ROWENA AVENUE, WAVERLY DRIVE, ANGUS STREET

CUT-THROUGH TRAFFIC STUDY

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EXISTING CONDITIONS

INTRODUCTION

The Silver Lake neighborhood, located northeast of U.S. Route 101, west of California State Route 2, and southwest of Interstate Highway 5, contains many shops, eateries, cafés, and local gathering places – making this east-side Los Angeles neighborhood an eclectic enclave and destination. The neighborhood is utilized by vehicles, bicycles, and pedestrians sharing major and local streets that connect the Silver Lake neighborhood to the rest of Los Angeles and beyond.

In 2013, after a 90-day testing period, a former four-lane portion of Rowena Avenue became a permanent two-lane road (one traffic lane in each direction) with a middle turning lane and dedicated bike lanes on both sides of the street adjacent to on-street parking. Since implementation of the road diet, concerns have been raised by community members related to the potential effects of the road diet on other streets in the area. Specifically, recent concerns regarding cut-through traffic on Waverly Drive and Angus Street have been discussed and highlighted. Concerned community members have raised concerns that more vehicles are traveling along these streets increasing the potential for conflict with pedestrians, including children walking to school, parents with strollers, and joggers.

This study focuses on the traffic patterns along Waverly Drive and Angus Street as these corridors relate to Rowena Avenue. Angus Street is a windy, hill-based residential corridor; Waverly Drive is also a residential corridor, with partial curb. Rowena Avenue is a mix of residential and commercial based properties. Additionally, Rowena Avenue serves as a major thoroughfare to and from California State Route 2 (SR-2) and Interstate Highway 5 (I-5) and as an alternative for connecting the eastern and western portions of the City of Los Angeles.

The City of Los Angeles' Council District 4 office recommended initiating this study to analyze and examine existing conditions in the area, specifically along Waverly Drive and Angus Street. This study will present existing traffic conditions in the project area, identify issues, and recommend potential strategies to help mitigate or alleviate those issues. Recommendations presented in this report are based on solutions developed through public input, technical analysis, and a cost/benefit analysis.

PROJECT AREA

The Project Area limits are Riverside Drive to the north, Maxwell Street to the west, Glendale Boulevard to the east, and Scotland Street to the South. The Project Area was defined through discussion with the two Project Working Groups. **Figure 1- Project Area Boundary** illustrates the Project Area boundaries. **Figure 2 - Project Area Points of Interest** highlights points of interest within the Project Area to provide contextual reference for the area.

Figure 1- Project Area Boundary

Figure 2- Project Area Points of Interest

PROJECT WORK-GROUPS

Additional insight and data points regarding the current conditions, and the real and perceived functions of the corridor, were gathered through two work-group meetings. These work-groups were appointed by the L.A City Council District 4 member David Ryu, and were comprised of local residents and stakeholders.

The work-group meetings were designed to facilitate open dialogue about the challenges and opportunities within the Project Area. Discussion was directed toward mobility and the needs of motorists, bicyclists, and pedestrians.

The first work-group meeting was held on September 25, 2017 at the Hollywood District Office. Members at this meeting expressed positive views regarding the two-way center-turn-lane implemented as part of the Rowena Avenue reconfiguration. The desire to keep this amenity while improving transportation on the street network was stated.

Other points of discussion included (but was not limited to) a desire for more signalized crosswalks, continuous sidewalks along Angus Street, and restricting traffic movement on Rokeby. **Figure 3 - Work group Comments and Notes Map 1** displays some of the notes from this meeting.

The second work-group meeting was held on October 5, 2017 at the Hollywood District Office. During this meeting, group members expressed similar concerns as the first work-group, including a desire for more pedestrian friendly areas, restricting through traffic movements on neighborhood streets, and maintaining facilities for alternative modes of transportation. **Figure 4 - Work-group Comments and Notes Map 2** displays notes from this meeting.

The areas of interest and perceived areas of conflict were used as a starting point to gather data on the existing conditions of Rowena Avenue, Waverly Drive, and Angus Street.

Figure 3-Work-group Comments and Notes Map 1 - Page 1/2

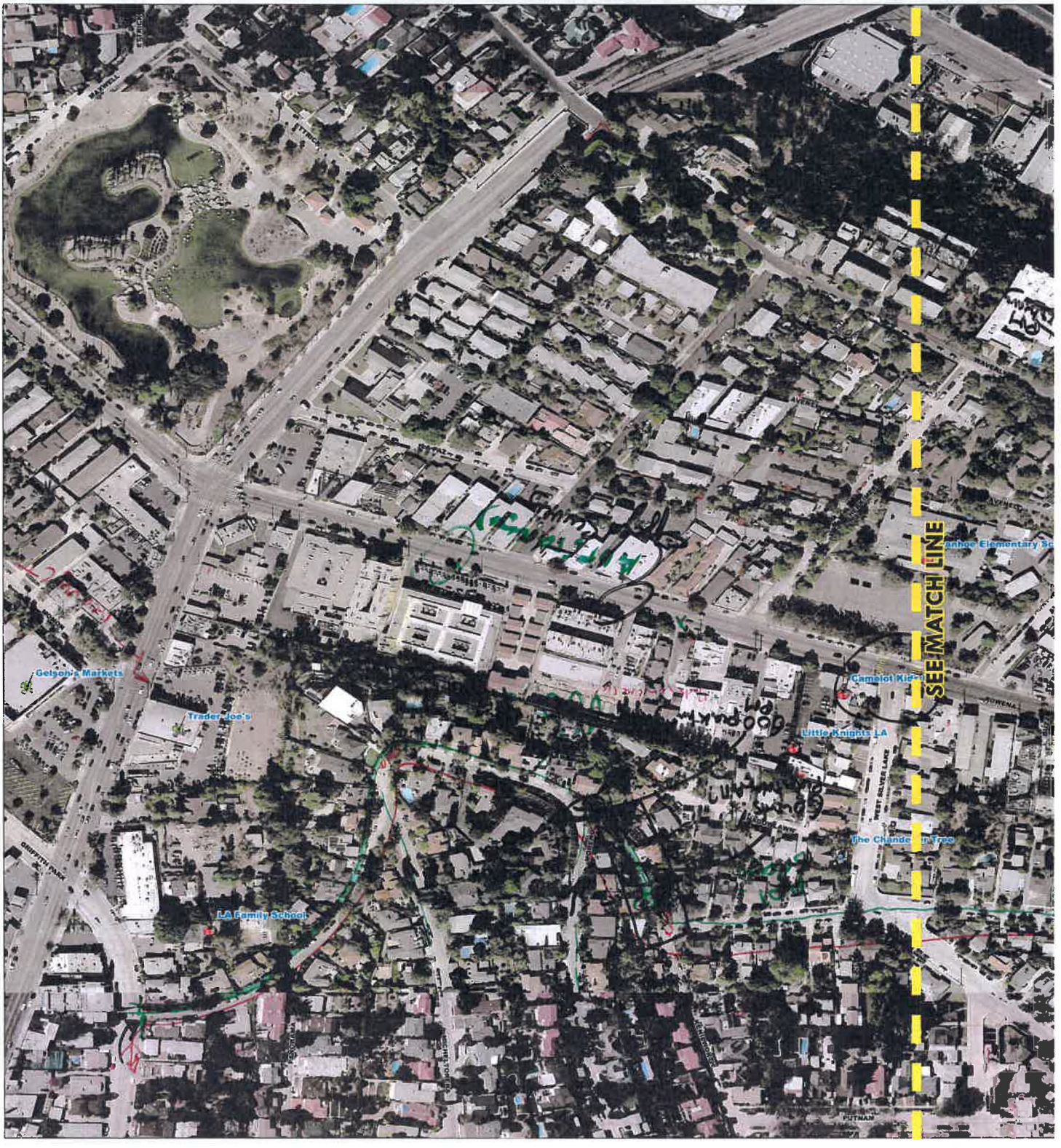


Figure 3-Work-group Comments and Notes Map 1 - Page 2/2

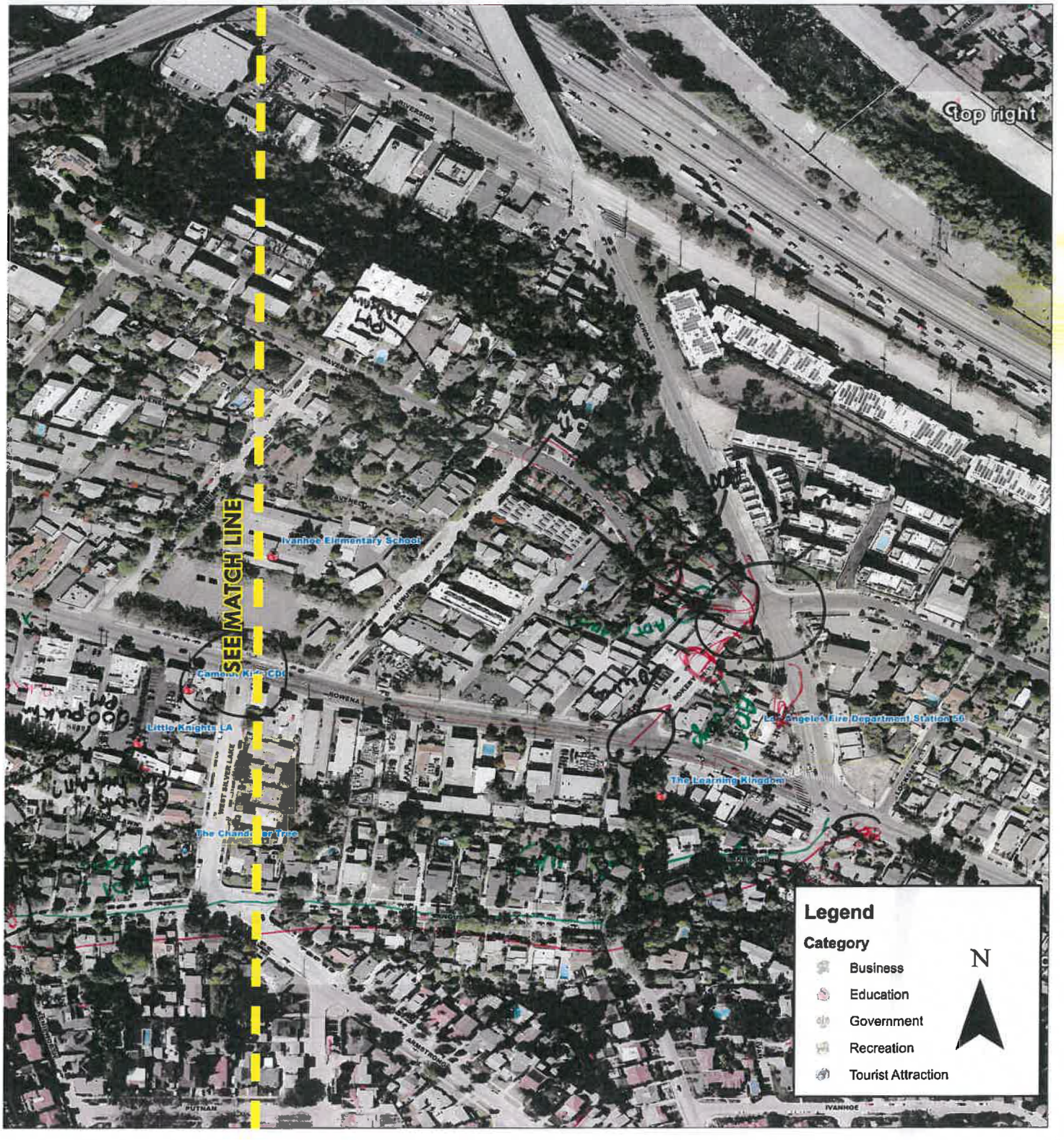
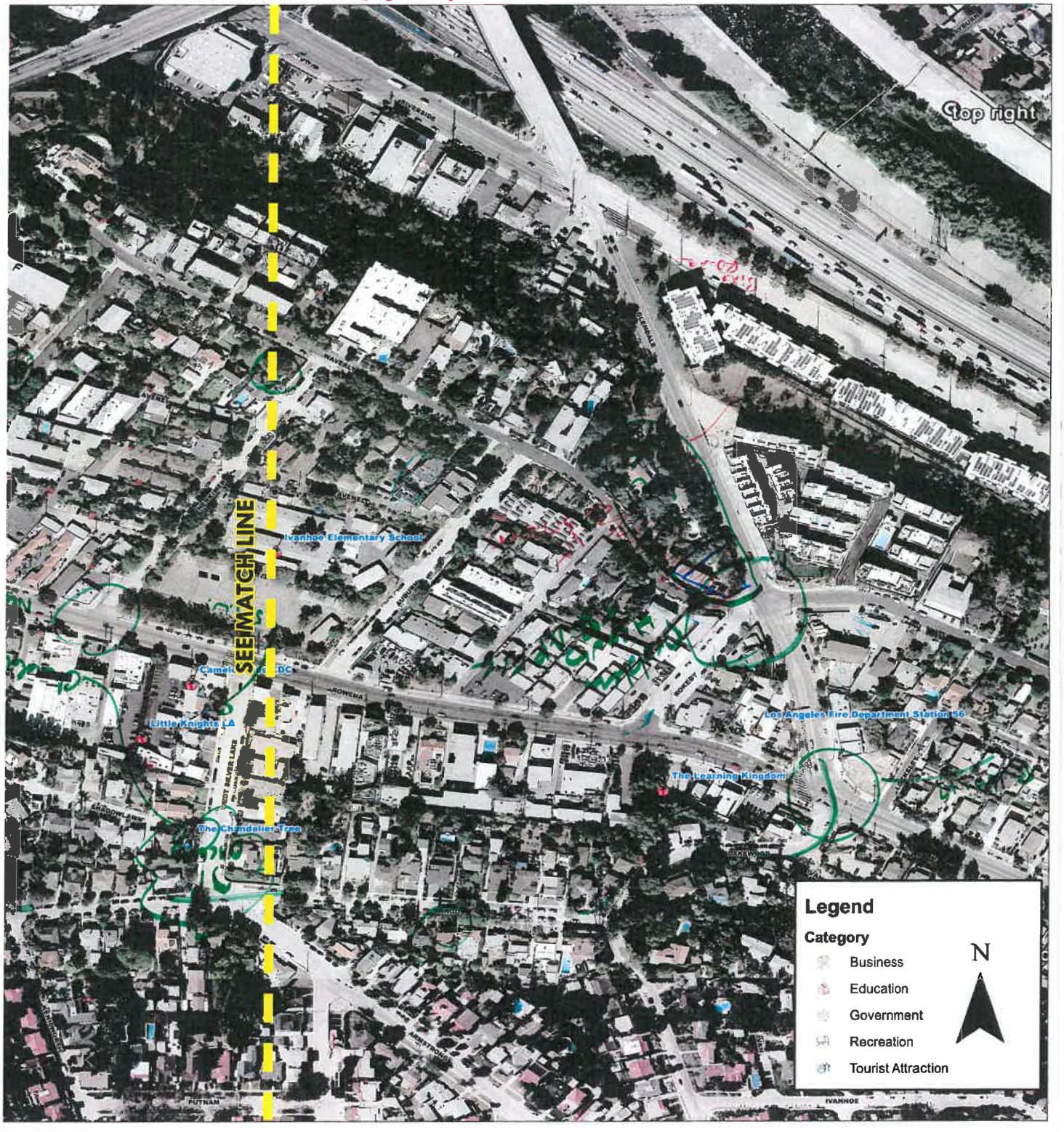


Figure 4-Work-group Comments and Notes Map 2 - Page 1/2

Figure 4-Work-group Comments and Notes Map 2 - Page 2/2



EXISTING CONDITIONS

LAND USE

EXISTING LAND USE

Existing (on-the-ground) land uses within the project area include a mix of single-family and multi-family residential uses. Other uses, mostly along Rowena Avenue, include neighborhood commercial and retail, small offices, schools, and restaurants. Existing land uses are shown in **Figure 5 – Existing Land Use**. Waverly Drive and Angus Street are lined with Single and Multi-Family residential.

GENERAL PLAN LAND USE

The General Plan Land Use map shows a mix of commercial, residential, and public facilities land use designations within the project area. As shown in **Figure 6 – General Plan Land Use Designations**, commercial land use designations are mostly located along Rowena Avenue, Hyperion Avenue, and Glendale Boulevard. Residential land use designations are located adjacent to commercial uses, but oriented along smaller residential streets such as Waverly Drive and Angus Street.

ACTIVITY GENERATORS

There are several locations within the project area that are considered "activity generators." These locations contain existing uses that contribute to traffic patterns and volumes in the area, including (but not limited to) Ivanhoe Elementary School, Camelot Kids CDC, Trader Joe's, and Gelson's Market. A new multi-unit development is slated to be constructed along Waverly Drive.

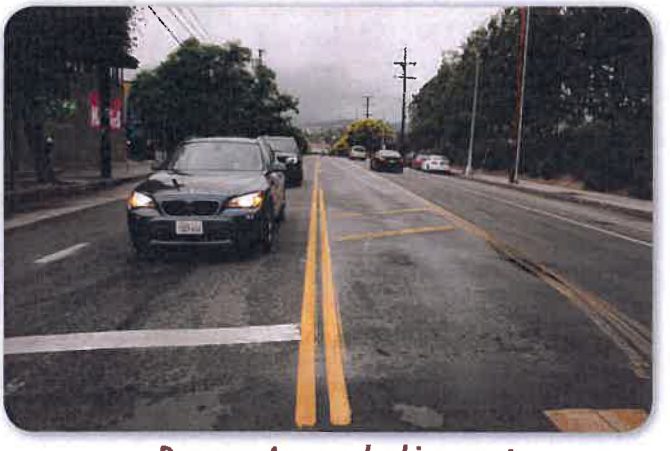
MOBILITY

CORRIDORS

Rowena Avenue impacts the connecting streets within the local and larger transportation network. This section of the Study Area (Rowena Avenue from Hyperion Avenue to Glendale Boulevard) is approximately 2,552 feet or 0.48 mile. Traffic patterns and behaviors along this corridor impact the two parallel streets which provide connections from Hyperion Avenue to Glendale Boulevard. These residential streets – Waverly Drive and Angus Street – are often used as alternatives to traveling along Rowena Avenue during peak period traffic.

Waverly Drive is a residential street, lined with single- and multi-family units. On-street parking is available on one side of the corridor; parking alternates between angled and parallel. The street is used as part of the Ivanhoe Elementary School's traffic routing for children drop-off/pick-up. Drivers are routed north along Herkimer Street and Auburn Street to continue either east or west along Waverly Drive.

Angus Street, also a residential street, provides access to the many single-family residences along the street. It serves as a connection to Micheltorena Street, Moreno Drive, and Kenilworth Avenue as well. Angus Street is curvilinear as it proceeds up and down a slight hill in the area.



Rowena Avenue looking west

Figure 5- Existing Land Use

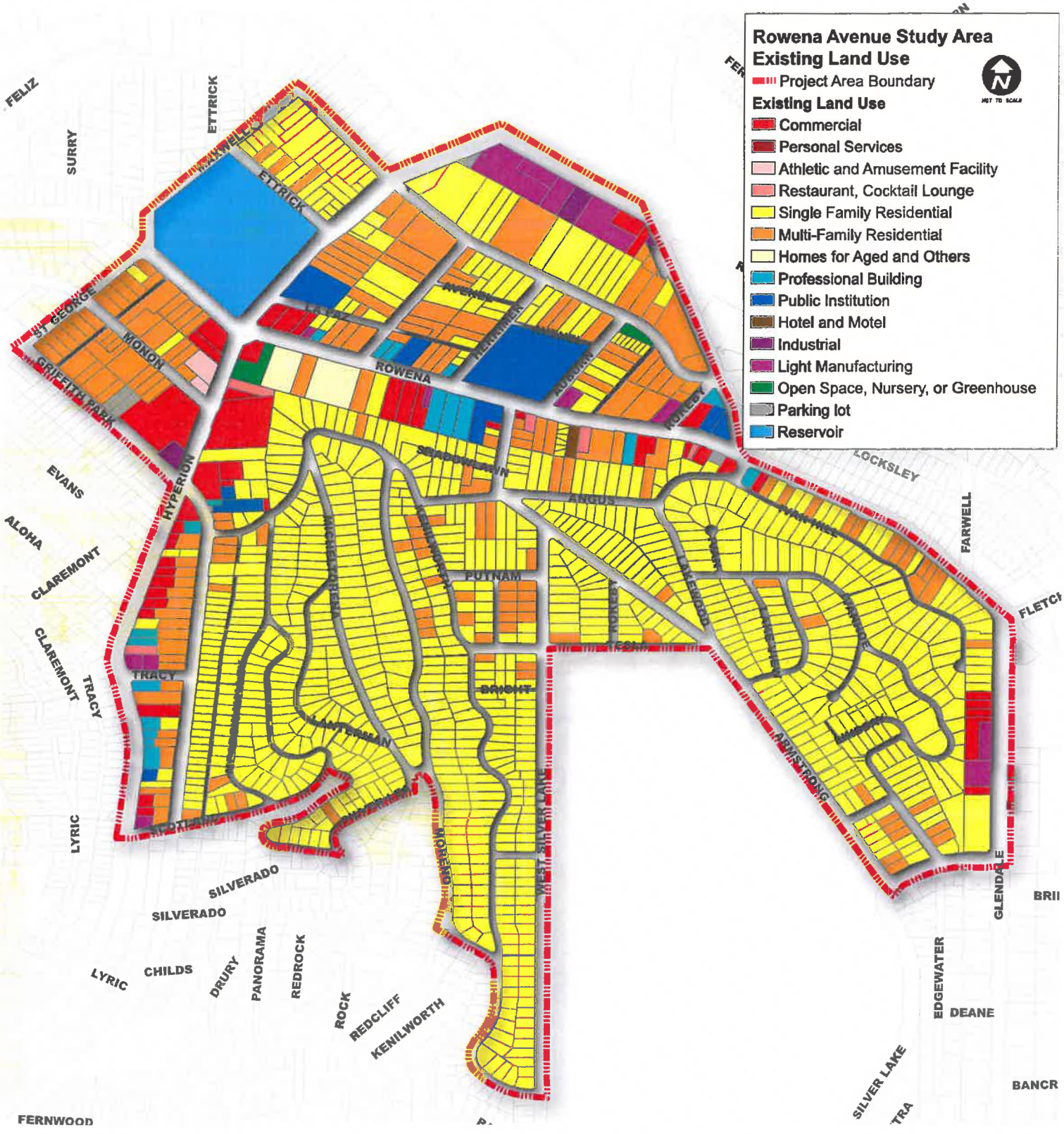
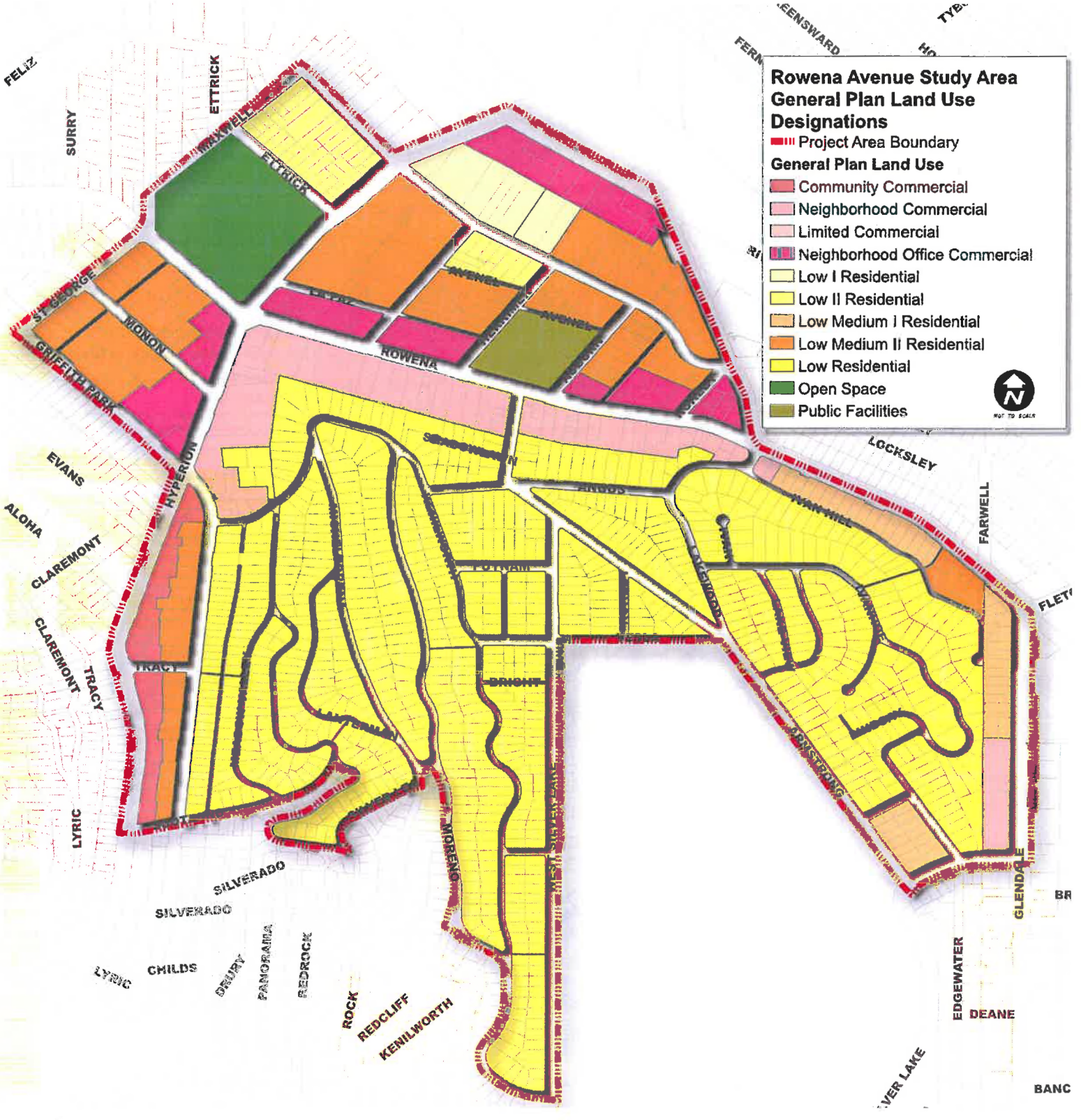


Figure 6- General Plan Land Use Designations



Waverly Drive on-street parking

Angus Street on-street parking

STREET NETWORK

Rowena Avenue is classified as an Avenue II under the Citywide General Plan Circulation System. As portrayed in this Plan, Rowena Avenue provides connections in the street network to two other corridors classified as Avenue II: Hyperion Avenue and Glendale Boulevard/Fletcher Drive. An Avenue II designation means that the corridor is designed with 86 feet of right-of-way with 56 feet of roadway width. The "roadway width" is typically described as the area between curbs.

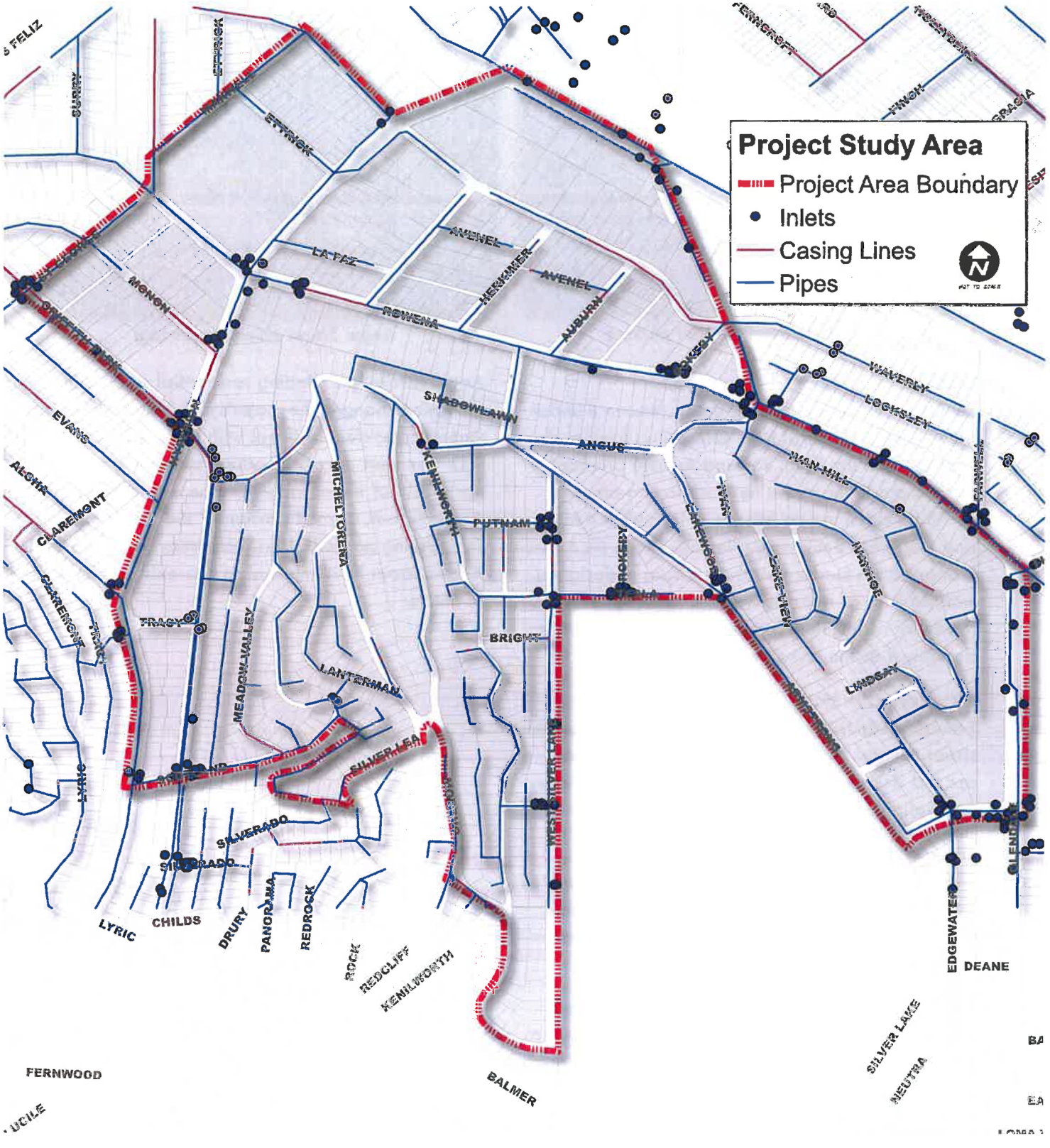
Other collector and local streets connect with Rowena Avenue within the immediate neighborhood street network. Waverly Drive and Angus Street are not designated on the Citywide General Plan Circulation System.

Rowena Avenue is designed as a three-lane undivided avenue, which includes a center two-way left-turn lane. It maintains bicycle lanes in both directions of travel as well as metered on-street parking on both sides of the corridor.

Waverly Drive and Angus Street, are designed as residential streets. Waverly Drive is currently a two-lane corridor without center striping and with on-street parking on the south side of the corridor. Existing parking alternates between parallel and head-in parking. Curbs are present along small segments on the north side of the street.

Angus Street is a winding residential street with elevation change. The majority of Angus Street is a two-way residential street without center striping, with on-street parallel parking permitted on the north side of the corridor. On the east side of Angus Street, a small portion of the street allows for parking no both sides. Both Waverly Drive and Angus Street have minimal to non-existent sidewalk facilities.

Figure 7- Infrastructure and Utility Locations Map



INFRASTRUCTURE

The location, condition, and accessibility of utilities and basic infrastructure features can greatly affect daily operations, construction timelines, and funding capabilities. Acknowledging these potential impacts, **Figure 7 - Infrastructure and Utilities Map** displays the water and stormwater utilities present within the Study Area. The location of these utilities has the potential to impact the ability and cost of any construction/reconstruction that may occur within the study area.

Signalized intersections within this study area are generally located where more commercial oriented streets intersect. Whereas, stop-controlled intersections typify the intersection of residential streets. Within the study area, traffic signals are located at the intersections of:

- Glendale Blvd/Rowena Ave/Lakewood Ave
- Glendale Blvd/Fletcher Dr/Silver Ridge Ave
- Glendale Boulevard/Silver Lake Boulevard
- W Silver Lake Drive/Rowena Avenue
- Hyperion Avenue/Rowena Avenue
- Hyperion Avenue/Monon Street
- Hyperion Avenue/Tracy Street
- Griffith Park Blvd/Hyperion Avenue

Additionally, the City DOT staff recently studied the intersection of Waverly Drive and Glendale Boulevard. The findings of the study indicated that the intersection is warranted for a traffic signal. This recommendation will be included in the recommendations of this study.

Utility hole coverings on Angus Street

Signalized Intersection of W Silver Lake Drive & Rowena Avenue

Stop-controlled intersection of W Silver Lake Drive and Angus Street

PUBLIC TRANSIT FACILITIES

Bus service is available along a portion of the Rowena Avenue Corridor via LA Metro Local or Limited Line service. Route 201 travels along Rowena Avenue east of West Silver Lake Drive. Routes 92 and 96 travel north/south and intersect Rowena Avenue at Glendale Avenue, then travel east/west along Glendale. **Table 1 - Metro Route Headways** represents the headways of these routes as expressed by Metro.

A physical bus stop is present along Rowena Avenue. It is located on the north side of Rowena Avenue (westbound traffic) in front of the fire station. This stop includes a shelter and bench, and has additional space for a bus "pull-out" in the area that is dedicated to on-street parking along the remainder of Rowena Avenue.

BICYCLE FACILITIES

The County of Los Angeles Bicycle Master Plan (2012) identifies existing and proposed bicycle network for the County. Griffith Park Boulevard and Silver Lake Avenue are designated by this plan as existing Class II – Bike Lane facilities. This means that the bike lane does not have a striped or physical buffer separating bicyclists from motorists. Also noted on this plan are bicycle facilities as proposed by other jurisdictions including: Glendale Boulevard, Fletcher Drive, Rowena Avenue, W Silver Lake Drive, and Armstrong Avenue. As part of the reconstruction that took place on Rowena Avenue in 2013, the street now includes a Class II bicycle facility (dedicated bicycle lane without a buffer that separates bicyclists and motorists).

Rowena Avenue Southside Bicycle Lane (looking East)

Table 1 - Metro Route Headways

	Weekdays			Saturdays		Sundays	
Line	Peaks	Day	Eve	Day	Eve	Day	Eve
91	16-20	25	50-60	26-30	60	40	60
96	30-35	40	60a	50-55	50-60a	60	-
201	50	50	-	60	-	60	-

[1] *24-hour Owl service*

[a] *No late-evening service*

PEDESTRIAN FACILITIES

Pedestrian facilities vary greatly within the study area from wide sidewalks in some areas to non-existent pedestrian facilities in other areas. Along Rowena Avenue, sidewalks are generally wide with occasional street trees and landscaping as buffers between pedestrians and vehicles. They are in good-to-fair condition. However, the high number of driveways impact the consistency of the sidewalk facilities.

Designated pedestrian crossings across Rowena Avenue are present at the intersections with Glendale Boulevard, W Silver Lake Drive, and Hyperion Avenue. These crossing are equipped with pedestrian countdown signal heads.

Beginning where Waverly Drive crosses Hyperion Avenue and continues east, sidewalks do not exist on either side of the roadway until Auburn Street. East of Auburn Street, five-foot sidewalks are present on both sides of the street. Streets that provide connections from Rowena Avenue up to Waverly Drive (such as Avenel Street, Herkimer Street, Auburn Street, etc.) have relatively steep slopes; although they have typical sized sidewalks, their grade makes for problematic ADA facilities - especially in regards to ramps.

Angus Street from Griffith Park Boulevard to Kenilworth Avenue contains a sidewalk facility on the north side of the street. However, the facility is approximately two- to two and one-half feet wide; which primarily allows a designated space for 'doorswing' for vehicles parked on the street.

The Project Area lacks a consistent pedestrian oriented wayfinding network.

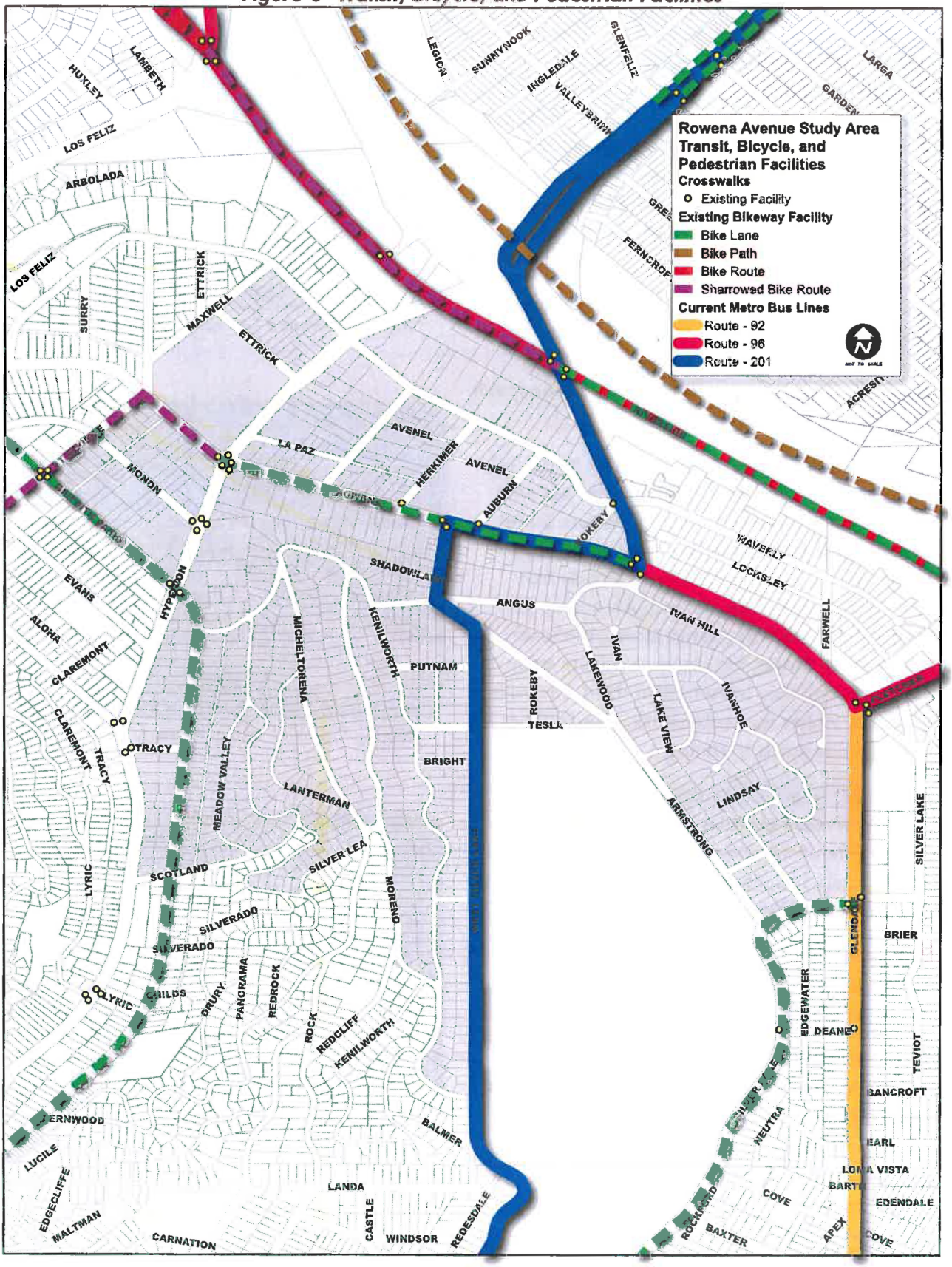
Figure 8 - Transit, Bicycle, and Pedestrian Facilities represents some of the existing facilities within the Project Area.

Rowena Avenue Southside Sidewalk (looking West)

Missing Sidewalk along Waverly Drive (looking West)

Minimal and Missing Sidewalks along Angus Street

Figure 8- Transit, Bicycle, and Pedestrian Facilities



PARKING FACILITIES

On-street parking is currently available along most of Rowena Avenue on both the north and south sides. This on-street parallel parking is metered and subject to two-hour time limits. Parking is heavily utilized by those venturing to the commercial and retail uses found along Rowena Avenue.

On-street parking is also present along residential streets in the study area. Along Angus Street, the narrow right-of-way and curvature of the road also allows the presence of on-street parking.

Waverly Drive maintains on-street parking along one-side of the corridor, transitioning between parallel parking to head-in, angled parking.

On-Street Parking along Angus Street

OPERATIONS

TRAFFIC COUNTS

Vehicles accessing the corridor and their various travel patterns greatly impact the overall corridor operations. **Table 2 - Average Daily Traffic Volumes** identifies the Average Daily Traffic (ADT) of three major corridors within the Study Area.

The daily volumes presented in this report are a combination of historical data and recently collected volumes.

The recent volumes for Rowena Avenue, Hyperion Avenue, and Glendale Drive were collect in March and September of 2017.

TURNING MOVEMENT COUNTS

Turning movement counts were gathered for specific intersections within the study area. **Figure 9- Turning Movement Count** displays the location, and the corresponding AM/PM turning movement vehicular counts.

At the intersection of Hyperion Avenue and Rowena Avenue, more westbound vehicles on Rowena Avenue turn south onto Hyperion Avenue than north. The opposite is true for eastbound vehicles. A similar pattern can be seen for those traveling north/south along Hyperion Avenue: more northbound travelers turn east onto Rowena Avenue than west; more southbound travelers turn west onto Rowena Avenue than east.

The intersection of Silver Lake Drive and Angus Street indicates that for eastbound travel along Angus Street, there are almost seven times the number of vehicles traveling in the PM peak hour than the AM peak hour. A similar pattern was not displayed in the westbound movements.

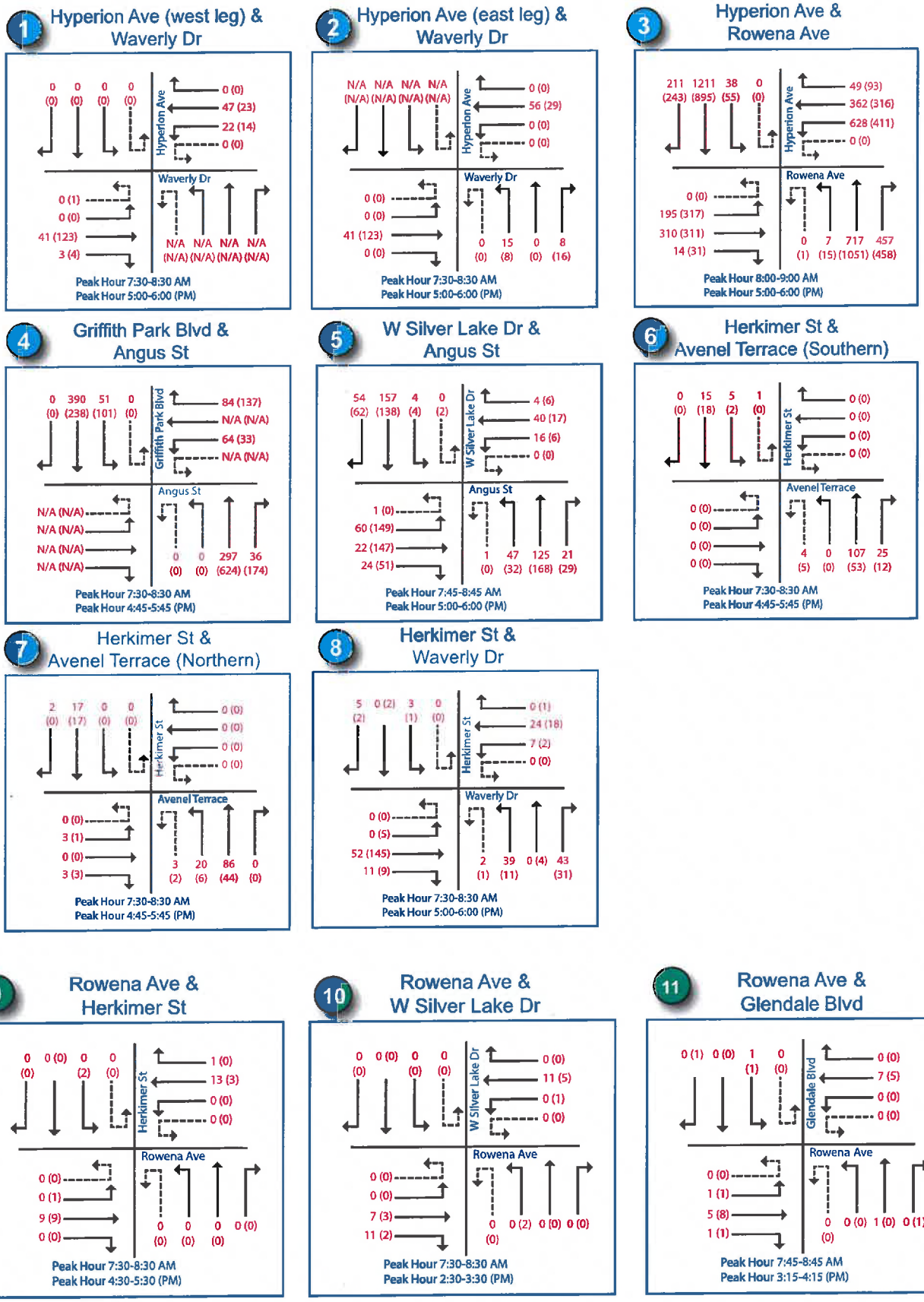
Turning movement counts for intersections within the Study Area presented in this Report were taken in September of 2017.

Table 2 - Average Daily Traffic Volumes

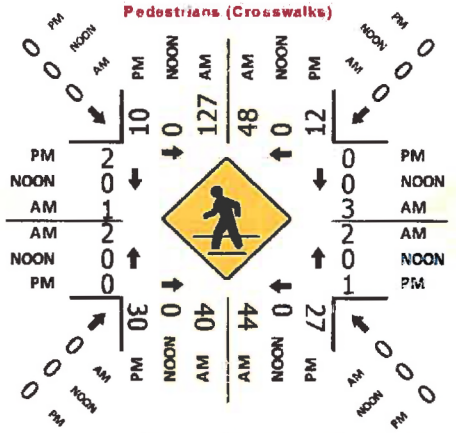
Corridor	Start Limit	End Limit	North bound	South bound	West bound	East bound
Rowena Avenue	Glendale Boulevard	Hyperion Avenue	N/A	N/A	12,949	12,551
Hyperion Avenue	Griffith Park Boulevard	Waverly Drive	19,281	19,151	N/A	N/A
Glendale Boulevard	Riverside Drive	Waterloo Street	13,030	12,575	N/A	N/A

Figure 9- Turning Movement Count Locations Map

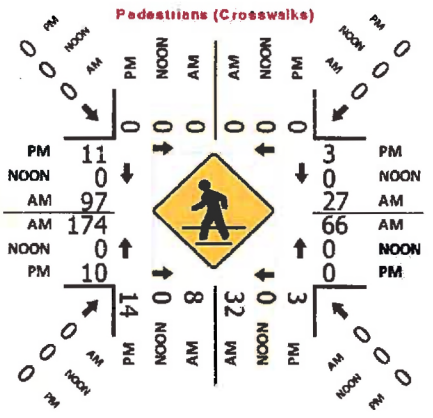
Figure 9 continued- Turning Movement Counts



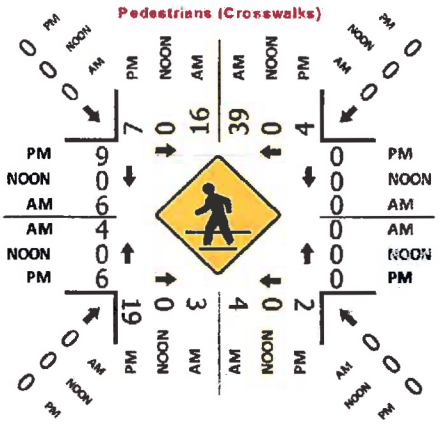
Figurev10 - Pedestrian Turning Movements



Intersection of Rowena Avenue (east/west) and Herkimer Boulevard (north/south)



Intersection of Rowena Avenue (east/west) and W Silver Lake Drive (north/south)



Intersection of Rowena Avenue (east/west) and Glendale Boulevard (north/south)

BIKE/PED COUNTS

Figure 9- Turning Movement Count displays the location of Bicycle counts at three key intersections along Rowena Avenue. Bicycle traffic along Rowena Avenue is consistent. The highest turning movement from Rowena Avenue are cyclist turning southbound onto W Silver Lake Drive in the AM peak hour.

Pedestrian Movements for those three intersections are displayed in **Figure 10- Pedestrian Turning Movements**. Rowena Avenue and Silver Lake Drive displayed the highest pedestrian traffic with a total of 240 pedestrians crossing from the south to the north side of Rowena Avenue.

The eastbound pedestrian traffic along Rowena Avenue at the intersection with Herkimer was also high, totally 127 pedestrians on the north leg and 40 on the south leg in the AM peak hour.

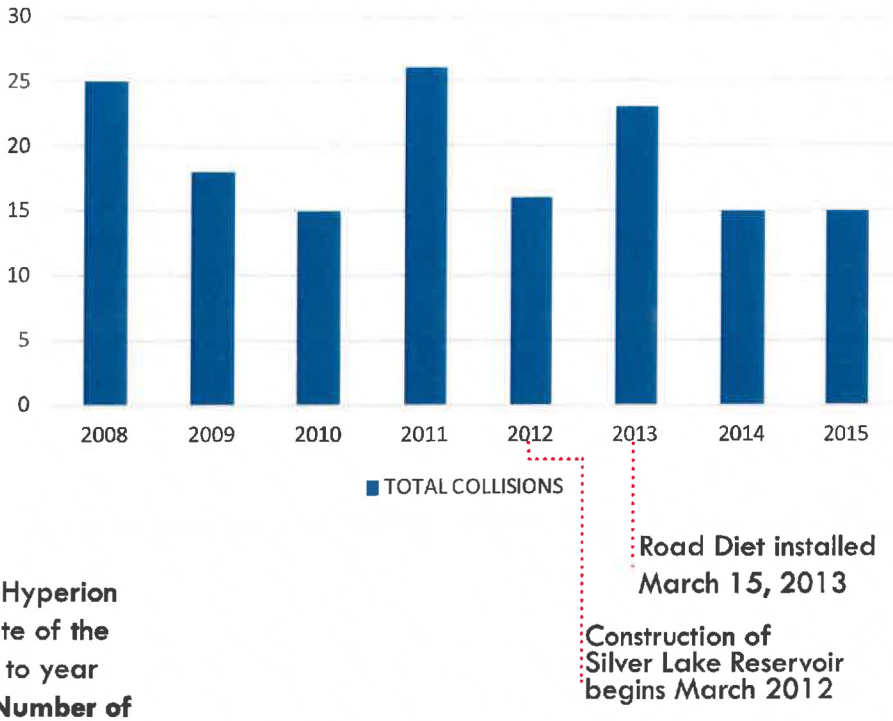
SPEED DATA

The perception of speed along the corridor by observers can vary greatly. Three independent speed surveys taken during 2017 collected data for the pace of vehicles, as well as the highest speed captured above posted speed limit. The posted speed for Hyperion Avenue, Glendale Boulevard, and Rowena Avenue is 35 miles per hour (MPH). The average speed of vehicles for Hyperion and Glendale were slightly above the posted speed; Rowena Avenue's average speed was 33 MPH, two MPH under the posted speed. Between 75 and 96 percent of vehicle traveled "in pace" along the corridor, meaning within a range of the posted speed limit.

CORRIDOR COLLISION HISTORY

A primary factor for conducting an evaluation of this Study Area was the perceived number of collisions occurring along Rowena Avenue and other closely related streets in the adjacent roadway network. **Figure 14 displays 2008-2012 Collisions and Figure 15 displays the 2013-2015 Collisions.** To identify major changes before/after the installation of the complete street design alternatives along Rowena Avenue, collision data is separated before and after 2013 (The road diet was installed on March 15, 2013).

Figure 11 - Total Number of Collisions Along Rowena Avenue



The intersection of Rowena Avenue and Hyperion Avenue maintains the highest collision rate of the intersections within the Study Area year to year between 2011 and 2015. **Figure 11 - Number of Collisions** displays the total number of collisions by year from 2011-2015 along streets where collision data was available. **Figure 12 - Type of Collisions by Year** represents the type of collision by year.

Figure 12 - Type of Collision Along Rowena by Year

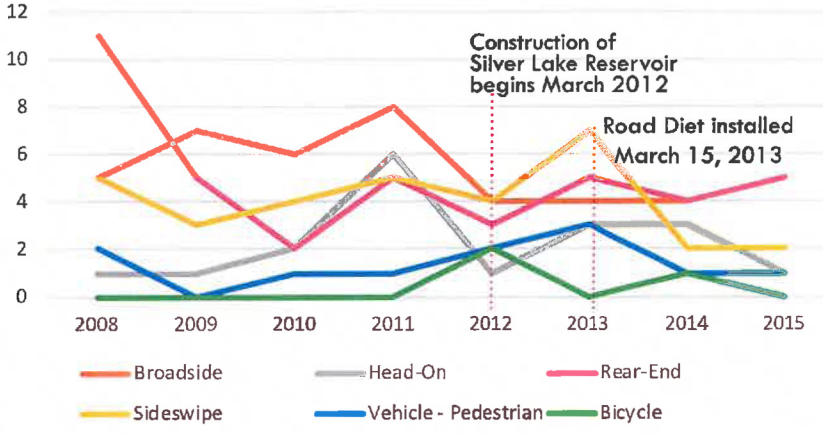


Figure 13 - Number of Injuries and Deaths Along Rowena by Year

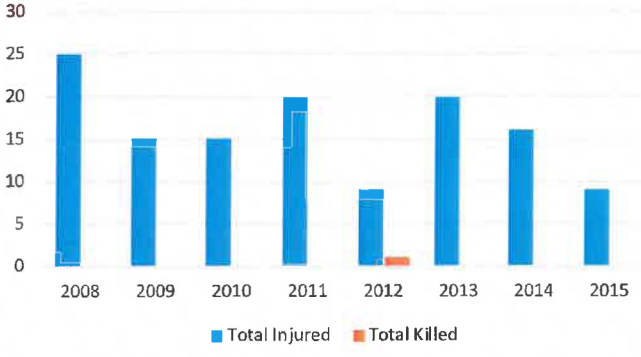


Figure 14 - 2008-2012 Collisions

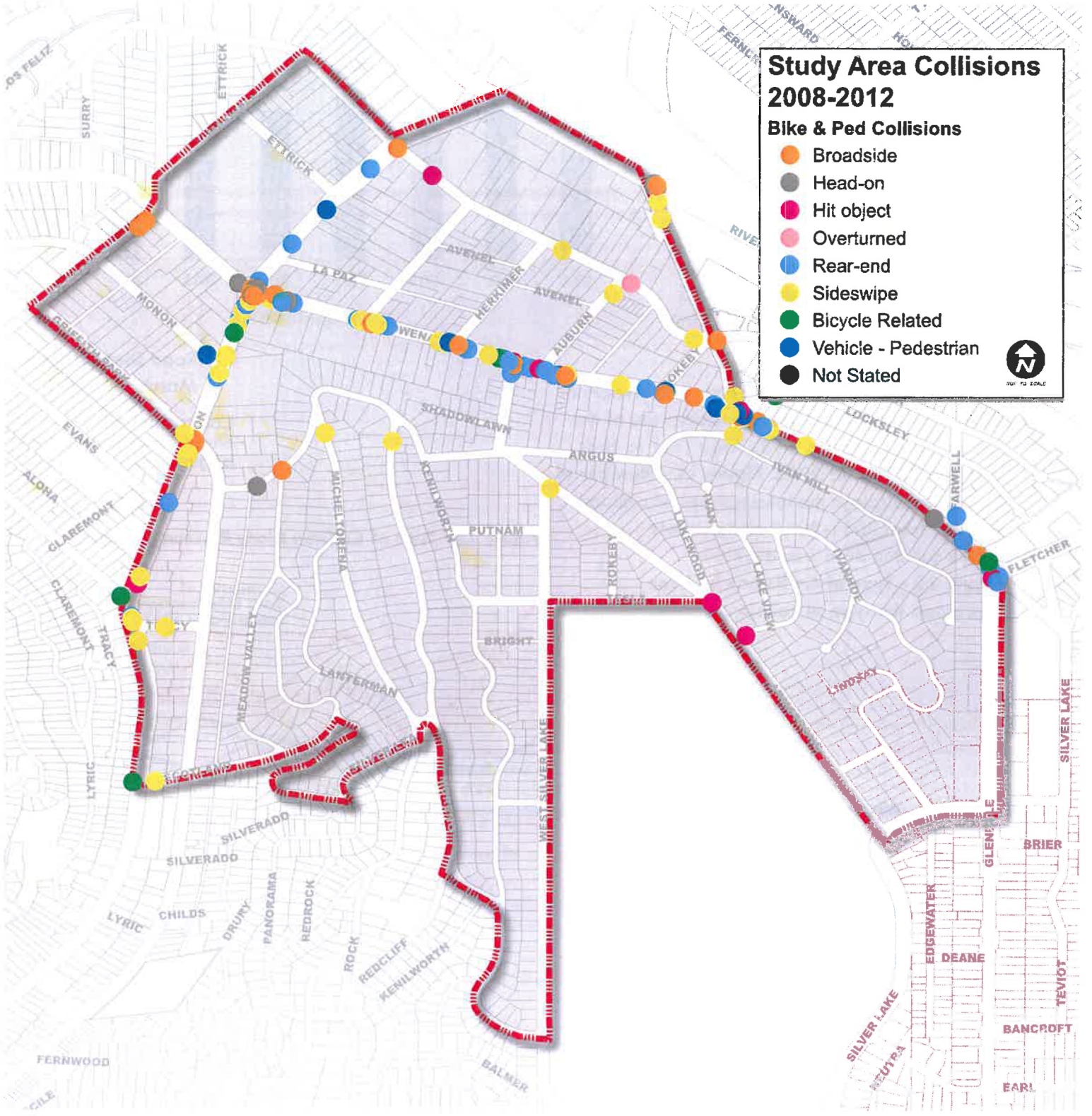
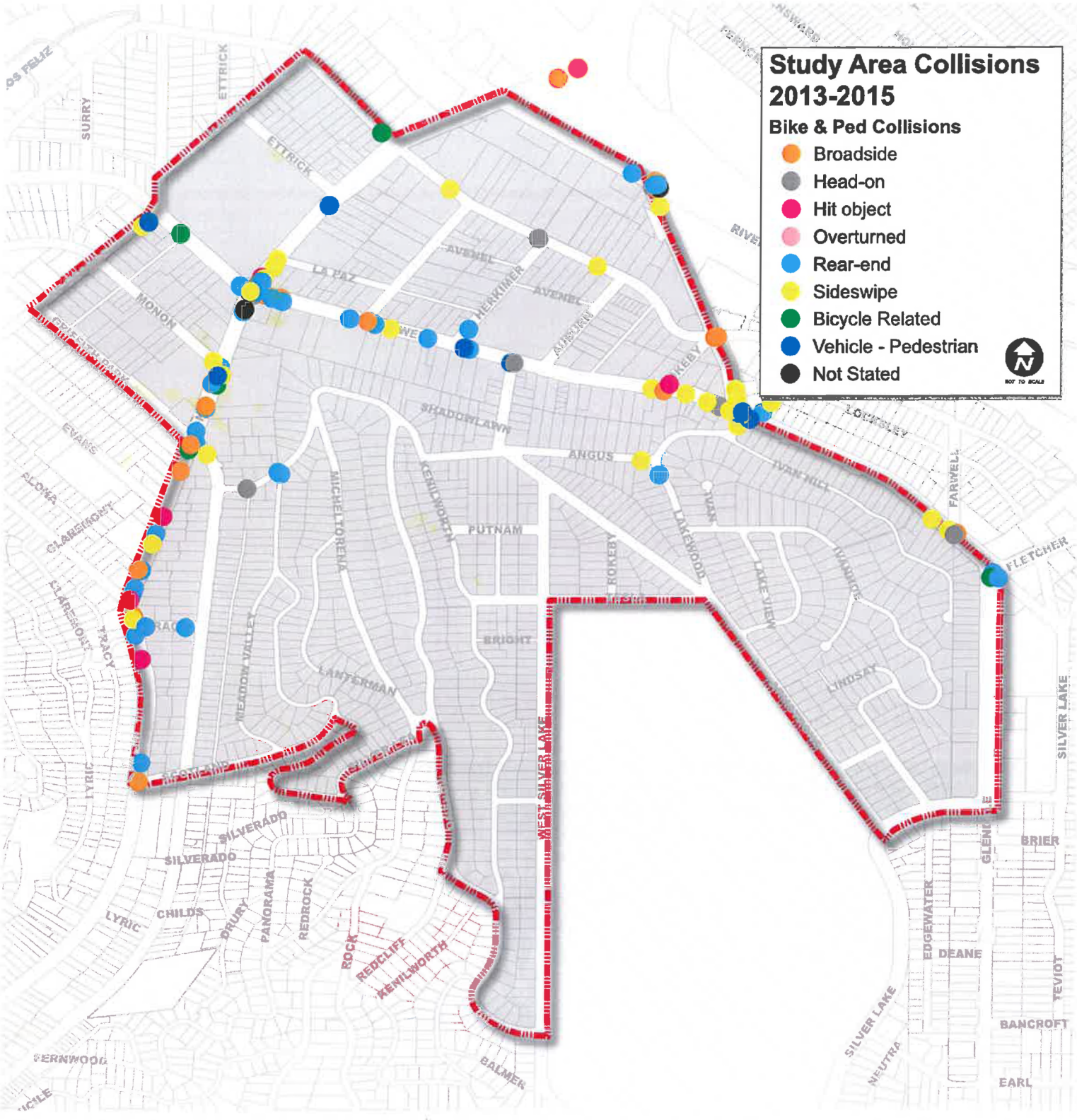


Figure 15 - 2013-2015 Collisions



IMPROVEMENT RECOMMENDATIONS

CHALLENGES AND OPPORTUNITIES

CHALLENGES

Several concerns emerged as priorities during discussions with participants in the Work Group, during analysis of existing conditions of the area, speed data, volume data, collision data, and visual impacts observed during multiple field visits. Identified challenges included:

- Cut-through traffic along Angus Street and Waverly Drive during peak hours;
- Incomplete or missing sidewalk infrastructure;
- Limited pedestrian facilities such as signalized crosswalks;
- Poor pedestrian-scaled lighting.

Additionally, there are the number of collisions regularly experienced at key intersections within the Project Area. The intersection of Rowena Avenue and Hyperion Boulevard has the highest density of collisions from 2011-2015.

The existing conditions evaluation showed that between 2012 and 2013 several pedestrian and bicycle related collisions occurred at the intersection of Rowena Avenue and Glendale Boulevard.

GENERAL IMPROVEMENT RECOMMENDATIONS

The following recommendations are sorted by mode of transportation. These recommendations can be applied as stand-a-lone items, or as packages within the alternatives expressed previously.

AUTO

1. Work with WAZE to understand what changes to street functions needed to restrict through-commuter traffic along local streets including Waverly Drive and Angus Street.

PEDESTRIAN

1. Install pedestrian-scaled lighting along Rowena Avenue from Hyperion Avenue to Glendale Boulevard.
2. Where feasible, install bulb-outs to enhance visibility of crosswalks at intersections.
3. Where feasible, install high visibility crosswalks.

BICYCLE

1. Where feasible, focus improvements at intersections where conflict points are high. Improvements include continued bicycle striping through the intersection and high-visibility green paint.

IMPROVEMENTS FOR CONSIDERATION

The following concepts were developed for improvements along streets within the Project Area. These include specific geometric or policy changes. These alternatives have the potential to be implemented individually or packaged with other alternatives. The improvements are categorized as: Intersections, Angus Street, Waverly Drive, and Rowena Avenue.

INTERSECTION OF GRIFFITH PARK BOULEVARD AND HYPERION AVENUE:

1. Intersection improvements such as high visibility crosswalks, enhanced pedestrian ramps, and if feasible through an engineering study, bulb-outs. **Figures 16 and 17** is an example of typical intersection improvements.

Figure 16 - High visibility crosswalks

Figure 17 - Ramps with Rumble Strips

INTERSECTION OF ROWENA AVENUE AND ST. GEORGE STREET:

1. At the northbound approach of the intersection, right-of-way can be delineated to provide a right-turn bay, and a through/left-turn lane, helping to alleviate some queuing. (See **Figure 18**)

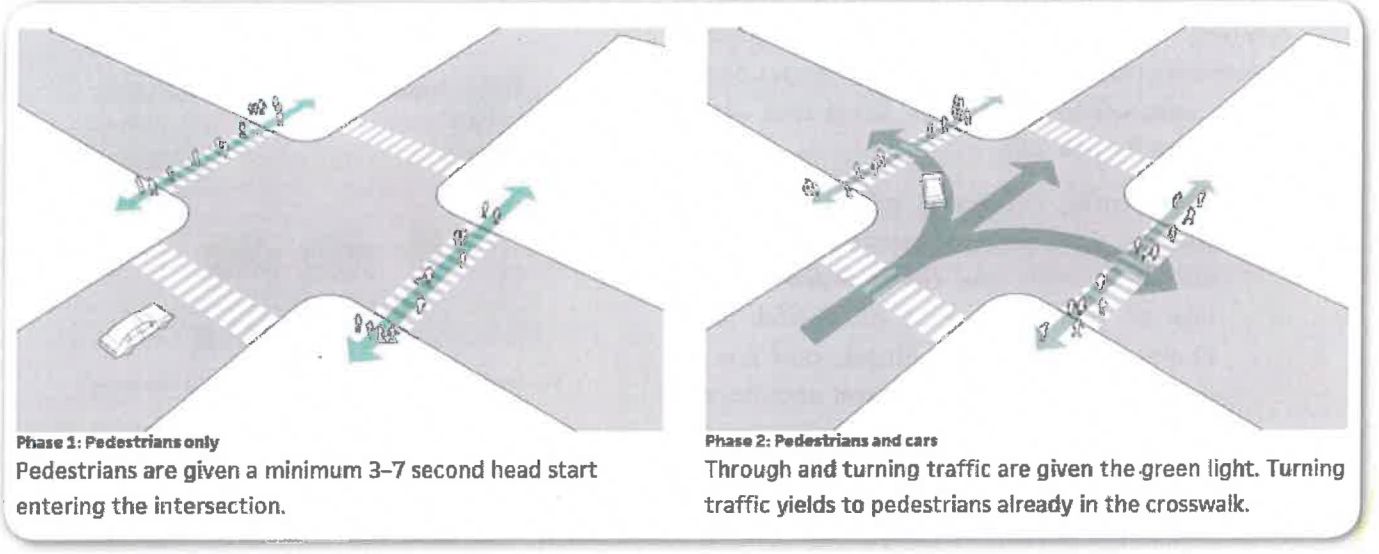
2. This improvement could also be applied to both the eastbound and westbound movements on Rowena Avenue with a right-turn bay installed.

Figure 18- Delineate Right-Turn Bay Within Existing Right-of-Way

INTERSECTION OF ROWENA AVENUE AND W SILVER LAKE DRIVE

1. In addition to the aesthetic and general pedestrian improvements discussed at the beginning of this section, a potential signal phase improvement is recommended. The inclusion of a Leading Pedestrian Interval (LPI) can improve traffic flow and enhance pedestrian safety. When active, an LPI provides a designated time for pedestrians to cross the street before allowing the green movement of vehicles.

Figure 19 - Implement a Leading Pedestrian Interval



Phase 1: Pedestrians only
Pedestrians are given a minimum 3–7 second head start entering the intersection.

Phase 2: Pedestrians and cars
Through and turning traffic are given the green light. Turning traffic yields to pedestrians already in the crosswalk.

Source: NACTO.org. Urban Street Design Guide. Leading Pedestrian Interval

UPPER ANGUS STREET IMPROVEMENT OPTIONS:

1. Relocate the existing curb face at Angus to add sidewalk on one side of the street. (See **Figure 20 and Figure 21**) This improvement would result in the elimination of on-street parking. Communication with the Technical Working Group expressed a desire from local residents to prioritize a continuous sidewalk over on-street parking.

2. Stripe an edge-line with cross-hedge markings along Angus Street to provide a designated pedestrian realm (See **Figure 22**).

3. Restrict through traffic on Angus Street between Moreno Drive and Kenilworth Avenue to one-way westbound traffic; restricting right-turn movements from Morena Drive onto Angus Street at the intersection of Moreno Drive and Angus Street (See **Figure 23**).

   a. Additionally, this would call for advanced warning signs for turn restrictions in prior to the intersection: one along Moreno Drive, one at the intersection of Griffith Park Boulevard with Angus Street, and one at the intersection of Angus Street and Moreno Drive.

   b. Closing off this street via a cul-de-sac or dead end is not a viable option for this area. Closing the area would eliminate a through route for fire and emergency vehicles and is not recommended.

LOWER ANGUS STREET IMPROVEMENT OPTIONS:

1. With the implementation of the one-way street segment as shown in **Figure 23**, cut-through traffic along lower Angus Street from Hyperion Avenue is likely to be reduced as well.

Figure 20 - Cross Section depicting current configuration of a portion of Upper Angus Street

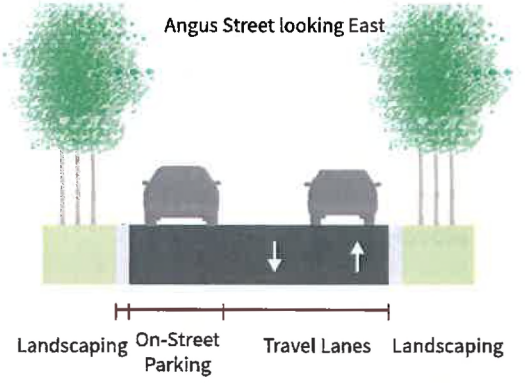


Figure 21 - Cross Section depicting Upper Angus Option 1

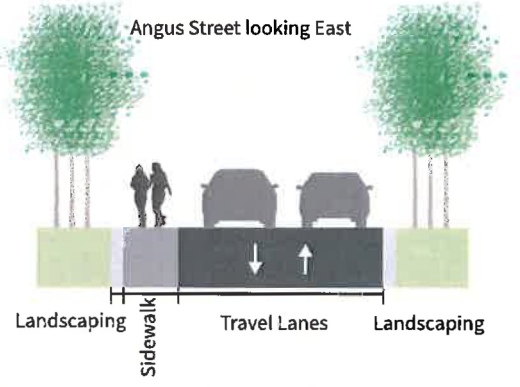


Figure 22 - Cross Section depicting Upper Angus Option 2

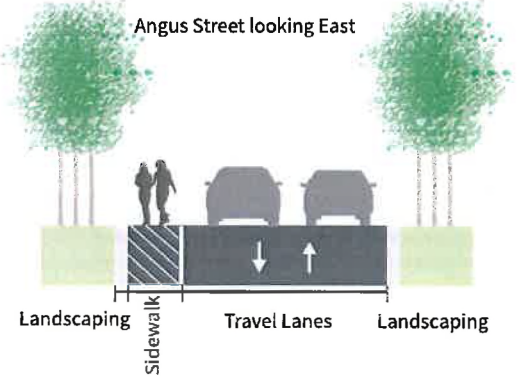
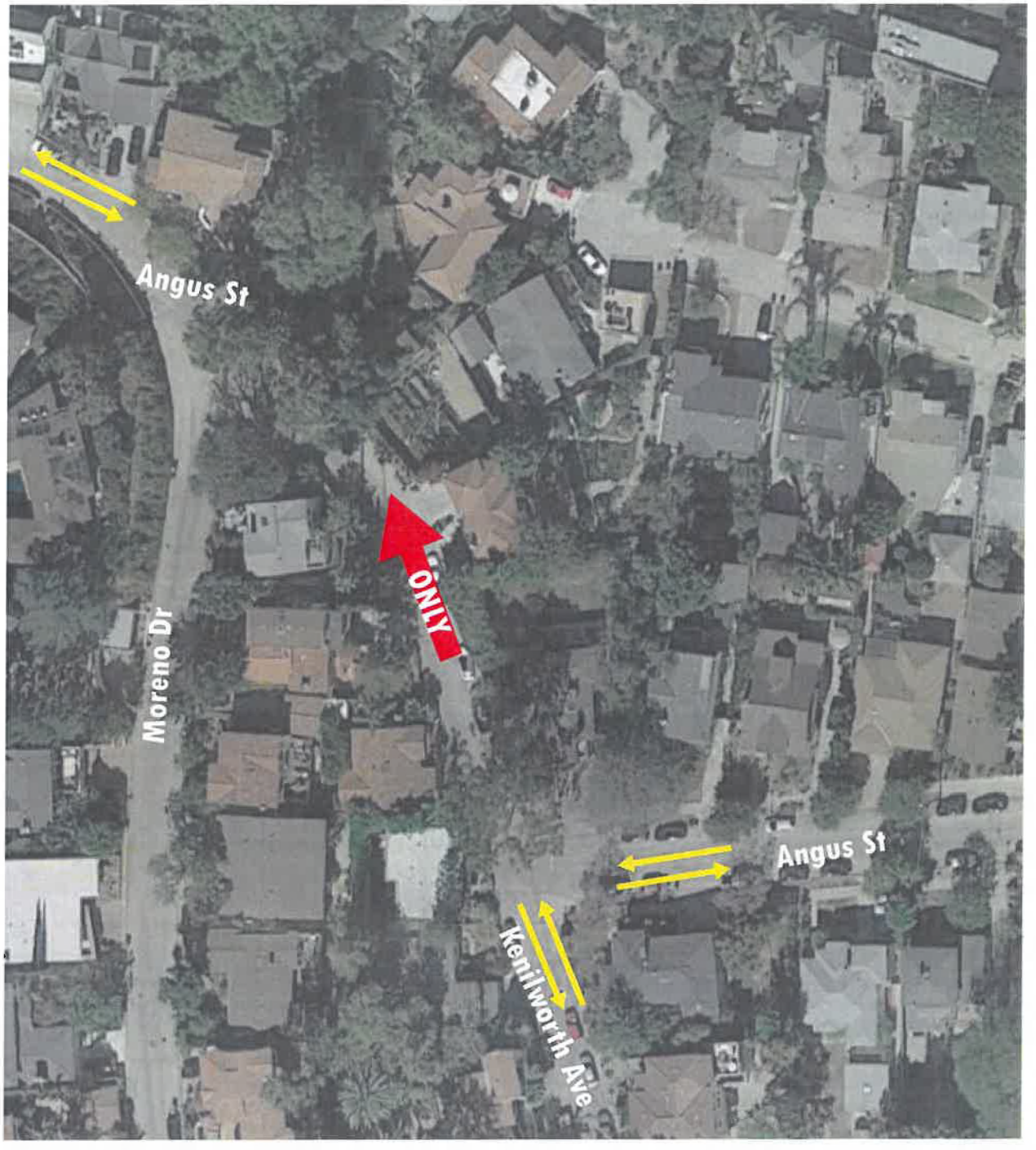


Figure 23 - High-level concept graphic depicting restrictions along Angus Street from Angus Option 3



WAVERLY DRIVE/ROKEBY STREET IMPROVEMENT OPTIONS:

1. Create a continuous sidewalk along one-side of Waverly Drive. (See **Figure 24 and Figure 25**)

2. Change all current on-street parking on Waverly Drive to 45-degree angled parking and add a sidewalk between the parking and the curb. (See **Figure 25 and Figure 26**).

3. Close the northern portion of Rokeby Street at the intersections with Waverly Drive and Glendale Boulevard. Reconfigure the geometry to a cul-de-sac. (See **Figure 27**)

Figure 24 - Cross Section depicting current configuration of a portion of Waverly Drive

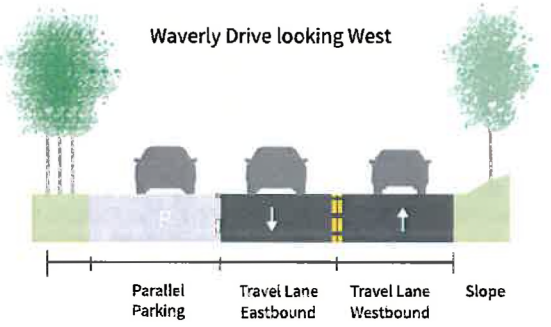


Figure 25 - Cross Section depicting Waverly Option 1 and 2

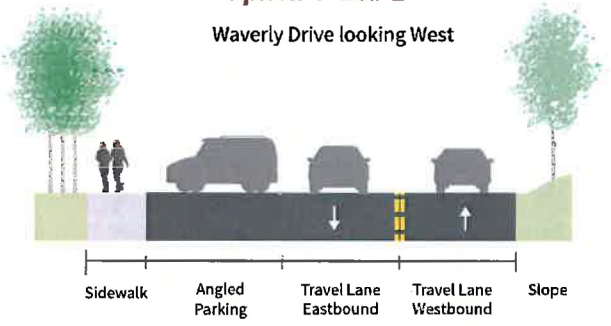


Figure 26 - Existing locations of parking along Waverly - Option 2

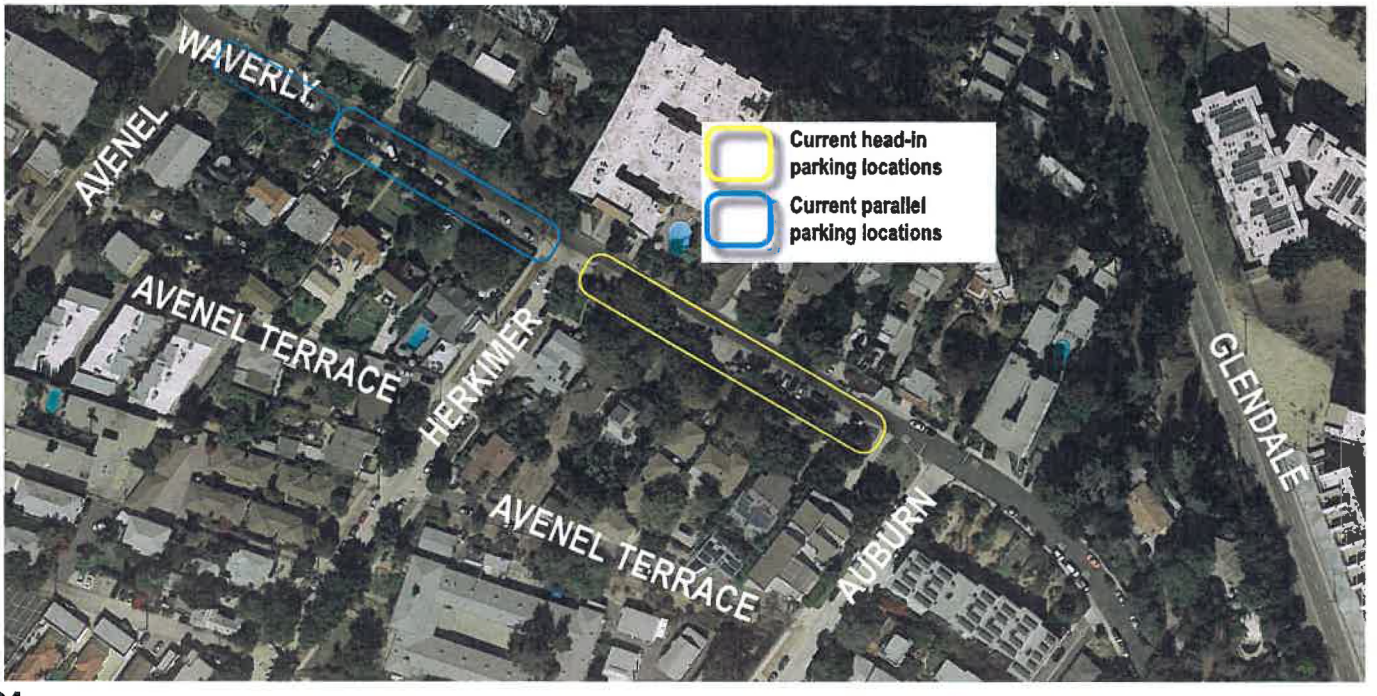
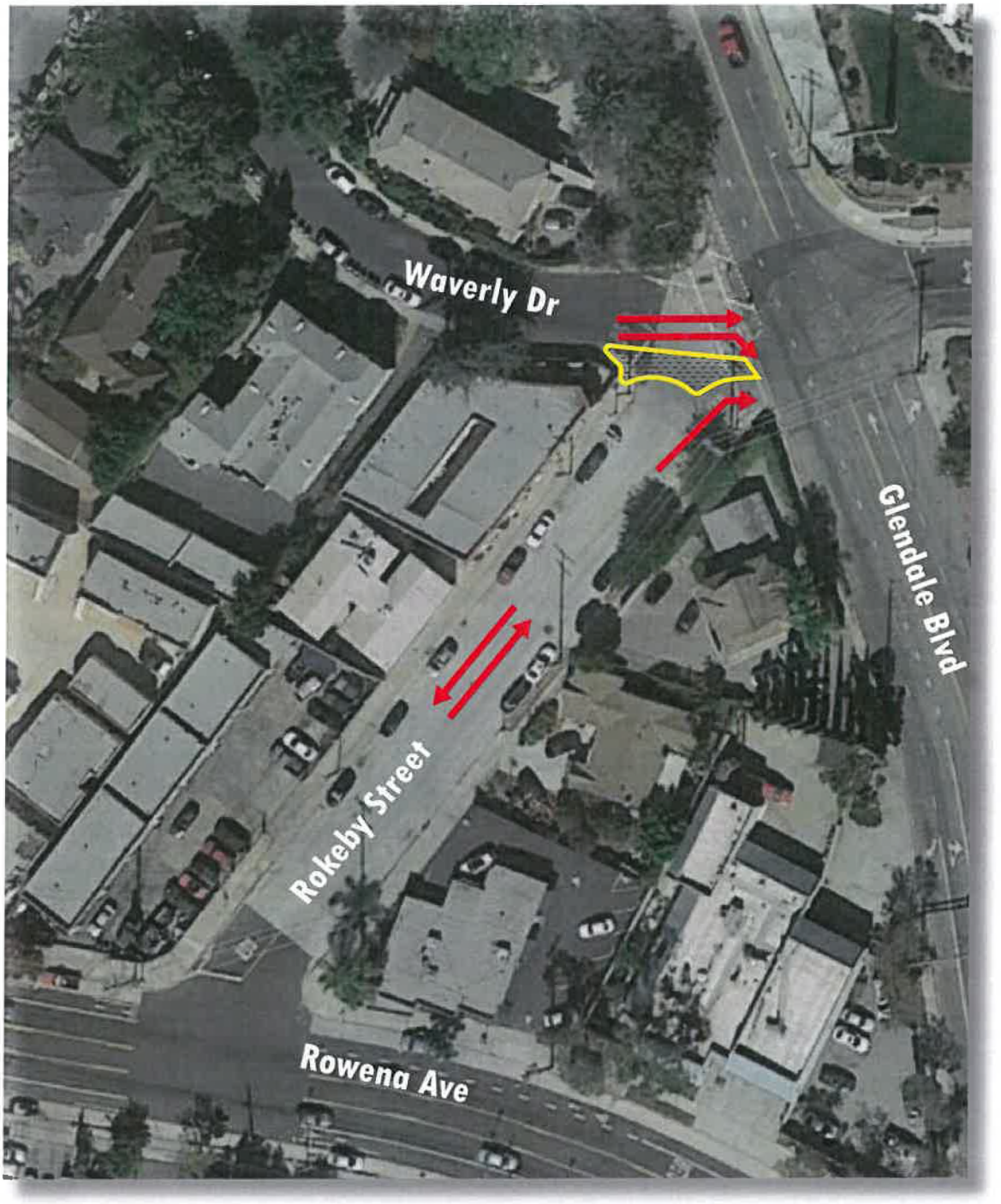


Figure 27 - High-level concept graphic depicting Waverly/Rokeby Option 3



ROWENA AVENUE IMPROVEMENT OPTIONS:

1. No roadway geometry changes would be made. Focus would be to prioritize minimal pedestrian improvements along Rowena Avenue including:

   a. Bulb-outs at crosswalks as seen **Figure 28,** to be further studied at locations in **Figure 31**

   b. Installation of pedestrian-scaled lighting. (See **Figure 29** for example of scale)

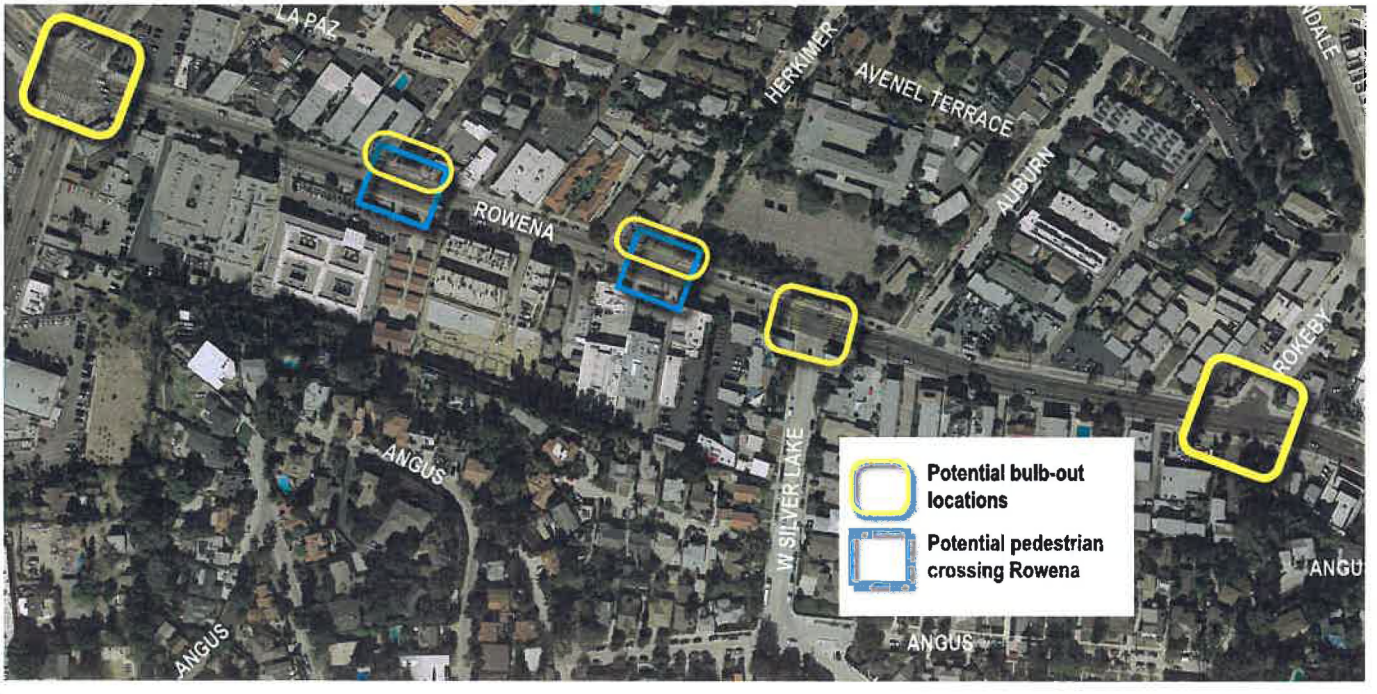
   c. Pedestrian street crossings in two locations along Rowena Avenue (Herkimer Street and Avenel Street) and (See **Figure 30 and Figure 31**)

Figure 28 - Example of intersection bulb-out (Rowena Option 1a)

Figure 29 - Example of pedestrian-scaled lighting (Rowena Option 1b)

Figure 30 - Example of pedestrian-street crossing (Rowena Option 1c)

Figure 31 - Potential high-level locations of bulb-outs along Rowena Option 1a



ROWENA AVENUE IMPROVEMENT OPTIONS (CONTINUED):

2. Remove bicycle lane striping from both directions of travel on Rowena Avenue. Re-purpose this right-of-way for use as an additional eastbound travel lane. This alternative would maintain on-street parking on both sides of the street. (See **Figure 33**)

3. Remove the on-street parking and bicycle lane in the eastbound travel direction only on Rowena Avenue. Re-purpose this right-of-way for use as an additional eastbound travel lane with Sharrow markings. This alternative maintains the on-street parking and the bicycle lane for the westbound direction of travel. (See **Figure 34**)

Figure 32 - Cross Section depicting Existing Conditions of Rowena Ave

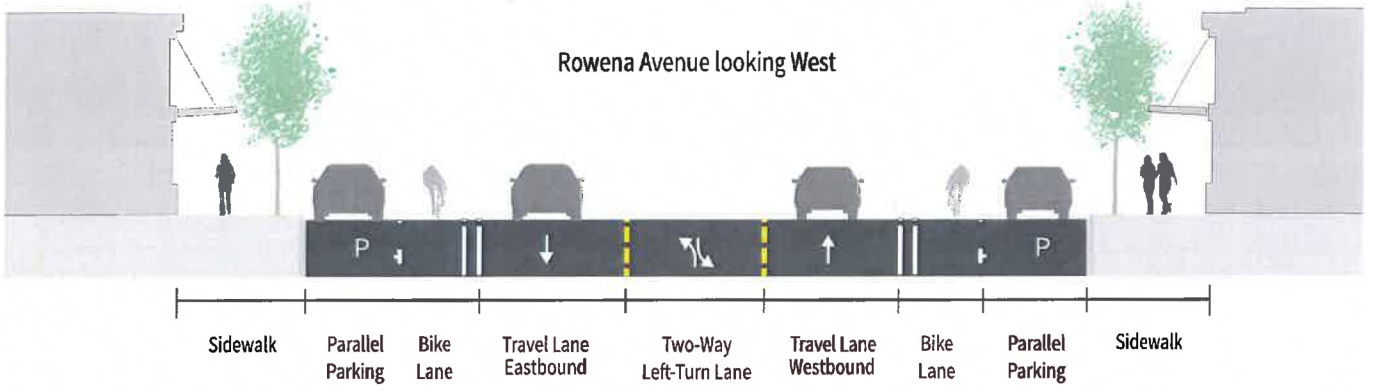


Figure 33 - Cross Section depicting Rowena Option 2

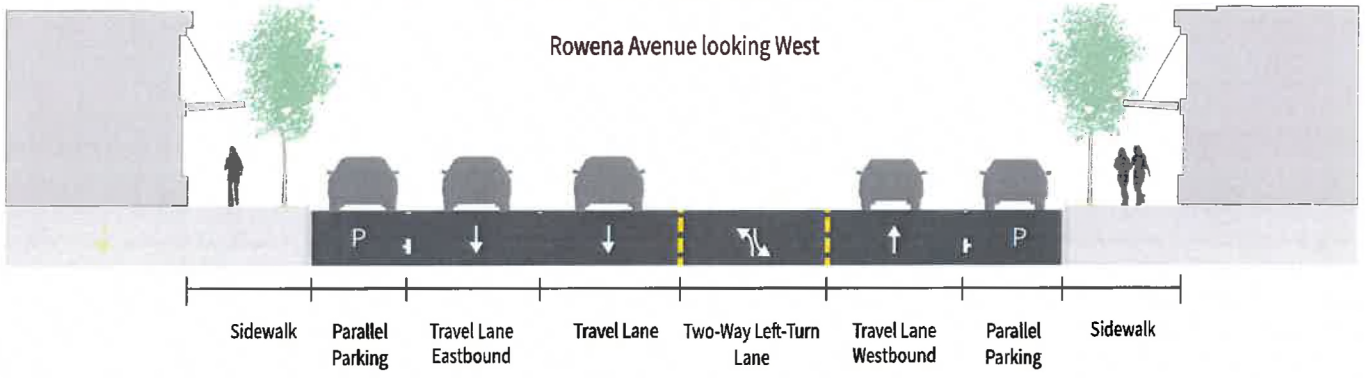
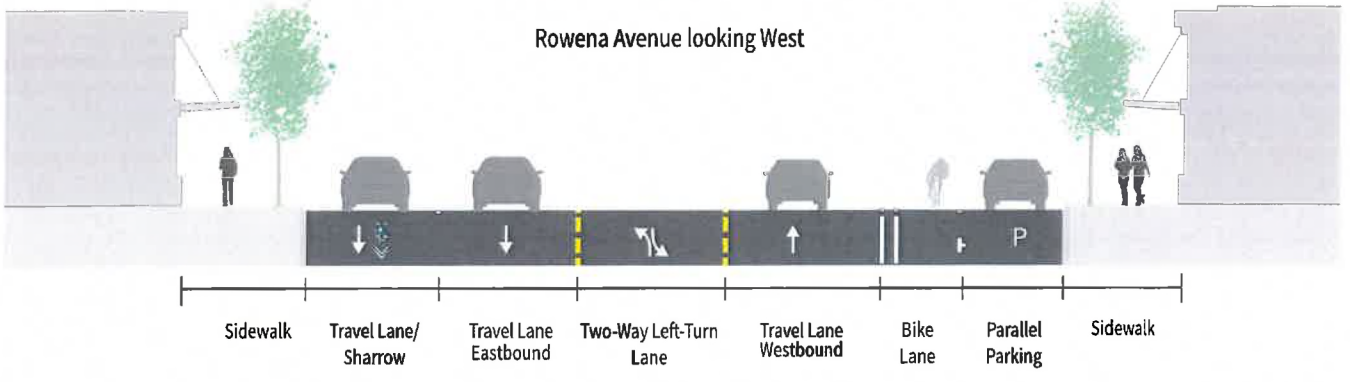


Figure 34 - Cross Section depicting Rowena Option 3



ROWENA AVENUE IMPROVEMENT OPTIONS (CONTINUED):

4. Restrict on-street parking during peak AM and PM commute hours on Rowena Avenue. During this designated time, the outside lane would be used as a travel lane and sharrow in both directions. (See **Figure 35 and Figure 36**)

Figure 35 - Cross Section depicting Rowena Option 4

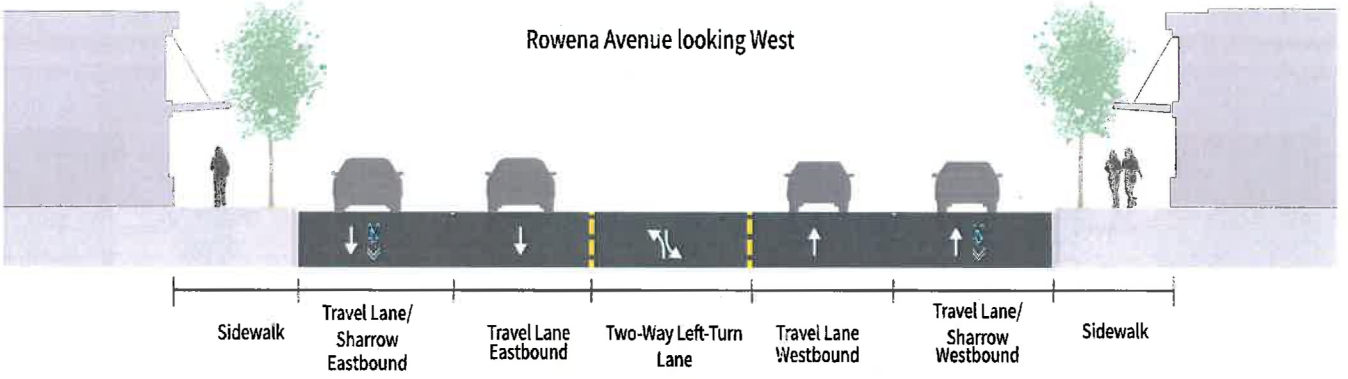


Figure 36 - Example of time-restriction signage for on-street parking for Rowena Option 4

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