future Conditions with Project (2025)

Warrant	Warrant Met			Comments
	Yes	No	N/A	
1: Eight-Hour Vehicular Volume		✖		Condition A and B are not 100% satisfied and neither A or B are 70% satisfied
2: Four-Hour Vehicular Volume	✖			Warrant was already satisfied based on pre existing conditions
3: Peak Hour Vehicular Volume			✖	Proposed site does not meet the condition of discharging large numbers of vehicles in a short time
4: Pedestrian Volume			✖	Intersection did not necessitate pedestrian volume warrant
5: School Crossing			✖	Intersection is not near a school crossing
6: Coordinated Signal System			✖	Intersection is less than 1,000 feet distance from adjacent signalized intersections at Normandie Ave and Dalton Ave
7: Crash Experience		✖		Did not meet minimum collision requirements

Warrant	Warrant Met			Comments
	Yes	No	N/A	
8: Roadway Network			✖	Driveways are not considered major routes
9: Intersection Near a Grade Crossing			✖	No grade crossing on the approach (driveway) controlled by stop sign

Similar to the existing condition signal warrant analysis, only signal warrants 1, 2, and 7 were analyzed for the future condition signal warrant analysis because the other warrants (3 to 6, 8 and 9) were not applicable to the study. Signal warrant 1 was not satisfied based on the 8-hour intersection volumes. Neither condition A or B was 100 percent satisfied and conditions A and B did not meet the 70 percent volume level criteria. Based on signal warrant 2, a signal is warranted at this location because the four-hour 70 percent intersection volumes exceeded the minimum requirements. This was expected because the warrant was already met under existing conditions. Warrant 7 was not satisfied because the intersection did not meet the minimum crash requirements. The minimum is five crashes in a 12-month period and a total number of four collisions occurred between the years 2016 and 2021.

CONCLUSIONS

A signal warrant analysis was completed at the intersection of Artesia Boulevard and Gateway Plaza Driveway/Proposed Site Driveway was completed for existing and future with project conditions. The results indicate that signal warrant 2 is met based on 4-hour vehicular volumes. It is noted that per CA MUTCD, the satisfaction of a traffic signal warrant shall not in itself require the installation of a traffic control signal. Considering that the traffic signal warrant is met under existing condition (without project) and the proposed project is not the anticipated to significantly increase the traffic volumes at the study intersection and result in satisfaction of additional signal warrants, it is recommended that a traffic signal be not considered at this intersection.

Assuming that the existing directional median opening will be retained, it is recommended that the proposed site driveway be evaluated as a right-in-right-out driveway with westbound U-turns allowed at Dalton Avenue. It is noted that eastbound U-turns are currently allowed at Normandie Avenue, but westbound U-turns are prohibited at Dalton Avenue.

APPENDIX A

Traffic Counts

Tuesday, May 03, 2022 | CITY: Gardena | PROJECT: SC3403

ADT1 Artesia east of Gateway Plaza. | **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
0:00	49		37			12:00	334		328		
0:15	60		25			12:15	336		263		
0:30	44		42			12:30	335		344		
0:45	33	186	37	141	327	12:45	346	1351	303	1238	2589
1:00	37		29			13:00	338		285		
1:15	36		22			13:15	373		257		
1:30	24		27			13:30	390		308		
1:45	28	125	26	104	229	13:45	347	1448	303	1153	2601
2:00	22		24			14:00	402		294		
2:15	21		20			14:15	403		285		
2:30	20		22			14:30	392		290		
2:45	25	88	28	94	182	14:45	378	1575	368	1237	2812
3:00	22		32			15:00	445		308		
3:15	28		34			15:15	470		314		
3:30	35		31			15:30	471		296		
3:45	32	117	33	130	247	15:45	435	1821	302	1220	3041
4:00	34		37			16:00	467		340		
4:15	35		54			16:15	447		327		
4:30	47		80			16:30	468		334		
4:45	61	177	77	248	425	16:45	490	1872	371	1372	3244
5:00	68		93			17:00	457		338		
5:15	66		147			17:15	444		345		
5:30	99		254			17:30	508		380		
5:45	107	340	293	787	1127	17:45	471	1880	345	1408	3288
6:00	118		403			18:00	390		308		
6:15	152		429			18:15	355		317		
6:30	187		506			18:30	326		286		
6:45	171	628	436	1774	2402	18:45	308	1379	268	1179	2558
7:00	194		365			19:00	294		209		
7:15	254		368			19:15	269		204		
7:30	249		417			19:30	233		234		
7:45	284	981	458	1608	2589	19:45	268	1064	193	840	1904
8:00	280		416			20:00	237		191		
8:15	272		391			20:15	204		192		
8:30	273		455			20:30	213		160		
8:45	302	1127	416	1678	2805	20:45	190	844	161	704	1548
9:00	253		423			21:00	162		124		
9:15	274		410			21:15	154		128		
9:30	275		431			21:30	145		112		
9:45	260	1062	366	1630	2692	21:45	118	579	90	454	1033
10:00	207		301			22:00	124		103		
10:15	236		302			22:15	106		80		
10:30	249		254			22:30	93		64		
10:45	241	933	310	1167	2100	22:45	77	400	60	307	707
11:00	290		305			23:00	108		58		
11:15	276		303			23:15	39		60		
11:30	298		296			23:30	65		45		
11:45	278	1142	277	1181	2323	23:45	52	264	63	226	490
Total Vol.		6906		10542	**17448**			14477		11338	**25815**

Daily Totals	EB	WB	**Combined**
	21383	21880	**43263**

	AM			**PM**		
Split %	39.6%	60.4%	**40.3%**	56.1%	43.9%	**59.7%**
Peak Hour	11:45	6:00	**7:45**	16:45	16:45	**16:45**
Volume	1283	1774	**2829**	1899	1434	**3333**
P.H.F.	0.95	0.88	**0.95**	0.93	0.94	**0.94**

Tuesday, May 03, 2022 CITY: Gardena PROJECT: SC3403

ADT2 Gateway Plaza north of Artesia. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
0:00	0		3			12:00	30		61		
0:15	0		2			12:15	25		54		
0:30	0		2			12:30	29		46		
0:45	0	0	0	7	7	12:45	30	114	58	219	333
1:00	0		0			13:00	24		60		
1:15	1		2			13:15	24		57		
1:30	0		0			13:30	28		65		
1:45	0	1	2	4	5	13:45	28	104	42	224	328
2:00	1		1			14:00	26		46		
2:15	0		0			14:15	17		32		
2:30	2		1			14:30	22		39		
2:45	0	3	0	2	5	14:45	19	84	33	150	234
3:00	0		0			15:00	17		36		
3:15	0		0			15:15	16		34		
3:30	0		1			15:30	20		32		
3:45	0	0	0	1	1	15:45	18	71	24	126	197
4:00	0		1			16:00	25		34		
4:15	1		2			16:15	20		34		
4:30	0		1			16:30	20		40		
4:45	2	3	0	4	7	16:45	25	90	42	150	240
5:00	0		1			17:00	20		34		
5:15	0		0			17:15	18		33		
5:30	0		0			17:30	22		44		
5:45	2	2	0	1	3	17:45	22	82	35	146	228
6:00	3		1			18:00	25		46		
6:15	2		1			18:15	18		45		
6:30	2		4			18:30	16		44		
6:45	1	8	1	7	15	18:45	20	79	38	173	252
7:00	5		5			19:00	19		37		
7:15	8		7			19:15	19		32		
7:30	5		5			19:30	16		32		
7:45	8	26	4	21	47	19:45	20	74	28	129	203
8:00	13		13			20:00	17		35		
8:15	23		10			20:15	15		35		
8:30	15		11			20:30	20		28		
8:45	23	74	19	53	127	20:45	10	62	30	128	190
9:00	14		14			21:00	6		26		
9:15	15		22			21:15	5		24		
9:30	15		32			21:30	7		19		
9:45	14	58	12	80	138	21:45	0	18	13	82	100
10:00	14		13			22:00	4		9		
10:15	21		23			22:15	1		4		
10:30	10		23			22:30	2		4		
10:45	21	66	25	84	150	22:45	2	9	5	22	31
11:00	22		25			23:00	1		6		
11:15	33		33			23:15	1		2		
11:30	26		38			23:30	0		2		
11:45	27	108	32	128	236	23:45	0	2	3	13	15
Total Vol.		349		392	**741**			789		1562	**2351**

Daily Totals

NB	SB	Combined
1138	1954	**3092**

	AM			PM		
Split %	47.1%	52.9%	**24.0%**	33.6%	66.4%	**76.0%**
Peak Hour	11:15	11:45	**11:45**	12:00	12:45	**12:45**
Volume	116	193	**304**	114	240	**346**
P.H.F.	0.88	0.79	**0.84**	0.94	0.92	**0.93**

cs@aimtd.com Tell. 714 253 7888

Tuesday, May 03, 2022 | CITY: Gardena | PROJECT: SC3403

ADT3 Artesia west of Gateway Plaza. | **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
0:00	48		39			12:00	326		351		
0:15	58		25			12:15	326		282		
0:30	42		42			12:30	333		359		
0:45	33	181	37	143	324	12:45	338	1323	323	1315	2638
1:00	35		27			13:00	322		305		
1:15	35		22			13:15	359		276		
1:30	24		27			13:30	379		334		
1:45	27	121	27	103	224	13:45	346	1406	316	1231	2637
2:00	22		24			14:00	393		305		
2:15	21		20			14:15	402		299		
2:30	21		22			14:30	389		304		
2:45	25	89	28	94	183	14:45	369	1553	373	1281	2834
3:00	22		32			15:00	441		320		
3:15	28		34			15:15	463		326		
3:30	34		31			15:30	473		308		
3:45	32	116	33	130	246	15:45	439	1816	310	1264	3080
4:00	33		37			16:00	459		342		
4:15	32		52			16:15	443		336		
4:30	46		80			16:30	457		341		
4:45	63	174	77	246	420	16:45	497	1856	388	1407	3263
5:00	67		93			17:00	461		359		
5:15	66		147			17:15	445		361		
5:30	99		254			17:30	508		398		
5:45	108	340	292	786	1126	17:45	474	1888	359	1477	3365
6:00	118		401			18:00	387		326		
6:15	153		429			18:15	340		329		
6:30	184		505			18:30	319		307		
6:45	168	623	433	1768	2391	18:45	304	1350	282	1244	2594
7:00	194		365			19:00	284		217		
7:15	253		366			19:15	261		209		
7:30	251		419			19:30	230		247		
7:45	285	983	455	1605	2588	19:45	262	1037	195	868	1905
8:00	280		416			20:00	232		204		
8:15	277		383			20:15	196		204		
8:30	273		451			20:30	209		164		
8:45	301	1131	411	1661	2792	20:45	182	819	173	745	1564
9:00	254		424			21:00	152		134		
9:15	272		415			21:15	141		134		
9:30	267		440			21:30	134		113		
9:45	255	1048	359	1638	2686	21:45	113	540	98	479	1019
10:00	209		302			22:00	121		105		
10:15	238		306			22:15	103		80		
10:30	250		268			22:30	92		65		
10:45	239	936	312	1188	2124	22:45	76	392	62	312	704
11:00	289		307			23:00	107		62		
11:15	279		306			23:15	38		60		
11:30	296		306			23:30	64		46		
11:45	285	1149	289	1208	2357	23:45	52	261	66	234	495
Total Vol.		6891		10570	**17461**			14241		11857	**26098**

Daily Totals	EB	WB	**Combined**
	21132	22427	**43559**

	AM			**PM**		
Split %	39.5%	60.5%	**40.1%**	54.6%	45.4%	**59.9%**
Peak Hour	11:45	6:00	**7:45**	16:45	16:45	**16:45**
Volume	1270	1768	**2820**	1911	1506	**3417**
P.H.F.	0.95	0.88	**0.95**	0.94	0.95	**0.94**

cs@aimtd.com Tell. 714 253 7888

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, May 3, 22

LOCATION: Gardena
NORTH & SOUTH: Gateway Plaza Dwy
EAST & WEST: Artesia

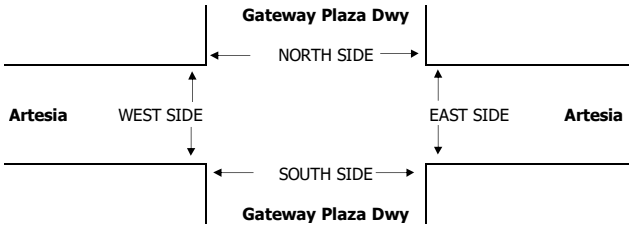
PROJECT #: SC3403
LOCATION #: 2
CONTROL: STOP S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N / ◄ W / E ► / S ▼

☐ Add U-Turns to Left Turns

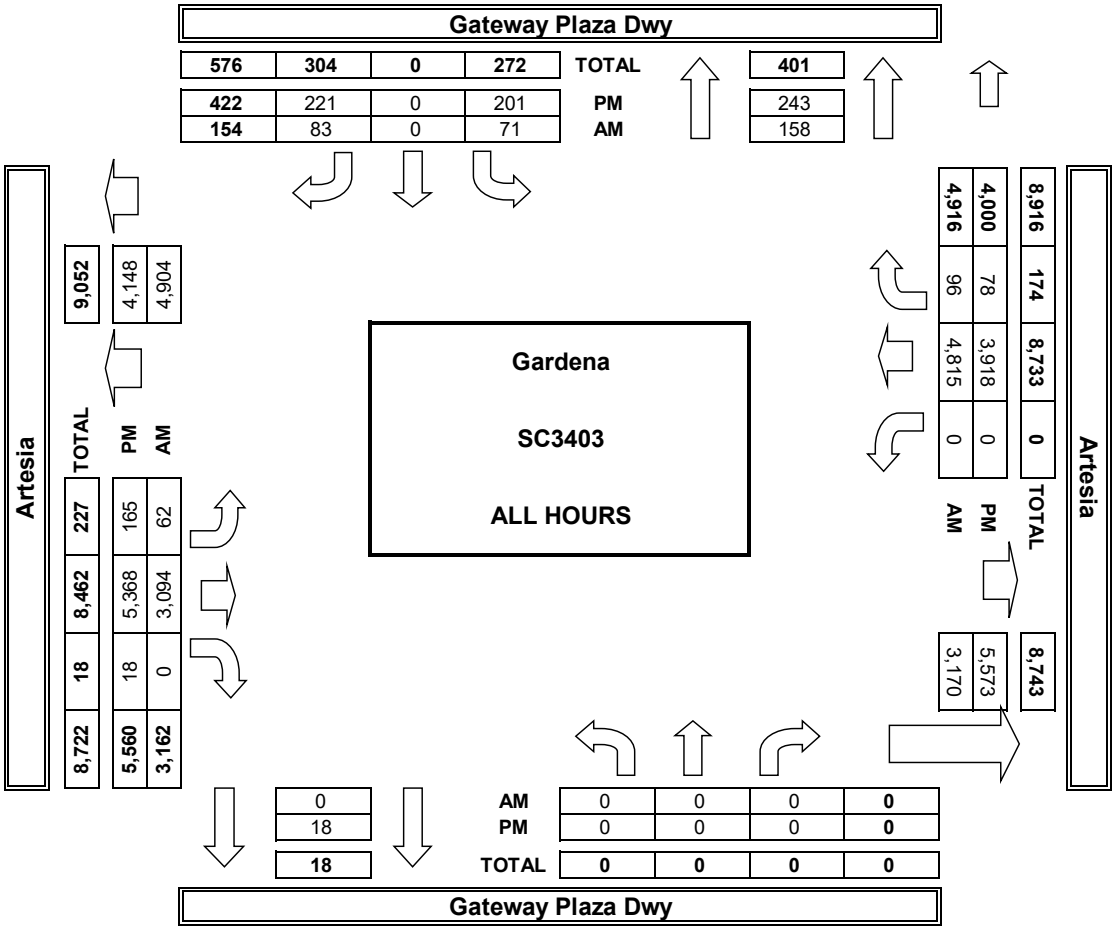
		NORTHBOUND Gateway Plaza Dwy			SOUTHBOUND Gateway Plaza Dwy			EASTBOUND Artesia			WESTBOUND Artesia				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 1	ST X	SR 1	EL 1	ET 3	ER X	WL X	WT 3	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	3	0	2	2	191	0	0	362	3	563	0	0	1	0	1
	7:15 AM	0	0	0	3	0	4	2	251	0	0	362	6	628	0	0	0	0	0
	7:30 AM	0	0	0	0	0	5	3	248	0	0	414	2	672	0	0	0	1	1
	7:45 AM	0	0	0	2	0	2	3	282	0	0	453	5	747	0	0	0	0	0
	8:00 AM	0	0	0	6	0	7	6	274	0	0	409	7	709	0	0	0	0	0
	8:15 AM	0	0	0	8	0	2	10	264	0	0	378	13	675	0	0	3	0	3
	8:30 AM	0	0	0	6	0	5	8	265	0	0	446	7	737	0	0	0	2	2
	8:45 AM	0	0	0	10	0	9	10	291	0	0	402	13	735	0	0	0	1	1
	9:00 AM	0	0	0	3	0	11	4	250	0	0	413	10	691	0	0	0	0	0
	9:15 AM	0	0	0	9	0	13	6	265	0	0	401	9	703	0	0	1	0	1
	9:30 AM	0	0	0	15	0	17	7	260	0	0	423	8	730	0	0	0	0	0
	9:45 AM	0	0	0	6	0	6	1	253	0	0	352	13	631	0	0	1	1	2
	VOLUMES	0	0	0	71	0	83	62	3,094	0	0	4,815	96	8,232	0	0	6	5	11
	APPROACH %	0%	0%	0%	46%	0%	54%	2%	98%	0%	0%	98%	2%						
	APP/DEPART	0	/	158	154	/	0	3,162	/	3,170	4,916	/	4,904	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	0	0	22	0	16	27	1,085	0	0	1,686	32	2,873					
	APPROACH %	0%	0%	0%	58%	0%	42%	2%	97%	0%	0%	98%	2%						
	PEAK HR FACTOR		0.000			0.731			0.978			0.939		0.962					
	APP/DEPART	0	/	59	38	/	0	1,115	/	1,109	1,720	/	1,705	0					
PM	3:00 PM	0	0	0	18	0	18	10	428	1	0	300	7	782	0	0	2	0	2
	3:15 PM	0	0	0	16	0	18	10	452	1	0	308	6	811	0	0	0	0	0
	3:30 PM	0	0	0	16	0	16	13	455	3	0	290	7	800	0	0	2	0	2
	3:45 PM	0	0	0	10	0	13	13	425	1	0	297	5	764	0	0	0	0	0
	4:00 PM	0	0	0	24	0	10	16	442	0	0	331	9	832	0	0	1	0	1
	4:15 PM	0	0	0	16	0	18	11	431	0	0	317	9	802	0	0	1	1	2
	4:30 PM	0	0	0	26	0	14	12	443	1	0	326	8	830	0	0	1	0	1
	4:45 PM	0	0	0	14	0	25	19	475	3	0	363	6	905	0	0	0	2	2
	5:00 PM	0	0	0	13	0	26	15	443	2	0	332	5	836	0	0	1	1	2
	5:15 PM	0	0	0	12	0	21	13	430	2	0	340	5	823	0	0	0	0	0
	5:30 PM	0	0	0	21	0	23	17	488	3	0	375	5	932	0	0	0	0	0
	5:45 PM	0	0	0	15	0	19	16	456	1	0	339	6	852	0	0	1	0	1
	VOLUMES	0	0	0	201	0	221	165	5,368	18	0	3,918	78	9,982	0	0	9	4	13
	APPROACH %	0%	0%	0%	48%	0%	52%	3%	97%	0%	0%	98%	2%						
	APP/DEPART	0	/	243	422	/	18	5,560	/	5,573	4,000	/	4,148	0					
	BEGIN PEAK HR		4:45 PM																
	VOLUMES	0	0	0	60	0	95	64	1,836	10	0	1,410	21	3,500					
	APPROACH %	0%	0%	0%	39%	0%	61%	3%	96%	1%	0%	98%	1%						
	PEAK HR FACTOR		0.000			0.881			0.940			0.943		0.939					
	APP/DEPART	0	/	85	155	/	10	1,911	/	1,899	1,434	/	1,506	0					

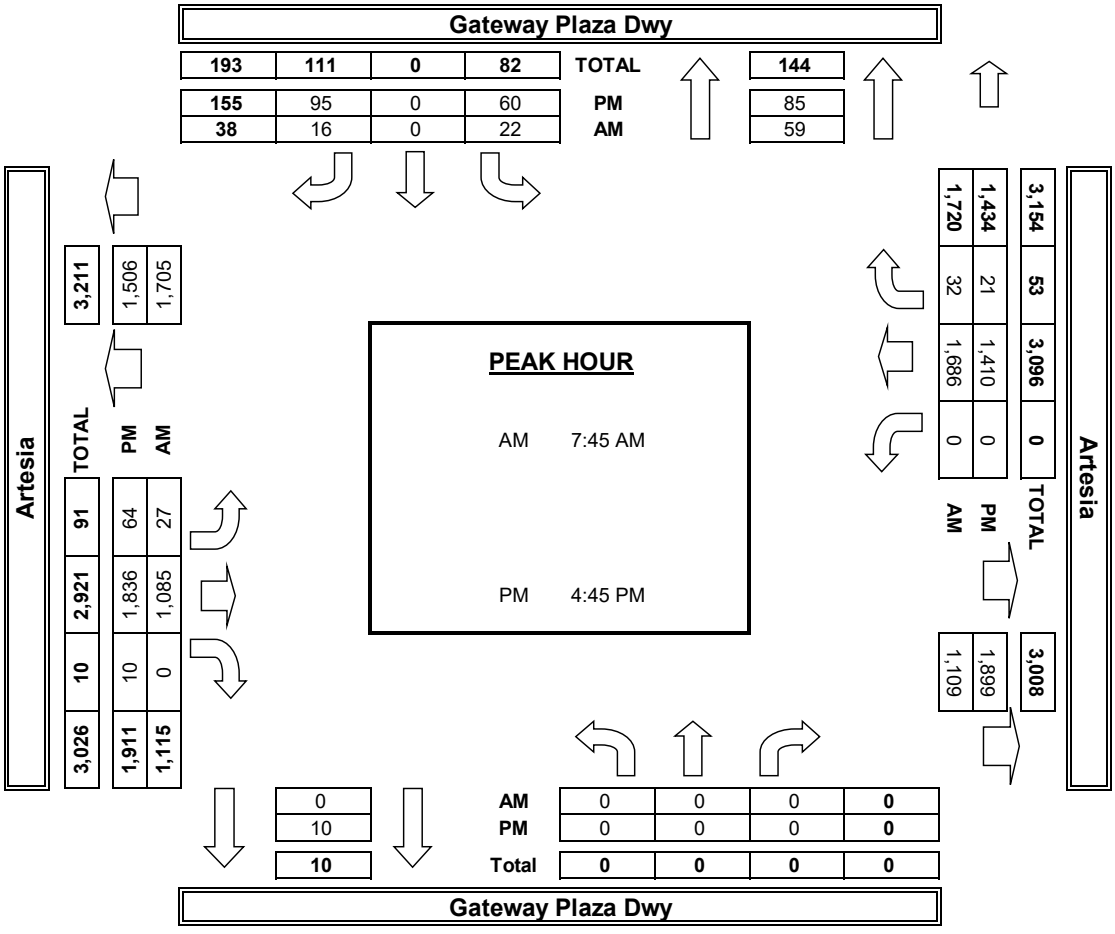


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	7:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:30 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	7:45 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:00 AM	4	1	0	0	5	4	0	0	0	4	0	1	0	0	1
	8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:30 AM	3	0	0	1	4	3	0	0	0	3	0	0	0	1	1
	8:45 AM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
	9:00 AM	2	0	0	1	3	1	0	0	1	2	1	0	0	0	1
	9:15 AM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	9:30 AM	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	18	2	0	4	24	14	0	0	3	17	4	2	0	1	7
	AM BEGIN PEAK HR			7:45 AM			9	0	0	0	9					
PM	3:00 PM	2	1	0	0	3	1	1	0	0	2	1	0	0	0	1
	3:15 PM	1	3	0	0	4	1	3	0	0	4	0	0	0	0	0
	3:30 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
	3:45 PM	6	8	0	0	14	6	8	0	0	14	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	2	0	0	0	2	1	0	0	0	1	1	0	0	0	1
	4:30 PM	1	2	0	0	3	0	2	0	0	2	1	0	0	0	1
	4:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:00 PM	7	1	0	0	8	7	0	0	0	7	0	1	0	0	1
	5:15 PM	1	3	0	0	4	1	1	0	0	2	0	2	0	0	2
	5:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
	5:45 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
	TOTAL	22	21	0	0	43	18	17	0	0	35	4	4	0	0	8
	PM BEGIN PEAK HR			4:45 PM			9	1	0	0	10					

AimTD LLC

TURNING MOVEMENT COUNTS





APPENDIX B

Signal Warrant Analysis - Existing Conditions (2022)

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** | Engineer: **Kimley-Horn**
County: **Los Angeles** | Date: **May 13, 2022**

Major Street: **Artesia Blvd** | Lanes: **3** | Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** | Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied.
Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied.

Condition A - Minimum Vehicular Volume

100% Satisfied: ☐ Yes ☒ No
80% Satisfied: ☐ Yes ☒ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours							
Approach Lanes	1		2 or more		5:00 PM - 6:00 PM	4:00 PM - 5:00 PM	3:00 PM - 4:00 PM	8:00 AM - 9:00 AM	2:00 PM - 3:00 PM	9:00 AM - 10:00 AM	7:00 AM - 8:00 AM	12:00 PM - 1:00 PM
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	500 (400)	350	600 (480)	420	**3,296**	**3,228**	**3,036**	**2,809**	**2,790**	**2,678**	**2,591**	**2,561**
Highest Approach on Minor Street	150 (120)	105	200 (160)	140	146	150	126	53	150	80	21	219

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where the traffic volume is so heavy that traffic on the minor street suffers excessive delay.

Applicable: ☒ Yes ☐ No
Excessive Delay: ☐ Yes ☒ No
100% Satisfied: ☐ Yes ☒ No
80% Satisfied: ☐ Yes ☒ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours							
Approach Lanes	1		2 or more		5:00 PM - 6:00 PM	4:00 PM - 5:00 PM	3:00 PM - 4:00 PM	8:00 AM - 9:00 AM	2:00 PM - 3:00 PM	9:00 AM - 10:00 AM	7:00 AM - 8:00 AM	12:00 PM - 1:00 PM
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	750 (600)	525	900 (720)	630	**3,296**	**3,228**	**3,036**	**2,809**	**2,790**	**2,678**	**2,591**	**2,561**
Highest Approach on Minor Street	75 (60)	53	100 (80)	70	146	150	126	53	150	80	21	219

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

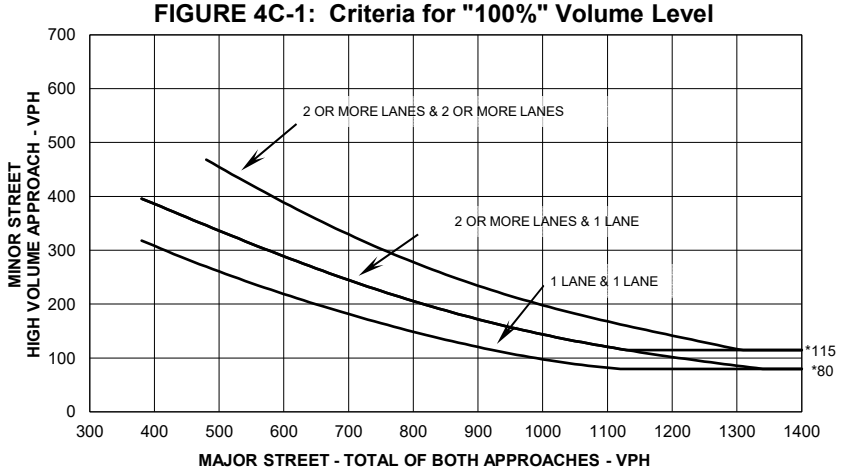
If all four points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

Plot four volume combinations on the applicable figure below.

Four Highest Hours	Volumes	
	Major Street	Minor Street
5:00 PM - 6:00 PM	3,296	146
4:00 PM - 5:00 PM	3,228	150
3:00 PM - 4:00 PM	3,036	126
8:00 AM - 9:00 AM	2,809	94

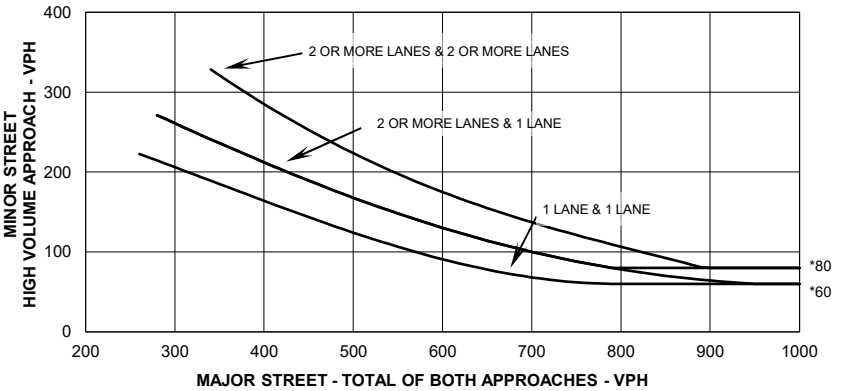
FIGURE 4C-1: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

AM Peak

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfed.

Unusual condition justifying use of warrant:

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour		
8:00 AM	2809	53

Criteria

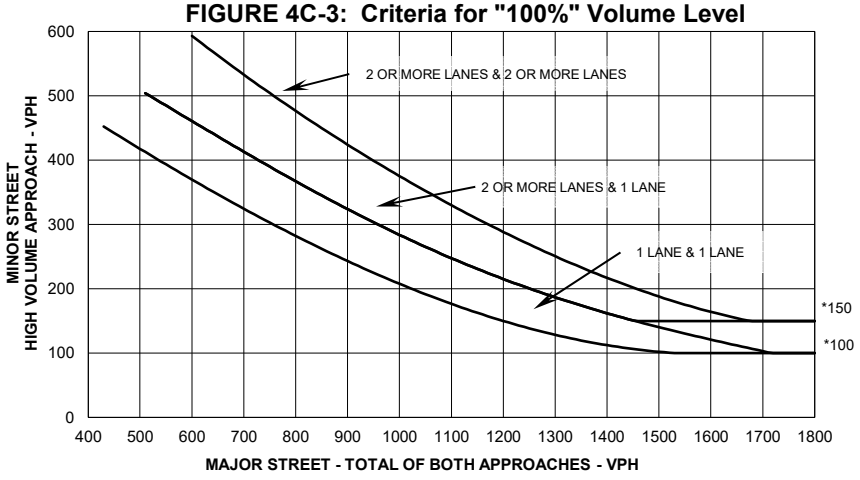
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		0.1
Fulfilled?: ☐ Yes	☒ No	

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*		53
Fulfilled?: ☐ Yes	☒ No	

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*		2,862
Fulfilled?: ☒ Yes	☐ No	

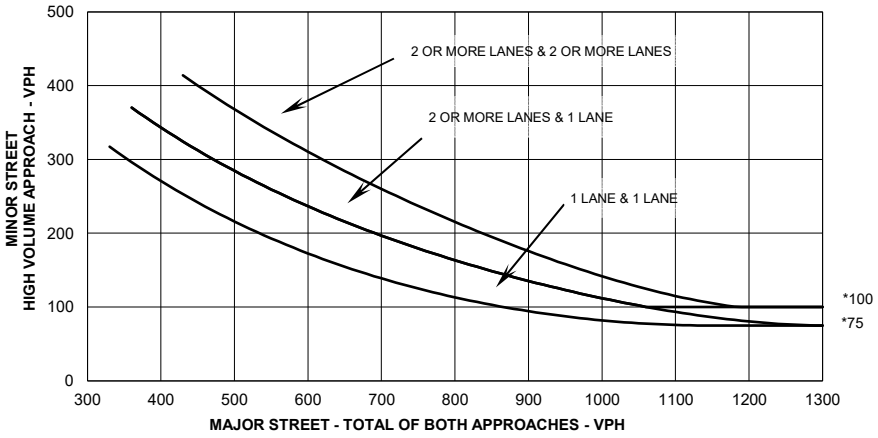
Plot volume combination on the applicable figure below.

FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

WARRANT 4 - PEDESTRIAN VOLUME

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if condition 1 or 2 is fulfilled and condition 3 is fulfilled.

Criteria	Hour	Pedestrian Volume	Pedestrian Gaps	Fulfilled? Yes	Fulfilled? No
1. Pedestrian volume crossing the major street is 100 ped/hr or more for each of any four hours and there are less than 60 gaps per hour in the major street traffic stream of adequate length.				☐	☐
2. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour and there are less than 60 gaps per hour in the major street traffic stream of adequate length.				☐	☐
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☐	☐

WARRANT 5 - SCHOOL CROSSING

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Criteria				Fulfilled? Yes	Fulfilled? No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:		☐	☐
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the crossing than the number of minutes in the same period.		Minutes:	Gaps:	☐	☐
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☐	☐

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft).

Criteria	Fulfilled? Yes	Fulfilled? No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	☐	☒
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.	☐	☒

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

WARRANT 7 - CRASH EXPERIENCE

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Criteria		Hour	Volume	Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. One of the warrants to the right is met.	Warrant 1, Condition A (80% satisfied)			☐	☒	☐	☒
	Warrant 1, Condition B (80% satisfied)			☐	☒		
	Warrant 4, Pedestrian Volume at 80% of volume requirements: 80 ped/hr for four (4) hours or 152 ped/hr for one (1) hour	n/a	n/a	☐	☒		
		n/a	n/a				
		n/a	n/a				
		n/a	n/a				
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:	n/a			☐	☒
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-mo. period.		Number of crashes per 12 months:	**2**			☐	☒

WARRANT 8 - ROADWAY NETWORK

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the characteristics listed.

Criteria							Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.		Entering Volume:				☐	☐	☐	☐
	b. Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.	Warrant:	1	2	3		☐	☐		
		Satisfied?:								
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)						← Hour	☐	☐		
						← Volume				

Characteristics of Major Routes		Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:	☐	☐	☐	☐
	Minor Street:	☐	☐		
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:	☐	☐		
	Minor Street:	☐	☐		
3. Appears as a major route on an official plan.	Major Street:	☐	☐		
	Minor Street:	☐	☐		

CONCLUSIONS

Warrants Satisfied: N | Y | N | N | N | N | N | N

Remarks: _____

Source: Revised from NCHRP Report 457

APPENDIX C

Signal Warrant Analysis - Future Conditions with Project (2025)

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** | Engineer: **Kimley-Horn**
County: **Los Angeles** | Date: **May 13, 2022**

Major Street: **Artesia Blvd** | Lanes: **3** | Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** | Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied.
Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied.

Condition A - Minimum Vehicular Volume

100% Satisfied: ☐ Yes ☒ No
80% Satisfied: ☐ Yes ☒ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours							
Approach Lanes	1		2 or more		5:00 PM - 6:00 PM	4:00 PM - 5:00 PM	3:00 PM - 4:00 PM	8:00 AM - 9:00 AM	2:00 PM - 3:00 PM	9:00 AM - 10:00 AM	7:00 AM - 8:00 AM	12:00 PM - 1:00 PM
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	500 (400)	350	600 (480)	420	**3,470**	**3,398**	**3,198**	**2,990**	**2,940**	**2,834**	**2,744**	**2,704**
Highest Approach on Minor Street	150 (120)	105	200 (160)	140	214	196	178	94	188	106	41	241

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where the traffic volume is so heavy that traffic on the minor street suffers excessive delay.

Applicable: ☒ Yes ☐ No
Excessive Delay: ☐ Yes ☒ No
100% Satisfied: ☐ Yes ☒ No
80% Satisfied: ☐ Yes ☒ No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours							
Approach Lanes	1		2 or more		5:00 PM - 6:00 PM	4:00 PM - 5:00 PM	3:00 PM - 4:00 PM	8:00 AM - 9:00 AM	2:00 PM - 3:00 PM	9:00 AM - 10:00 AM	7:00 AM - 8:00 AM	12:00 PM - 1:00 PM
Volume Level	100%	70%	100%	70%								
Both Approaches on Major Street	750 (600)	525	900 (720)	630	**3,470**	**3,398**	**3,198**	**2,990**	**2,940**	**2,834**	**2,744**	**2,704**
Highest Approach on Minor Street	75 (60)	53	100 (80)	70	214	196	178	94	188	106	41	241

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

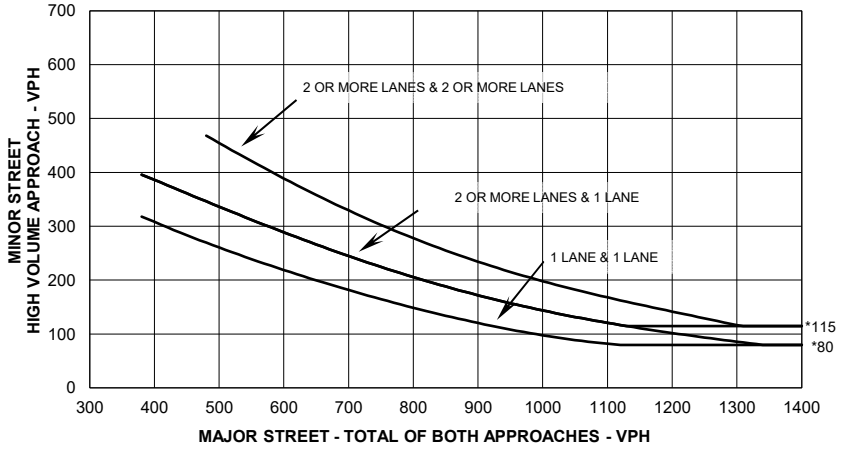
If all four points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☒ Yes ☐ No
Satisfied: ☒ Yes ☐ No

Plot four volume combinations on the applicable figure below.

Four Highest Hours	Volumes	
	Major Street	Minor Street
5:00 PM - 6:00 PM	3,470	214
4:00 PM - 5:00 PM	3,398	196
3:00 PM - 4:00 PM	3,198	178
8:00 AM - 9:00 AM	2,990	94

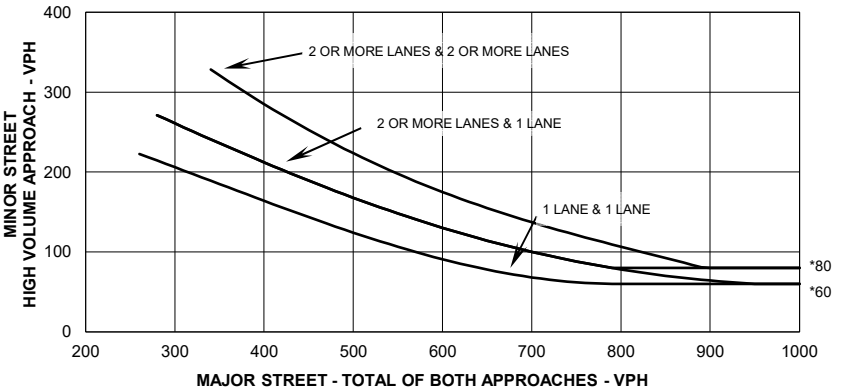
FIGURE 4C-1: Criteria for "100%" Volume Level



** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

AM Peak

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? ☒ Yes ☐ No
2. Is the intersection in a built-up area of isolated community of <10,000 population? ☐ Yes ☒ No

If Question 1 or 2 above is answered "Yes", then use "70%" volume level ☒ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

If all three criteria are fullfilled or the plotted point lies above the appropriate line, then the warrant is satisfed.

Unusual condition justifying use of warrant:

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour		
8:00 AM	2990	94

Criteria

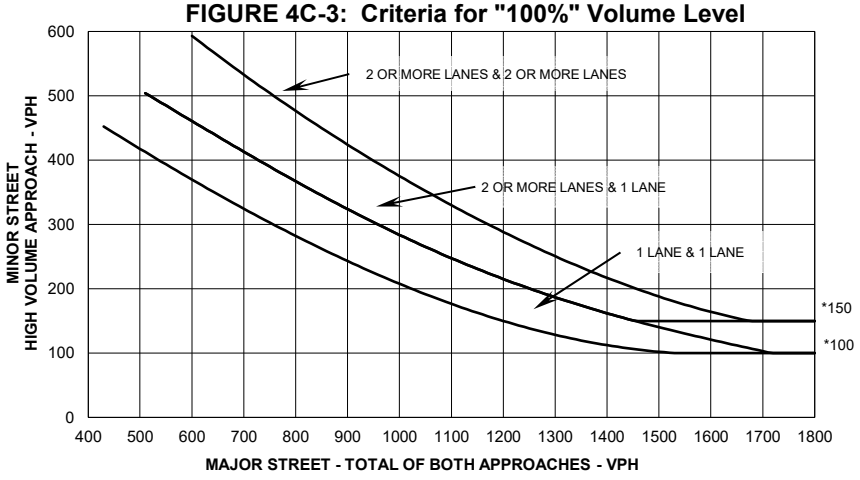
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		0.1
Fulfilled?: ☐ Yes	☒ No	

2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*		94
Fulfilled?: ☐ Yes	☒ No	

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*		3,084
Fulfilled?: ☒ Yes	☐ No	

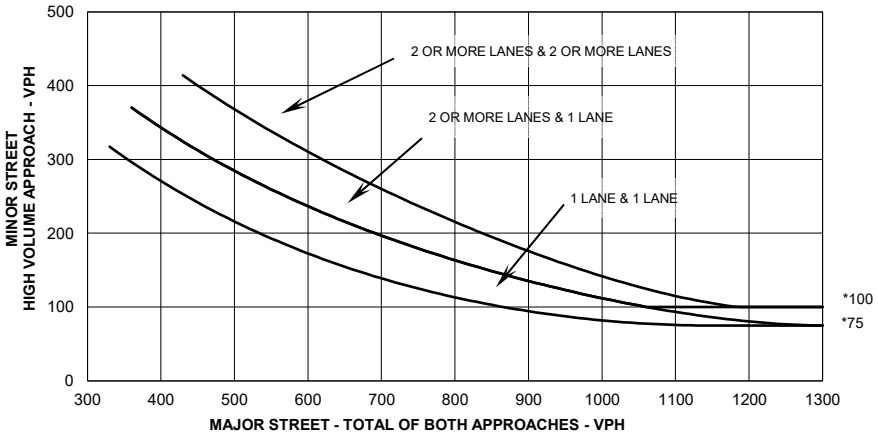
Plot volume combination on the applicable figure below.

FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level
(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

WARRANT 4 - PEDESTRIAN VOLUME

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if condition 1 or 2 is fulfilled and condition 3 is fulfilled.

Criteria	Hour	Pedestrian Volume	Pedestrian Gaps	Fulfilled? Yes	Fulfilled? No
1. Pedestrian volume crossing the major street is 100 ped/hr or more for each of any four hours and there are less than 60 gaps per hour in the major street traffic stream of adequate length.				☐	☐
2. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour and there are less than 60 gaps per hour in the major street traffic stream of adequate length.				☐	☐
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☐	☐

WARRANT 5 - SCHOOL CROSSING

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Criteria				Fulfilled? Yes	Fulfilled? No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:		☐	☐
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the crossing than the number of minutes in the same period.		Minutes:	Gaps:	☐	☐
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.				☐	☐

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft).

Criteria	Fulfilled? Yes	Fulfilled? No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.	☐	☒
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.	☐	☒

Source: Revised from NCHRP Report 457

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Gardenia** Engineer: **Kimley-Horn**
County: **Los Angeles** Date: **May 13, 2022**

Major Street: **Artesia Blvd** Lanes: **3** Critical Approach Speed: **45**
Minor Street: **Gateway Plaza Dwy** Lanes: **2**

WARRANT 7 - CRASH EXPERIENCE

Applicable: ☒ Yes ☐ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Criteria		Hour	Volume	Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. One of the warrants to the right is met.	Warrant 1, Condition A (80% satisfied)			☐	☒	☐	☒
	Warrant 1, Condition B (80% satisfied)			☐	☒		
	Warrant 4, Pedestrian Volume at 80% of volume requirements: 80 ped/hr for four (4) hours or 152 ped/hr for one (1) hour	n/a	n/a	☐	☒		
		n/a	n/a				
		n/a	n/a				
		n/a	n/a				
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:	n/a			☐	☒
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-mo. period.		Number of crashes per 12 months:	**2**			☐	☒

WARRANT 8 - ROADWAY NETWORK

Applicable: ☐ Yes ☒ No
Satisfied: ☐ Yes ☒ No

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the characteristics listed.

Criteria							Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.		Entering Volume:				☐	☐	☐	☐
	b. Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.	Warrant:	1	2	3		☐	☐		
		Satisfied?:								
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)						← Hour	☐	☐		
						← Volume				

Characteristics of Major Routes		Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:	☐	☐	☐	☐
	Minor Street:	☐	☐		
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:	☐	☐		
	Minor Street:	☐	☐		
3. Appears as a major route on an official plan.	Major Street:	☐	☐		
	Minor Street:	☐	☐		

CONCLUSIONS

Warrants Satisfied: N | Y | N | N | N | N | N | N

Remarks: _____

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