FEHR PEERS

TECHNICAL MEMORANDUM

Date: January 24, 2013

To: Mike Tassano, City of Pleasanton

From: Kathrin Tellez, Fehr & Peers

Subject: Transportation Assessment for Residences at California Center

WC11-2878.01

Fehr & Peers has conducted a transportation assessment for the proposed redevelopment of the California Center (Project) at Hacienda Business Park in Pleasanton, California. This study evaluates peak-hour intersection and driveway operations under existing and future conditions. Recommendations to improve site access and circulation are provided. The following presents our project understanding, analysis methods, analysis results, site access and circulation, and conclusions and recommendations.

PROJECT DESCRIPTION

The California Center is located on a 60-acre site within the Hacienda Business Park, one mile east of the Dublin/Pleasanton BART Station. The site is bound by Owens Drive to the south, Rosewood Drive to the west, existing office uses and parking to the north, and Tassajara Creek to the east, as shown on **Figure 1**. The site is currently occupied by 1,065,000 square feet of office space, including conference and storage facilities, which was approximately 50 percent occupied at the time of data collection. The buildings are oriented in the center of the site and are surrounded by approximately 3,900 surface parking spaces.

The Project proposes to construct 305 residential units and 7,520 square feet of retail on surface parking on the southern portion of the site fronting Owens Drive. Modifications to the remaining parking areas would be constructed to improve circulation within the resulting parking area. A parking garage will also be constructed on the southeastern portion of the site to serve office uses.

Access to the site is currently provided by six driveways, including two on Owens Drive and four on Rosewood Drive. Of the two Owens Drive driveways, one provides full access and the other is

restricted to right-in/right-out operation only. Of the Rosewood Drive driveways, two provide full access and the remaining two are restricted to right-in/right-out operation only. With construction of the proposed retail and residential uses, the following circulation changes are proposed to occur:

- Access to the office parking supplies from Owens Drive would be discouraged by design from the existing full access driveway
- The existing Owens Drive right-in/right-out driveway would be modified to provide full access
- Two new right-in/right-out driveways serving the retail portion of the Project would be constructed, with one driveway on Owens Drive and the other on Rosewood Drive

ANALYSIS METHODS

Study Area and Analysis Scenarios

The following intersections were included in this assessment as they provide access to the Project site and are likely to be affected by the Project:

1. Interstate 580 Westbound Ramps at Hacienda Drive (signalized)
2. Interstate 580 Eastbound Ramps at Hacienda Drive (signalized)
3. Owens Drive at Hacienda Drive (signalized)
4. Rosewood Drive at California Center (signalized)
5. Owens Drive at Rosewood Drive (signalized)
6. Owens Drive at Proposed Right-in/Right-out Driveway (unsignalized)
7. Owens Drive at Primary Residential Access Driveway (unsignalized)
8. Owens Drive at Secondary Access Driveway (unsignalized)
9. Owens Drive at West Las Positas Boulevard (signalized)
10. Rosewood Drive at Proposed Right-in/Right-out Driveway (unsignalized)

Study intersection operations were evaluated during the weekday morning (AM) and weekday evening (PM) peak hours for the following scenarios:

- ***Existing***- Existing conditions based on recent traffic counts.
- ***Existing plus Occupancy of Existing Vacant Office Space*** –the recent traffic counts from the existing conditions assessment reflect approximately 50 percent occupancy of the existing office uses on the site; typical occupancies are above 90 percent.

- ***Existing plus Occupancy of Existing Uses Plus Project***– the above scenario plus the addition of Project traffic.
- ***Existing Plus Approved Projects***– Near-term conditions, which consider existing traffic plus anticipated traffic from approved developments that would substantially affect the volumes at the study intersections.
- ***Existing Plus Approved Projects Plus Project***–Near-term conditions plus Project-related traffic.
- ***Cumulative Without Project***–Future forecast conditions, which considers local and regional traffic growth.
- ***Cumulative With Project***–Future forecast conditions plus Project-related traffic.

No roadway improvements were assumed at the study intersections, except for changes proposed as part of the Project.

ExistingConditions

This section describes transportation facilities in the Project study area, including the surrounding roadway network, transit, pedestrian, and bicycle facilities in the Project site vicinity.

Regional access to the Project site is provided by ***Interstate 580 (I-580)***. I-580 is an east-west freeway that forms the northern boundary of the City of Pleasanton and extends from the City of San Rafael in the west through the City of Tracy in the east. In Pleasanton, four to five travel lanes per direction are provided and the facility carries approximately 195,000 vehicles per day, based on information provided by Caltrans. Access to the study area is provided by full interchanges at Hacienda Drive and Santa Rita Road.

Rosewood Drive is a four- to six-lane divided roadway that forms the western and northern boundary of the Project site. Three travel lanes per direction and turn pockets at intersection approaches are provided on Rosewood Drive adjacent to the Project site. A partially landscaped raised median runs along the centerline of the roadway from Owens Drive to Santa Rita Road. The roadway provides connections to commercial land uses in the study area from larger arterial roadways. Class II bike lanes are provided east of the Project site on Rosewood drive. Sidewalks are provided along both sides of the roadway in the study area except for a segment north of the Project site adjacent to I-580. No on-street parking is permitted. The posted speed limit on Rosewood Drive is 40 miles per hour (mph).

Owens Drive is an east-west oriented four- to six-lane divided roadway that forms the southern boundary of the Project site. Three travel lanes per direction and turn pockets at intersection approaches are provided on Owens Drive in the study area. A partially landscaped raised median runs along the centerline of the roadway from West Las Positas Boulevard to Johnson Drive. Sidewalks and Class II bikes lanes are provided on Owens Drive adjacent to the Project site. No on-street parking is permitted in the study area. The posted speed limit on Owens Drive is 40 miles per hour (mph).

Hacienda Drive is a north-south oriented six-lane divided arterial located west of the Project site. Three travel lanes per direction and turn pockets at intersection approaches are provided. A partially landscaped raised median runs along the centerline of the roadway from I-580 to West Las Positas Boulevard, where the roadway terminates. Sidewalks are provided along the length of the roadway on both sides of the street, with bike lanes provided between Gibraltar Drive and Stoneridge Drive. No on-street parking is permitted in the study area. The posted speed limit on Hacienda Drive is 40 miles per hour (mph).

West Las Positas Boulevard is an east-west oriented roadway that provides between two and six travel lanes. Through the Hacienda Business Park area, three travel lanes per direction are provided with a landscaped center median, bicycle lanes and sidewalks, as well as turn pockets at intersections. No on-street parking is permitted.

Existing Pedestrian and Bicycle Facilities

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Pedestrian facilities are provided on public roadways adjacent to the site. In the immediate Project vicinity, pedestrian crosswalks, push buttons and signals are provided at the signalized intersections of Owens Drive/Rosewood Drive and Full Access Driveway-Wal-Mart Driveway/Rosewood Drive. Sidewalks are provided on all sides of the project site. Pedestrian activity is moderate around the Project site.

Bicycle facilities in Pleasanton include the following:

- *Bike paths (Class I)* – Paved trails that are separated from roadways. There are also several unpaved off-street trails within Pleasanton. These facilities are typically shared with pedestrians, although bicycles must yield to pedestrians.
- *Bike lanes (Class II)* – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs. There may or may not be parking allowed on the roadway

- *Bike routes (Class III)* – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.
- *Side Paths* – An off-street facility located adjacent to a roadway that is shared with pedestrians. These paths may be paved or unpaved.

Class II bike lanes are provided on Owens Drive along the Project site frontage as well as Rosewood Drive east of the Project site. A future trail is identified in the City's Bicycle Plan along Tassajara Creek, which forms the eastern boundary of the California Center campus.

Existing Transit Service

Transit service in the area is provided by The County Connection, Wheels, Pleasanton Paratransit, Altamont Commuter Express, Amtrak, and Bay Area Rapid Transit (BART). Wheels provides fixed-route and paratransit service throughout the Tri-Valley and connections to other transit service providers.

Hacienda employees and residents are eligible for free Wheels ECO Passes. ECO Passes entitle the bearer to use the Wheels system seven days a week, 365 days a year for free while employed or residing within the park. Wheels buses connect the Tri-Valley area to locations throughout Hacienda. Wheels buses also meet each incoming ACE and BART train during the peak commute hours to shuttle Hacienda employees to their businesses and residents to the respective stations.

The Dublin/Pleasanton Bay Area Rapid Transit (BART) Station is located about one mile (20 minute walk or a short bus ride) from the Project site, as shown on Figure 1. BART provides regional transportation connections to much of the Bay Area and the Dublin/Pleasanton line provides direct access to San Francisco, with several stops in Oakland where connections may be made to other lines. BART train headways are 15-20 minutes from approximately 5:00 AM to 12:00 AM.

Existing Roadway Operations

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection vehicle turning movement counts were conducted in March 2012 for the driveways that serve the Project site. Counts for the signalized intersection were obtained from the City of Pleasanton, based on spring 2012 data. For the study intersections, the single hour with the highest traffic volumes during the count periods was identified. Due to the different data collection sources, imbalances between the existing intersection volume counts were observed. Volume balancing was completed for intersections along Owens Drive to reduce this imbalance. The peak hour

volumes are presented on **Figure 3** along with the existing lane configuration and traffic control. The existing driveway traffic count data are provided in the Technical Appendix.

The operations of roadway facilities are described with the term "level of service" (LOS) in this study. **Appendix A** describes the LOS analysis methods. The City of Pleasanton has set LOS D as the level of acceptable delay at most major intersections, which are defined as intersections of two or more Arterials or one Arterial and one Collector Street. A number of intersections, referred to as Gateway and Exempted Downtown intersections, are exempt from the LOS D policy. These intersections are exempt from the LOS D policy as physical improvements to provide additional capacity for vehicles could degrade the pedestrian realm in the case of Downtown intersections. For Gateway intersections, additional vehicle capacity could encourage additional vehicle traffic that should remain on the regional transportation system and could also degrade the pedestrian experience and visual character of the intersection. Gateway intersections evaluated in this assessment include:

- Hacienda Drive at I-580 Eastbound Ramp
- Hacienda Drive at I-580 Westbound Ramp
- Hacienda Drive at Owens Drive

Although the City strives to maintain access to the roadway system from driveways and local streets, there is not a defined level of service standard for those locations.

Results of the existing conditions analysis are presented in **Table 2**, which shows that the intersections that provide access to the Project site operate at LOS D or better during both peak hours. Vehicle queues are generally contained within the available vehicle storage, as shown on **Table 3**.

PROJECT TRAFFIC ESTIMATES

To estimate conditions with the residential and retail portions of the Project, and occupation of the vacant office space, vehicle trips expected to be added to the roadway system were combined with existing traffic volumes through the following process:

1. ***Trip Generation*** – The *amount* of vehicle traffic entering and exiting the Project site was estimated.
2. ***Trip Distribution*** – The *direction* trips use to approach and depart the site was projected.
3. ***Trip Assignment*** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Trip Generation

For the vacant office use, peak period trip generation rates per occupied square foot were calculated using the observed trip generation from recent driveway counts and compared to published data. These rates are similar to, but lower than trip generation rates for office uses published in *Trip Generation*, 9th Edition (Institute of Transportation Engineers (ITE), 2012). As the Project site is close to transit facilities, and is served by shuttle buses connecting to the BART station, these rates reflect the alternative mode use of existing site tenants. It is likely that future tenants would have similar trip generating characteristics.

However, to present a conservative assessment of traffic conditions that could occur with occupancy of the vacant office space since the characteristics of future tenants is unknown, average ITE rates were applied to the vacant office space. Trips generated by the existing office uses and that could be generated when the vacant office is occupied is presented in **Table 1**. With the vacant square footage of the existing office building occupied, approximately 880 morning and 840 evening additional peak hour trips could be generated by the site. However, future occupancy levels of the California Center are unknown and depending on future tenants, the actual trip generating potential could differ from what is shown in Table 1.

For the proposed residential and retail uses, trip generation rates from the 9th Edition of *Trip Generation* were used. Based on a review of data from the U.S. Census 2000 and the American Community Survey 2010 related to mode choice for primarily residential census tracts in the Hacienda Business Park, it is expected that some future residents of the Project may use transit for commute trips. However, no trip generation reduction was applied for this study. The resulting trip generation estimates are presented in **Table 2.** The Project is expected to generate approximately 160 morning and 220 evening peak hour trips.

TABLE 1
OFFICE VEHICLE TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Existing Occupied Office[1]	502,796 square feet	631	48	679	74	575	649
Existing Vacant Office[2]	562,204 square feet	772	105	877	142	696	838
Total Office Vehicle Trips		1,403	153	1,556	216	1,271	1,487
Net New Trips on the Roadway		***772***	***105***	***877***	***142***	***696***	***838***

Notes:
1. From driveway counts collected in March 2012.
2. AM and PM trip generation based on rates for Office (Land Use 710) in ITE*Trip Generation* (9th Edition) as presented below (where: T = trip ends and X = 1,000 square feet):
   AM Rate: (T) = 1.56 (X) (inbound = 88%, outbound = 12%)
   PM Rate: (T) = 1.49 (X) (inbound = 17%, outbound = 83%)

Source: ITE's*Trip Generation*, 9th Edition and Fehr & Peers, January 2013.

TABLE 2
PROJECT VEHICLE TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Apartments [1]	305 units	31	125	156	126	66	189
Retail[2]	7,520 square feet	4	3	7	13	15	28
Net New Project Trips		***35***	***128***	***163***	***139***	***81***	***217***

Notes:
1. AM and PM trip generation based on rates for Apartment (Land Use 220) in ITE *Trip Generation* (9th Edition) as presented below (where: T = trip ends and X = number of dwelling units):
   AM Rate: (T) = 0.51 (X) (inbound = 20%, outbound = 80%)
   PM Rate: (T) = 0.62 (X) (inbound = 65%, outbound = 35%)
2. AM and PM trip generation based on rates for Shopping Center (Land Use 820) in ITE *Trip Generation* (9th Edition) as presented below(where: T = trip ends and X = 1,000 square feet):
   AM Rate: (T) = 0.96 (X) (inbound = 62%, outbound = 38%)
   PM Rate: (T) = 3.71 (X) (inbound = 48%, outbound = 52%)

Source: ITE's*Trip Generation*, 9th Edition and Fehr & Peers, January 2013.

Trip Distribution and Assignment

Vehicle trips expected to be generated by the Project were assigned to the roadway system based on existing travel patterns,locations of complementary land uses, Project site driveway location, and location of parking fields within the site. Trip distribution percentages are presented on **Figure 4.** The net new vehicle traffic generated by the Project was then assigned to streets in the local roadway system for the AM and PM peak hours. The resulting Project trip distribution through for each study intersection is shown on **Figure 5.**

TRAFFIC FORECASTS

Existing Plus Vacant Office

Vehicle trips that could be generated by occupancy of the vacant office space within California Center (as shown in Table 1) were assigned to the roadway network based on the existing travel patterns at the driveways serving the site and added to the existing traffic counts. The resulting traffic forecasts are presented on **Figure 6.**There are a variety of routes that vehicles can take to access the site and not all trips generated by the current vacant office space would enter the site from the driveways on Owens Drive. For example, from I-580 east, the shortest travel route to the site is Via Santa Rita Road to Rosewood Drive, where there is a full access driveway on the northern portion of the Project site.

Existing Plus Vacant Office Plus Project

Project trips shown on Figure 5 were added to the volumes presented on Figure 6. The initial intersection turning movement forecasts were adjusted to account for vehicle trips generated by the office that would no longer use the primary driveway on Owens Drive. With the Project, travel through the middle of the site by office trips would be discouraged by design, and full access from the easterly Owens Drive driveway would be provided and offer a more direct route to California Center office parking supplies for the southern portion of the campus. The resulting intersection turning movement volumes are shown on **Figure 7.**

Future Conditions

To assess the changes in traffic flow through the City with approved and planned development, the City of Pleasanton Travel Demand model was used to assess citywide vehicular travel changes. For this Project, the near-term and cumulative forecasts developed for the Housing Element Analysis were adjusted to remove traffic forecasts associated with development of the proposed Project on the site. The expected traffic from the Project, as depicted on Figure 5, was then added

to the Without Project forecasts and the traffic shifts to account for driveway changes were accounted for. **Figures 8 through 11**present the Near-Term without Project, Near-Term with Project, Cumulative without Project and Cumulative with Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices. These forecasts were not adjusted to account for existing office vacancy as the model forecasts assumed typical occupancy of the office buildings.

ROADWAY NETWORK

For the purposes of this assessment, no changes to the lane configurations at the study intersections were assumed, except for driveway changes proposed with the Project.

ANALYSIS RESULTS

Intersection Operations

Intersections were evaluated using Synchro software for the weekday AM and PM peak hours for analysis scenarios listed previously, based on the analysis methods outlined in Attachment A. As presented in **Table 3,** the driveways and intersections that provide access to the site from regional transportation system currently operate at LOS D or better during the morning and evening peak hours.

With the addition of traffic from the occupation of the vacant office uses, the unsignalized full access driveway on Owens Drive is expected to degrade to LOS F for movements from the side street during both peak hours. This primarily represents additional delay for southbound vehicles from the site during the morning peak hour and for northbound left-turning vehicles from the Archstone Apartment complex during the evening peak hour, with approximately 18 vehicles in the morning and 16 vehicles in the evening experiencing degraded operations. The increase delay comes from a combination of increased through traffic on Owens Drive, as well as increased turning movements to/from the California Center site. With construction of the Project and associated driveway changes and traffic shifts, operations of the primary access intersection would improve, although the side street movements would continue to experience LOS E or F conditions. Vehicles exiting Archstone have the option of exiting the complex at Rosewood Drive at Owens Drive signalized intersection.

TABLE 3
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing		Existing Vacant Office		Existing With Project		Near-Term Without Project		Near-Term With Project		Cumulative Without Project		Cumulative With Project	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]
1. I- 580 Westbound Ramps at Hacienda Drive	Signal	AM	7	A	7	A	7	A	8	A	8	A	9	A	9	A
		PM	7	A	7	A	7	A	7	A	7	A	7	A	7	A
2. I-580 Eastbound Ramps at Hacienda Drive	Signal	AM	14	B	17	B	17	B	15	B	15	B	18	B	19	B
		PM	11	B	14	B	14	B	14	B	14	B	13	B	14	B
3. Owens Drive at Hacienda Drive	Signal	AM	15	B	16	B	16	B	18	B	18	B	18	B	19	B
		PM	26	C	28	C	31	C	36	D	41	D	31	C	35	C
4. Rosewood Drive at California Center	Signal	AM	7	A	7	A	7	A	7	A	7	A	7	A	7	A
		PM	9	A	11	B	11	B	10	A	10	A	11	B	11	B
5. Owens Drive at Rosewood Drive	Signal	AM	7	A	9	A	10	A	9	A	11	B	11	B	13	B
		PM	8	A	9	A	11	B	9	A	10	A	9	A	9	A
6. Owens Drive at Right-in/ Right-out Driveway	Side-Street Stop-Controlled	AM	N/A		N/A		0 (11)	A (B)	N/A		0 (11)	A (B)	N/A		0 (11)	A (B)
		PM	N/A		N/A		0 (11)	A (B)	N/A		0 (10)	A (A)	N/A		0 (11)	A (B)

TABLE 3
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control[1]	Peak Hour	Existing		Existing Vacant Office		Existing With Project		Near-Term Without Project		Near-Term With Project		Cumulative Without Project		Cumulative With Project	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delay[2]	LOS[3]
7. Owens Drive at Primary Residential Access Driveway	Side-Street Stop-Controlled	AM PM	5 (33) 4 (46)	A (D) A (E)	7(70) 7(61)	A (F) A (F)	4 (43) 3 (49)	A (E) A (E)	5 (42) 5 (130)	A (E) A (F)	5 (45) 4 (93)	A (E) A (F)	8 (73) 7 (207)	A (F) A (F)	5 (44) 4 (116)	A (E) A (F)
8. Owens Drive at Secondary Access Driveway	Side-Street Stop-Controlled	AM PM	0 (11) 1 (11)	A (B) A (B)	0 (11) 1 (11)	A (B) A (B)	7 (109) 7 (29)	A (F) A (D)	0 (11) 1 (10)	A (B) A (A)	4 (47) 3 (16)	A (E) A (C)	0 (11) 1 (11)	A (B) A (B)	3 (30) 3 (18)	A (D) A (C)
9. Owens Drive at West Las Positas Boulevard	Signal	AM PM	12 13	B B	13 13	B B	14 14	B B	10 16	A B	11 17	B B	12 19	B B	13 20	B B
10. Rosewood Drive at Right-in/Right-out Driveway	SSSC	AM PM	N/A N/A		N/A N/A		0 (0) 0 (0)	A (A) A (A)	N/A N/A		0 (0) 0 (0)	A (A) A (A)	N/A N/A		0 (0) 0 (0)	A (A) A (A)

Notes: **Bold** text indicates unacceptable operations based on City's level of service policy.

1. Signal = Signalized Intersection; at side-street stop-controlled intersections, traffic from the major roadway does not stop.
2. Delay presented in seconds per vehicle; for side-street stop-controlled intersections, delay presented as intersection average (worst approach)
3. LOS = Level of Service.

Source: Fehr & Peers, January 2013.

As a restricted access driveway, the easternmost driveway operates with minimal delay for vehicles turning from the site to westbound Owens Drive. With the construction of the Project and modifications to this driveway to provide full-access, delay for vehicles exiting the site would increase during both peak hours, with vehicles exiting the site experiencing LOS F conditions in during the morning peak hour in the Existing Plus Project (plus vacant office space occupied) scenario. This is due to increased traffic at the driveway due to internal traffic shifts as well as delay for vehicles waiting to turn left from the site to eastbound Owens Drive. Measures to improve the operations of this movement are provided below.

Signalized intersections are expected to continue operating at LOS D or better in the Existing, Near-Term and Cumulative conditions both without and with the Project.

Peak hour volume and delay signal warrants were evaluated for the unsignalized full access intersections on Owens Drive. Neither signal warrant was satisfied during the AM peak hour at either driveway intersection. During the PM peak hour, the volume warrant is satisfied at the existing full access driveway and would continue to be satisfied with the occupation of the vacant office space. With the Project and expected traffic shifts to the easterly driveway, the volume warrant would no longer be satisfied at the existing main access intersection, but would be satisfied at the easterly access intersection. However, the location of the future parking garage within the site could affect how vehicle trips load to the roadway network as there are many driveways that serve the site. Additionally, the trip generating characteristics of future office tenants could differ from what was assumed in this analysis and signalization may not be warranted based on actual future conditions.

> ***Recommendation:*** Monitor the operations of the easterly driveway after the Project is constructed and the California Center office reaches a more typically level of occupancy to determine if signalization of the easterly driveway intersection is warranted. Signalization of the existing main access intersection on Owens Drive is not recommended due to the short distance between the driveway and the signalized Owens Drive at Rosewood Drive intersection.

Vehicle Queues

Vehicle queues were evaluated for turning movements where the project is expected to have an effect on traffic volumes, including the eastbound and southbound movements to/from the driveways on Owens Drive, the eastbound left-turn movement from Owens Drive to Rosewood

Drive, and the westbound left-turn from Owens Drive into the Archstone apartments. The 95th percentile vehicle queue as calculated by Synchro is presented in **Table 4**.

As shown in Table 4, the expected 95th percentile vehicle queues for movements from Owens Drive are expected to be accommodated within the available storage, including the westbound left-turn on Owens Drive into the Archstone Apartment complex.

Although vehicle queues for movements on Owens Drive would be accommodated within the available storage, vehicles waiting to turn onto Owens Drive from the Project site or from Archstone could extend beyond the available storage. At the secondary driveway, vehicle queues could extend beyond the designated driveway throat and periodically block access to on-street parking within the Project site.

> ***Recommendation:*** Provide separate left- and right-turn lanes at the easterly Project driveway for approximately 50 feet into the site, with a 37-footwide cross-section to accommodate a 15-foot wide entry lane and two 11-feet exit lanes. This would reduce the vehicle queues to less than 100 feet during the evening peak hour and reduce delay for vehicles exiting the site during the morning peak hour. Provision of separate turn lanes from the site would also facilitate the future signalization of the intersection if warranted by actual conditions.

Vehicles turning left to Owens Drive from the Archstone apartments could extend approximately 75 feet into that site, potentially impeding their on-site circulation. However, with the Project, traffic would shift to the easterly Project site driveway, reducing the vehicle queue and improving operations. Additionally, vehicles exiting Archstone could use the traffic signal at the driveway opposite Rosewood Drive to avoid delays and vehicle queues at the unsignalized driveway.

TABLE 4
VEHICLE QUEUES IN FEET[1]

Intersection	Movement	Available Storage[2]	Existing		Existing Vacant Office		Existing With Project		Near-Term Without Project		Near-Term With Project		Cumulative Without Project		Cumulative With Project	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Owens Drive at Rosewood Drive	Eastbound Left	225	75	100	150	125	150	125	100	125	125	150	150	150	175	150
Owens Drive at Primary Access Driveway/Archstone Driveway	Eastbound Left	215	50	0	75	0	25	25	50	0	25	25	100	0	25	0
	Southbound	200/50	0	50	25	150	75	50	25	75	75	50	50	75	75	50
	Westbound Left	130	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Northbound Left	50	50	25	50	50	25	25	50	**75**	25	50	50	**75**	25	50
	Northbound Right	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Owens Drive at Secondary Access Driveway	Eastbound Left	0/150	N/A	N/A	N/A	N/A	100	25	N/A	N/A	50	0	N/A	N/A	50	0
	Southbound	325/100	0	25	0	25	100	**175**	0	25	50	100	0	25	25	100

Notes:**BOLD**indicates 95th percentile queue could exceed storage length.

1. 95th Percentile Vehicle queue (in feet) as calculated by Synchro. Bold indicates vehicle queues will extend beyond the available storage space.
2. Vehicle storage presented in feet, not accounting for the bay taper. Where two numbers are presented, the first number represents vehicle storage without the Project and the second number represented vehicle storage with the Project.

Source: Fehr & Peers, January 2013.

SITE ACCESS AND ON-SITE CIRCULATION

This section discusses site access and internal circulation for vehicles, pedestrians, bicycles, and emergency vehicles based on the site plan presented previously on Figure 2. A parking assessment was also conducted. Site recommendations are presented on **Figure 12**.

Vehicles

The existing California Center is currently served by two driveways on Owens Drive and four driveways on Rosewood Drive. With the Project, two new driveways would be constructed to serve the retail portion of the Project, one on Owens Drive and one on Rosewood Drive. Both driveways would be restricted to right-in/right-out operation and are projected to operate acceptably during peak hours, as shown previously in Table 3. As these driveways are restricted to right-in/right-out operation, vehicles accessing the site may increase the number of u-turns at adjacent intersections; the number of u-turns from retail trips was estimated and accounted for in the off-site intersection analysis.

With the Project, the easternmost driveway on Owens Drive that is currently restricted to right-in/right-out operation would be modified to provide full access, with the internal roadway providing direct access to the proposed parking structure serving the existing office uses. Based on the intersection operations analysis presented in the previous section provision of separate left and right turn lanes exiting the site is recommended as there may be periods during the PM peak hour when vehicles exiting the site block access to the parallel parking on the easternmost drive aisle.Monitoring of driveway operations as the vacant office space is occupied and the Project is developed is also recommended to determine if signalization is warranted.

The existing full access driveway on Owens Drive would remain full access and would be the primary entry to the residential portion of the Project. Access to the Archstone apartment complex on the south side of the street is also provided from this driveway. Delay for northbound vehicles turning left from the Archstone driveway are expected to degrade as through traffic volumes increase on Owens Drive as a result of re-occupation of the existing office space and regional growth in traffic. With the traffic shifts to the eastern-most driveway expected with the Project, peak hour delay would decrease for vehicles from the side-street, improving operations with the Project. This driveway is expected to operate acceptably with the Project and no modifications from the existing traffic control are recommended to improve vehicle operations.

A sight distance assessment was conducted for vehicles turning to/from the easterly Project driveway, since that driveway would be modified with the Project. For this assessment, the stopping sight distance and corner sight distance were reviewed. Stopping sight distance is defined as the distance required by a driver of a vehicle, traveling at a given speed, to bring the vehicle to a stop after an object on the road becomes visible and in advance of reaching the object. Corner sight distance is defined as the line of sight maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Based on the existing speed limit of 40 miles per hour on Owens Drive, and assumptions of the prevailing travel speed of 45 miles per hour, the minimum stopping sight distance is 360 feet and the corner sight distance is 495 feet. Vehicles traveling on Owens Road need approximately 360 feet to be able to stop in sufficient time if there is a vehicle turning to/from the Driveway within their travel path. For vehicles turning into or out of the site, they would be able to complete their turning movement within the time it takes an on-coming vehicle to travel approximately 495 feet. These sight distances from the driveway are shown on Figure 13, which indicates there is sufficient sight distance at the easterly driveway for the new turning movements.

> ***Recommendation:*** Maintain landscaping at the easterly driveway intersection to avoid sight distance conflicts (shrubs should not be higher than approximately 30 inches and tree canopies should be approximately six feet from the ground).

Incident data was reviewed for the Owens Drive Project frontage from January 1, 2009 to February 1, 2012. A few incidents were reported in proximity to the existing full access driveway into the site. Of the four reported incidents in the driveway influence area, three incidents resulted in rear-end collisions and one resulted in a sideswipe. Primary collision factors included unsafe speed and improper turning. Two of the incidents resulted in injuries.

As the Project would reduce the number of turning conflicts at the main access intersection and shift traffic to the easternmost driveway which is a 3-way intersection with sufficient sight distance, the proposed access changes proposed with the project are not likely to worsen the incident experience along the Owens Drive Project frontage.

Pedestrian

As part of the Project, new pedestrian paths would be constructed within the Project site and connect to the existing pedestrian system within the California Center campus. Curb extensions and high visibility crosswalks would also be provided at potentially high volume crossing locations. A pedestrian path would also connect the retail center to the residential common area,

continuing to the office uses, minimizing the number of drive aisles pedestrians would have to cross to access the retail center from the office uses.

Pedestrian access to the Project site would occur from a number of locations on Owens Drive and Rosewood Drive. Sidewalks are provided along both sides of most internal roadways, with the exception of the easterly access driveway where there are no active uses on the east side of the street. Based on the level of pedestrian enhancements proposed as part of the Project, the Project is not expected to create a significant impact to pedestrian system in the vicinity of the site.

Transit

Transit currently serves the Project area, with stops on Rosewood Drive, north of Owens Drive and on Owens Drive, west of Rosewood Drive. No changes to the number of transit stops or level of transit service are proposed as part of the Project. A driveway serving the retail center from Rosewood Drive is proposed to be constructed south of the existing bus pull-out area.

Existing employees and residents of the Archstone, Avila, Siena, and Verona communities within the Hacienda Business Park receive an ECO pass, which allows for free use of the Wheels transit system that provides connections to the BART station, and other locations within the Hacienda Business Park and the Tri-Valley Area.

> ***Recommendation:*** Provide ECO Passes to future residents and employees of the Project.

Bicycle

Class II bicycle facilities (bike lanes) are currently provided on Owens Drive along the Project frontage. Long-term bicycle parking would be provided throughout the site, including private garages and shared bicycle storage rooms. Short-term bicycle parking is proposed adjacent to the retail building and at three locations within the residential community.

Emergency Vehicles

Emergency vehicle access would be provided both from the Project frontages on Owens Drive and Rosewood Drive, and from the existing California Center campus circulation system on the north site of the site. Based on the level of access to the site, and the extent of the internal roadway system, the Project is not expected to result in inadequate emergency access.

Delivery Vehicle Access

Access to the site by moving trucks, furniture delivery, and trash collection vehicles are expected to occur on a regular basis. No designated loading areas are shown on the site plan. Trash collection areas are shown throughout the site, including the parking garage and at the end of an approximately 200 foot drive-aisle. Based on information provided by the Project applicant, trash enclosures in hard to reach areas would be brought to a central location for pick-up, eliminating the need for garbage vehicles to enter the parking garage or other dead-end drive aisles.

> ***Recommendation:*** Encourage residents to conduct move-in/move-out large vehicle maneuvers during off-peak hours, such as mid-day or weekends, to minimize potential internal vehicle conflicts. Allow delivery moving trucks/delivery vehicles to park in parallel parking stall(s) to maintain two-way travel on internal roadways.
>
> For the retail portion of the Project, encourage large vehicles deliveries to occur during off-peak hours as there are no designated loading areas within the retail portion of the Project site.

Parking

City of Pleasanton requirements for parking, based on the *City of Pleasanton Housing Site Development Standards and Design Guidelines*, were reviewed. For residential uses, 1.50 spaces are required for each unit with an additional 1 guest space for each 10 units, resulting in a parking code requirement of 489 spaces, as shown in **Table 5**. For the retail area, 5 parking spaces per 1,000 square feet are required, for a total parking requirement of 38 spaces for the retail portion of the Project for a total combined parking requirement of 527 spaces. As the project proposes to provide 529 parking spaces, there would be a surplus of 2 spaces as compared to the parking requirement.

Of the total parking supply, 60 individual garage spaces would be provided for some of the Garden Walkups, 250 spaces would be provided in a single level basement garage under the four-level podium building, and 138 surface parking spaces would be provided. In addition, 40 parking spaces would be shared between the existing campus office uses and the residential uses. An additional 41 surface spaces would be provided for the retail area. Sixteen of the parking stalls within the basement garage would be tandem stalls.

> ***Recommendation:*** Provide tandem stalls to vehicle owners residing in the same unit.

Office and residential uses have complementary parking demands, in that most residential uses have peak parking demands in the evening and through the night, while parking demand for office uses tends to peak during the day.

> ***Recommendation:*** Encourage short-term guest parking and overnight resident parking to occur in the shared parking stalls between the office and residential uses. Long term parking in those stalls should be discouraged.

TABLE 5
CITY CODE AUTOMOBILE PARKING REQUIREMENTS

Land Use	Size	Parking Code Requirement	Parking Spaces Required	Total Parking Supply
Residential	305 Units	1.50	458	529
	Guest Parking	1 per 10 units	31	
Retail	7,520	5 per 1,000 square feet	38	
Total Requirement			***527***	

Source: City of Pleasanton Housing Site Development Standards and Design Guidelines.

Additionally, 0.8 secure and weather protected bicycle parking spaces per residential unit are required, resulting in a requirement of 244 long-term bicycle parking spaces for the 305 units. Bicycle parking would be provided in each of the 60 private garages. Three bicycle storage rooms would be provided throughout the site, providing secure storage for an additional 185 bicycles, for a total of 245 secure and weather protected spaces. A bicycle shop is proposed as a community amenity. Sufficient bicycle parking would be provided.

Americans with Disability Act parking requirements were calculated separately for the residential and retail portions of the Project. For the residential portion of the Project, ADA requires nine accessible stalls to support a parking supply between 401 and 500 spaces, including 2 van accessible spaces. A total of five accessible stalls are proposed in the subterranean parking garage, and six are proposed spread out over the surface parking fields. Of the 11 accessible stalls, six are van accessible and five are standard ADA stalls. For the retail portion of the Project, two ADA stalls are required. Four are shown in the site plan, with two van accessible stalls.

CONCLUSIONS AND RECOMMENDATIONS

With construction of the Project, vehicular access to the office parking area from Owens Drive would be discouraged from the existing full access driveway and the easterly driveway would be modified to provide full access into the site and the office parking areas. With the provision of two full access driveways into the site from Owens Drive, the signalized intersections evaluated as part of this assessment would continue to operate at acceptable service levels and vehicle queues are expected to remain within the available storage for movements where the Project is expected to increase traffic. Although the easterly intersection into the site on Owens Drive is expected to satisfy the peak hour volume warrant for signalization during the PM peak hour,the side-street movements are projected to operate within acceptable delay limits.

Based on our site plan review, the following are recommended for consideration in development of the final site plan:

- Monitor the operations of the easterly driveway after the Project is constructed and the California Center office reaches a more typical level of occupancy to determine if signalization of the easterly driveway intersection is warranted.
- Provide separate left and right turn lanes at the easterly driveway.
- Provide ECO Passes to future residents and employees of the Project.
- Maintain landscaping along the Owens Drive Project frontage to provide adequate sight distance for vehicles turning to/from Project driveways.
- Encourage short-term parking within the shared parking between the office and retail uses.
- Encourage residents to conduct move-in/move-out large vehicle maneuvers during off-peak hours, such as mid-day or weekends, to minimize potential internal vehicle conflicts.
- Allow delivery moving trucks/delivery vehicles to park in parallel parking stall(s) to maintain two-way travel on internal roadways.
- For the retail portion of the Project, encourage large vehicles deliveries to occur during off-peak hours
- Provide tandem stalls to vehicle owners residing in the same unit.

Attachments:

Figure 1 – Project Site and Study Intersections

Figure 2 – Conceptual Project Site Plan

Figure 3 – Existing Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 4 – Project Trip Distribution

Figure 5 – Project Trip Assignment

Figure 6 – Existing With Vacant Office Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 7 – Existing With Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 8 – Near-Term without Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 9 – Near-Term with Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 10 – Cumulative without Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 11 – Cumulative with Project Peak Hour Traffic Volumes, Lane Configurations, and Traffic Control Devices

Figure 12 – Consultant Site Plan Recommendations

Technical Attachments:

A – Intersection Level of Service (LOS) Methods

B – Existing (2012) Traffic Count Sheets

C – Synchro Level of Service Reports

D – Signal Warrant Analysis Sheets

E – Signalized Intersection Queuing Reports

ATTACHMENT A – INTERSECTION LEVEL OF SERVICE ANALYSIS METHODS

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., best operating conditions) to LOS F (worst operating conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. The City of Pleasanton strives to maintain LOS D or better for peak hour intersection operations.

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method from Chapter 16 of the Transportation Research Board's 2000 *Highway Capacity Manual*. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table A-1** summarizes the relationship between average delay per vehicle and LOS for signalized intersections.

Unsignalized Intersections

Traffic conditions at unsignalized intersections were evaluated using the method from Chapter 17 of the 2000 *Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, as well as the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table A-2** summarizes the relationship between delay and LOS for unsignalized intersections.

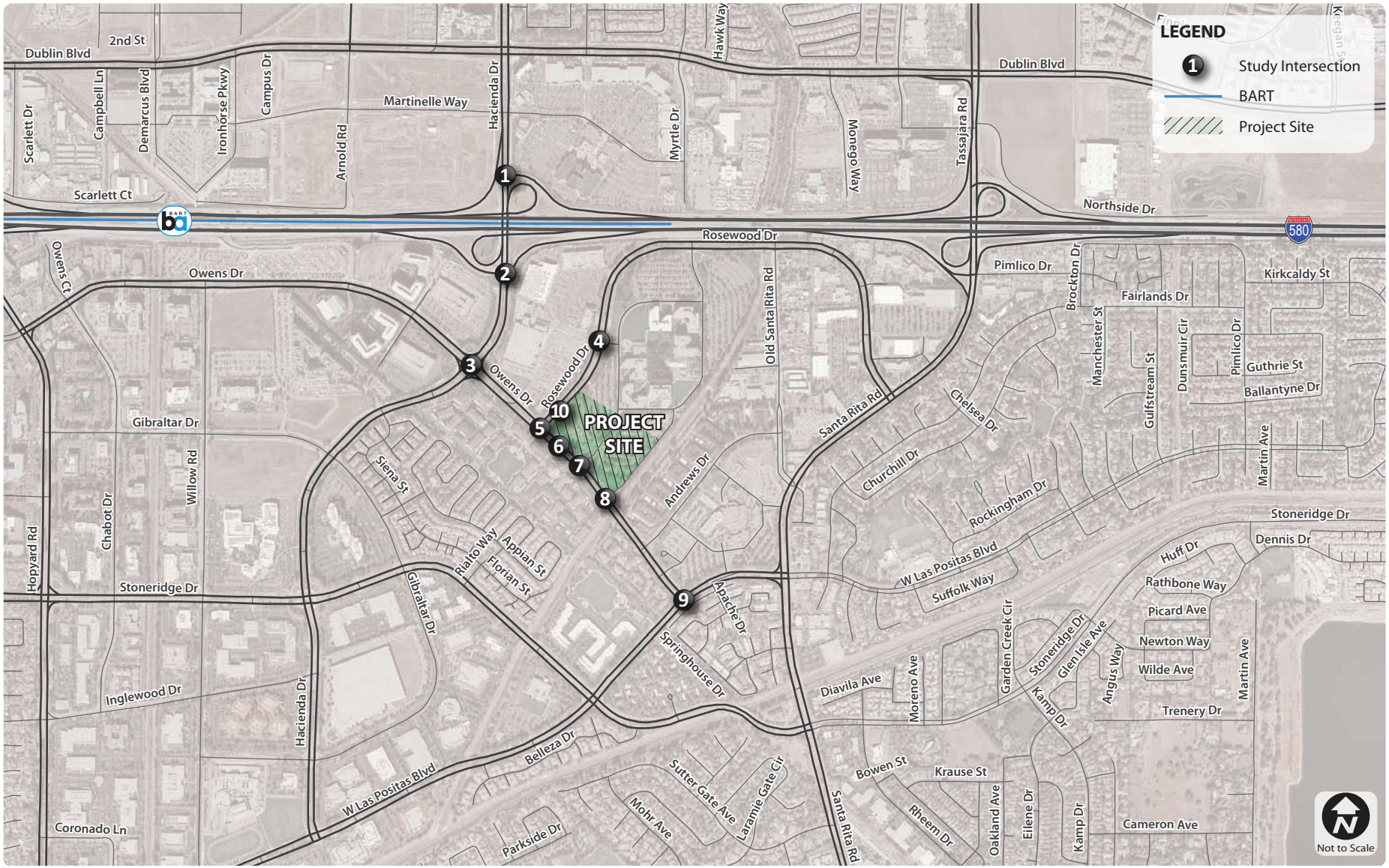
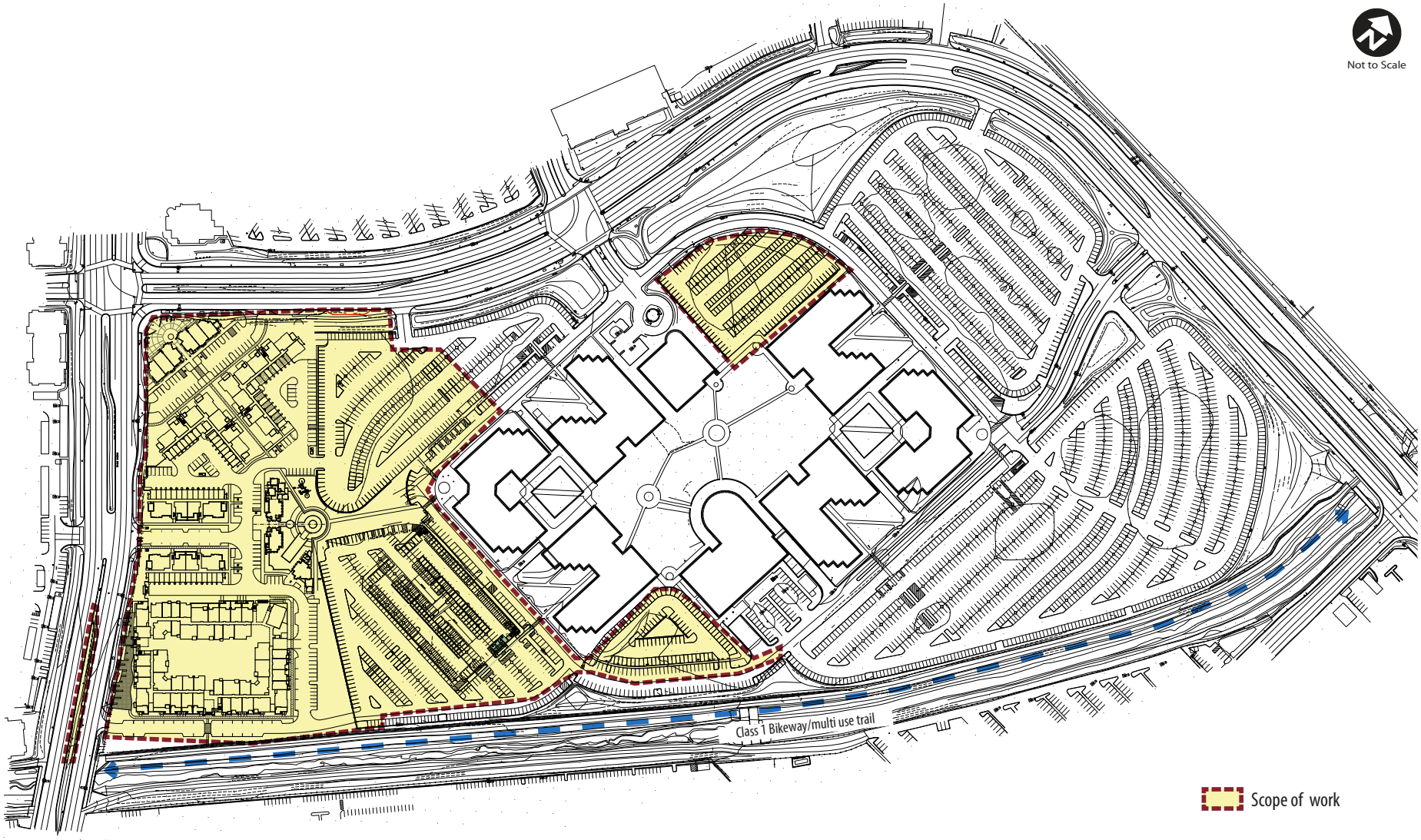


Figure 1.

Project Site and Study Intersections

WC11-2878.01_1_ProjSite

FEHR PEERS



SOURCE: Dahlin Group

Figure 2a.

Extent of Project Site Plan

WC11-2878.01_2a_SitePlan

FEHR & PEERS

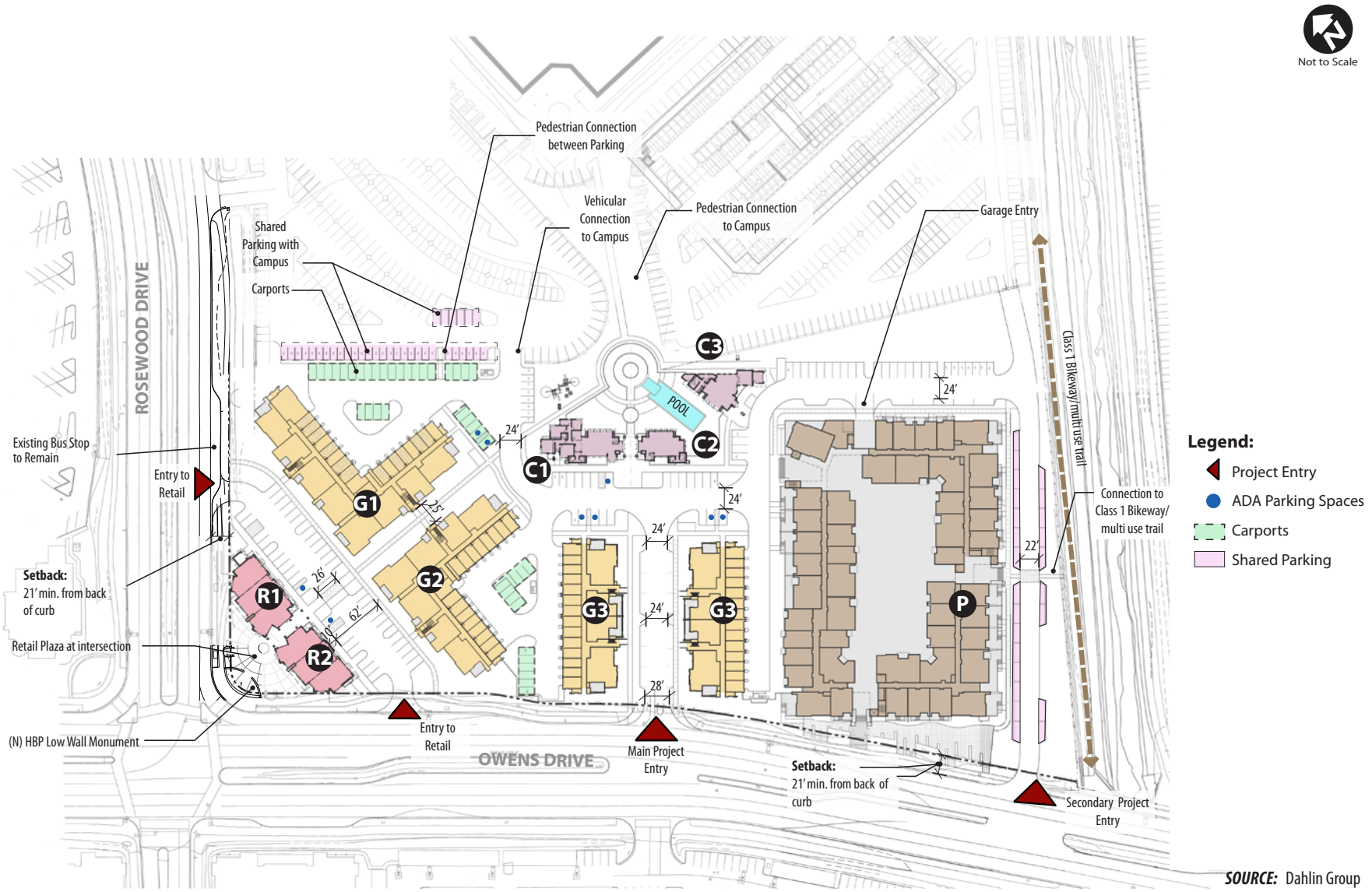


Figure 2b.

Conceptual Site Plan

WC11-2878.01_2b_SitePlan

FEHR PEERS

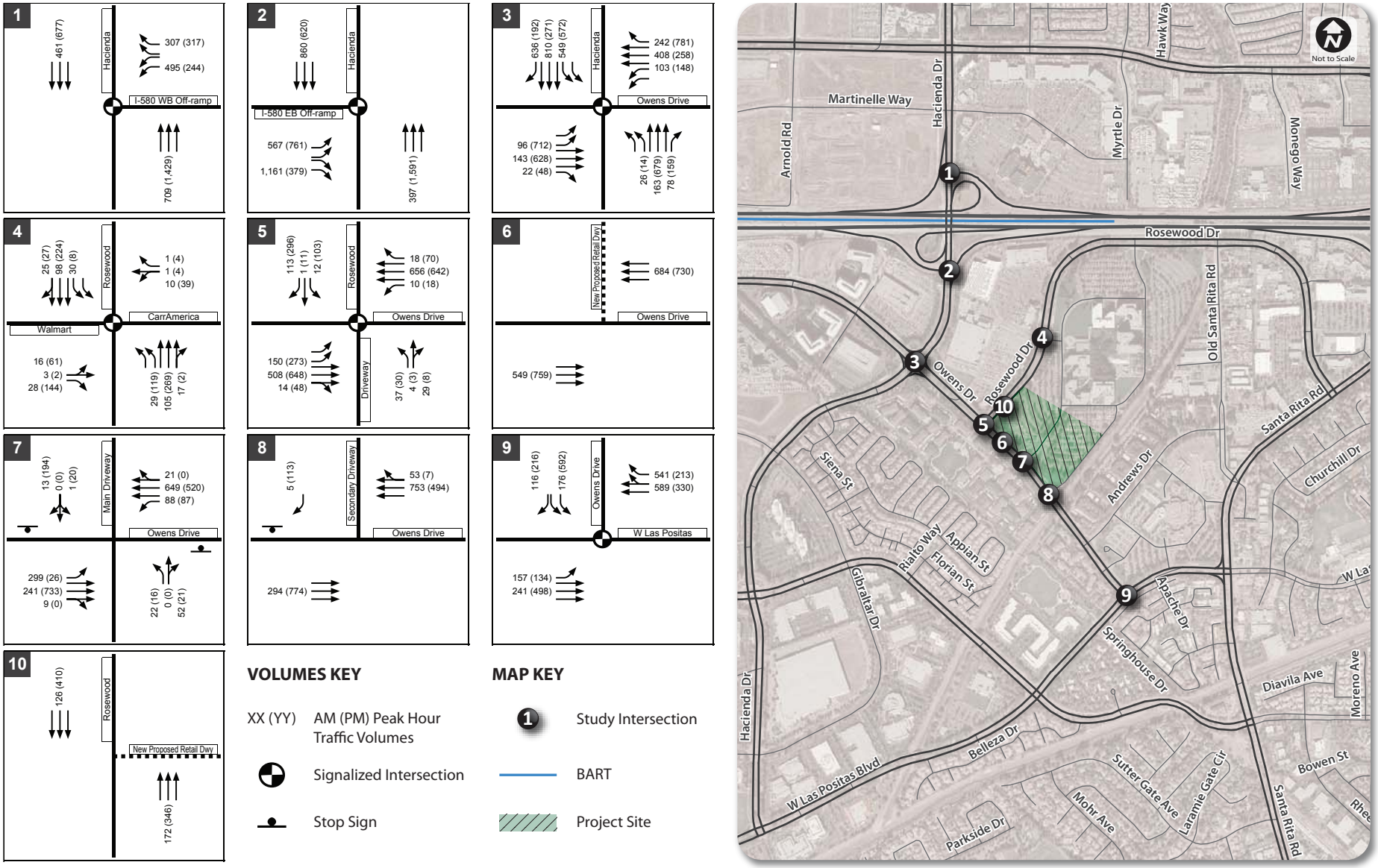


Figure 3.

Existing Peak Hour Volumes, Lane Configurations and Traffic Control

WC11-2878.01_3_ExVols

FEHR PEERS

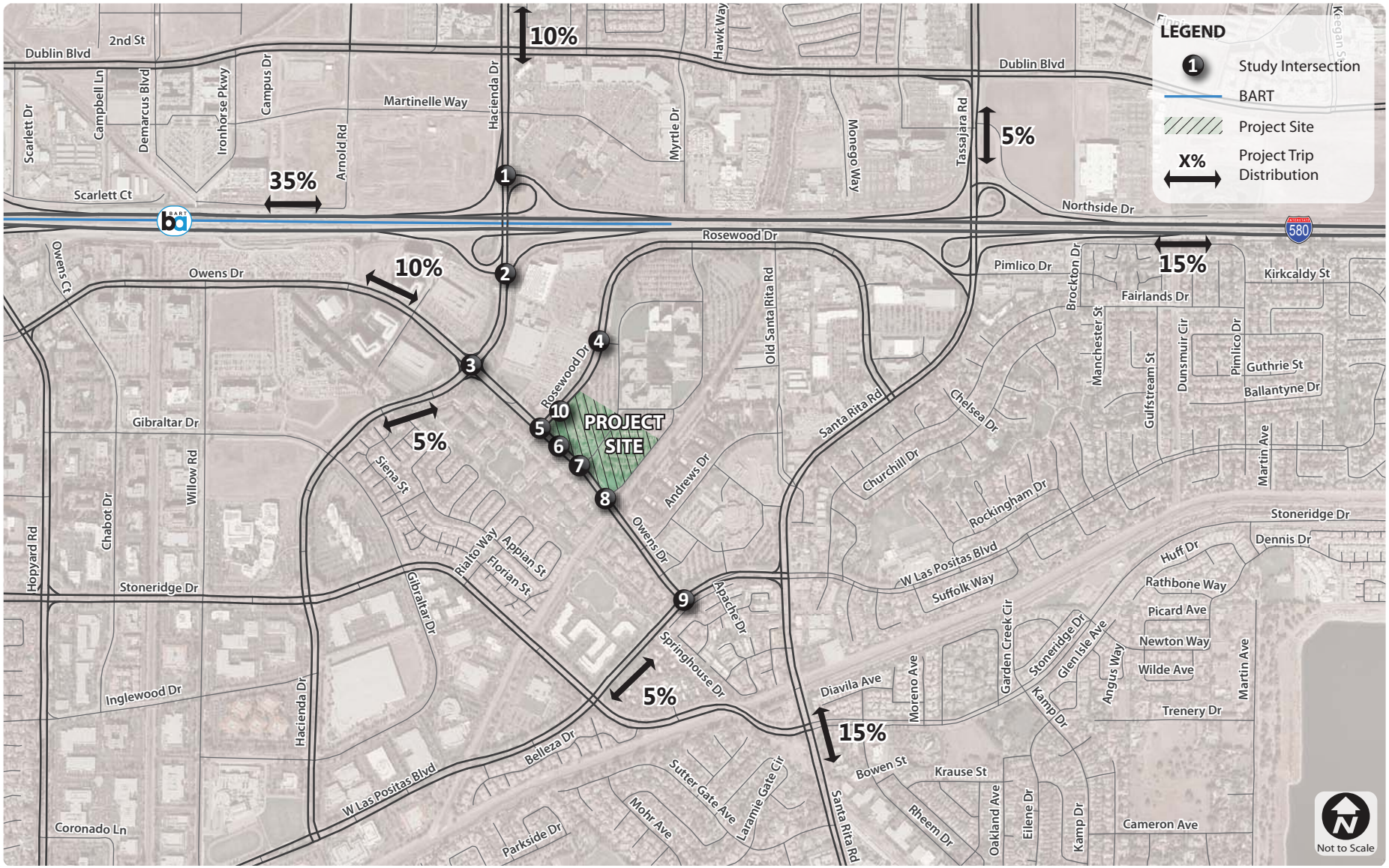


Figure 4.

Project Site and Study Intersections

WC11-2878.01_4_TripDistro

FEHR & PEERS

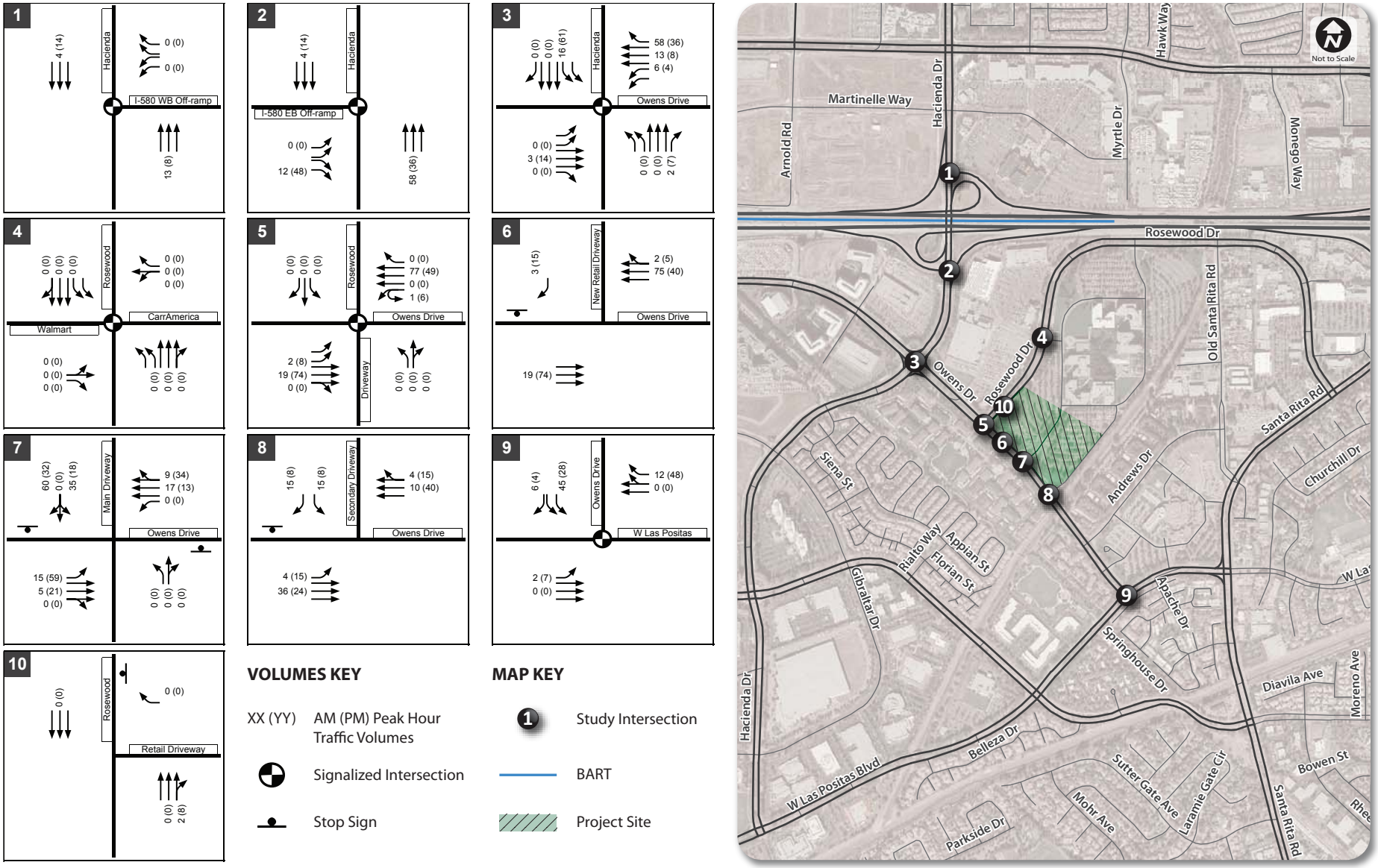


Figure 5.

Project Trips

WC11-2878.01_5_ProjTrips

FEHR PEERS

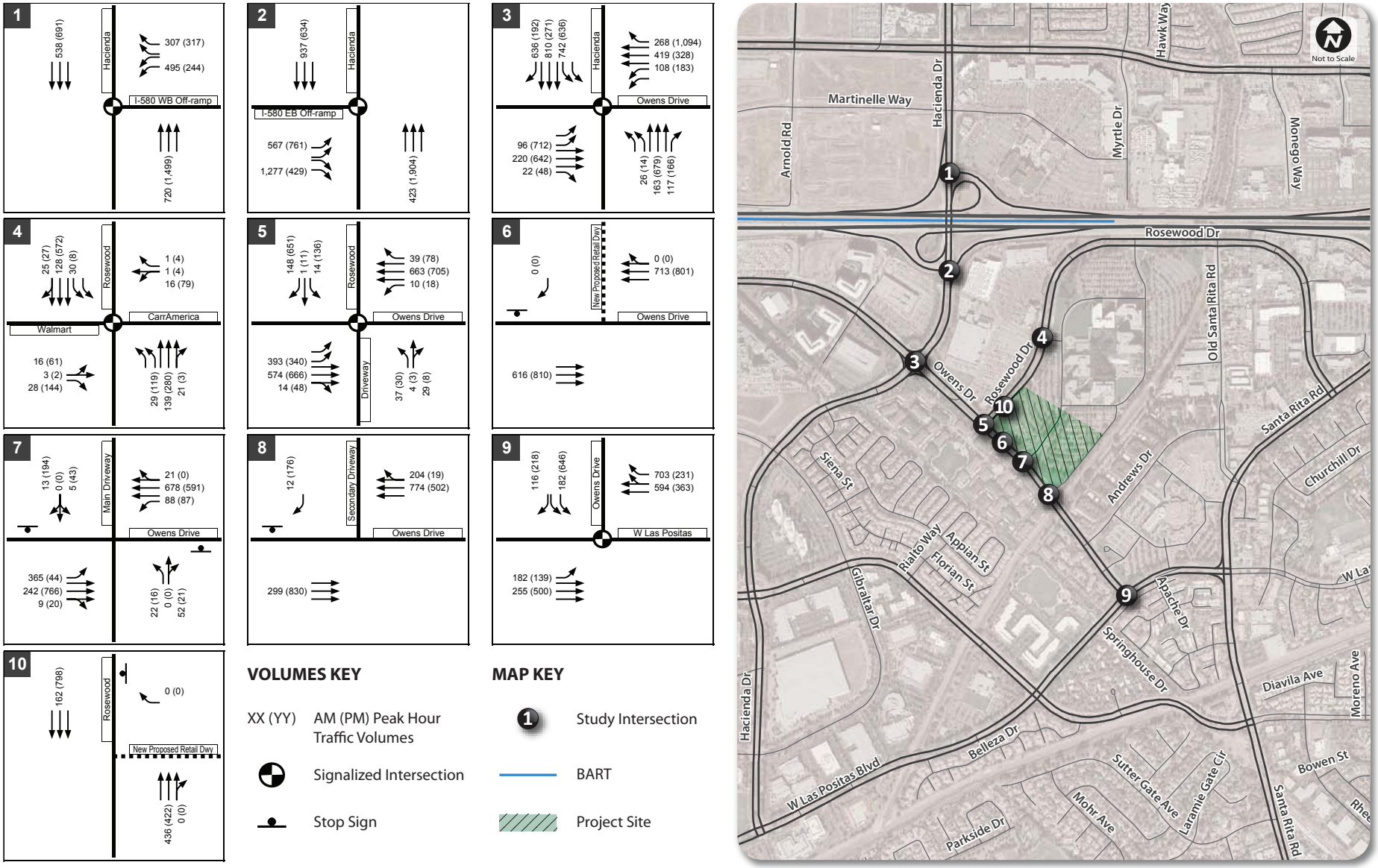
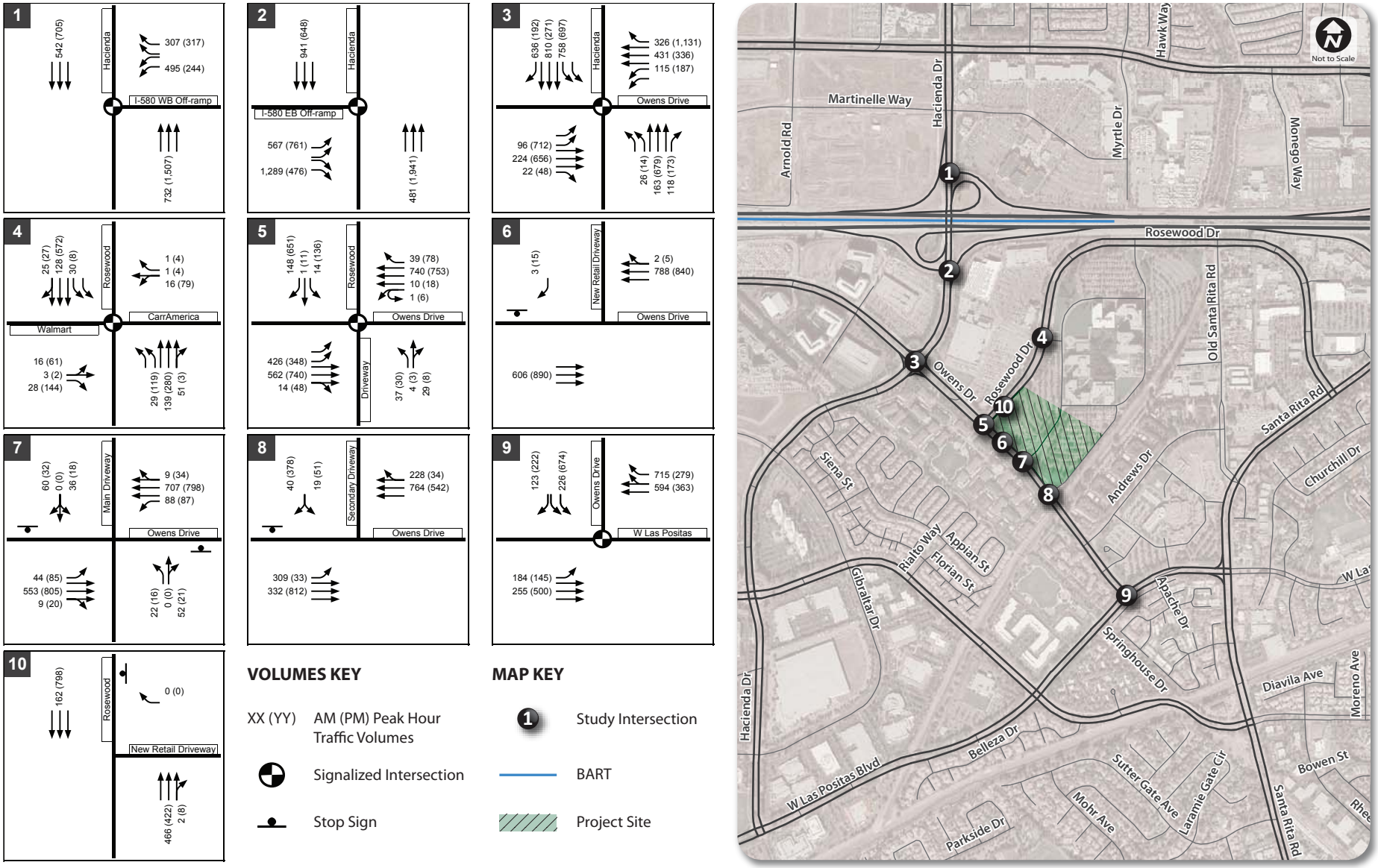


Figure 6.

Existing Plus Vacant Office Space Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_6_Ex+Vac

FEHR PEERS



NOTE: Reflects traffic shifts associated with driveway modifications on Owens Drive.

Figure 7.

Existing Plus Vacant Office Space Plus Project Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_7_Ex+ProjVols

FEHR PEERS

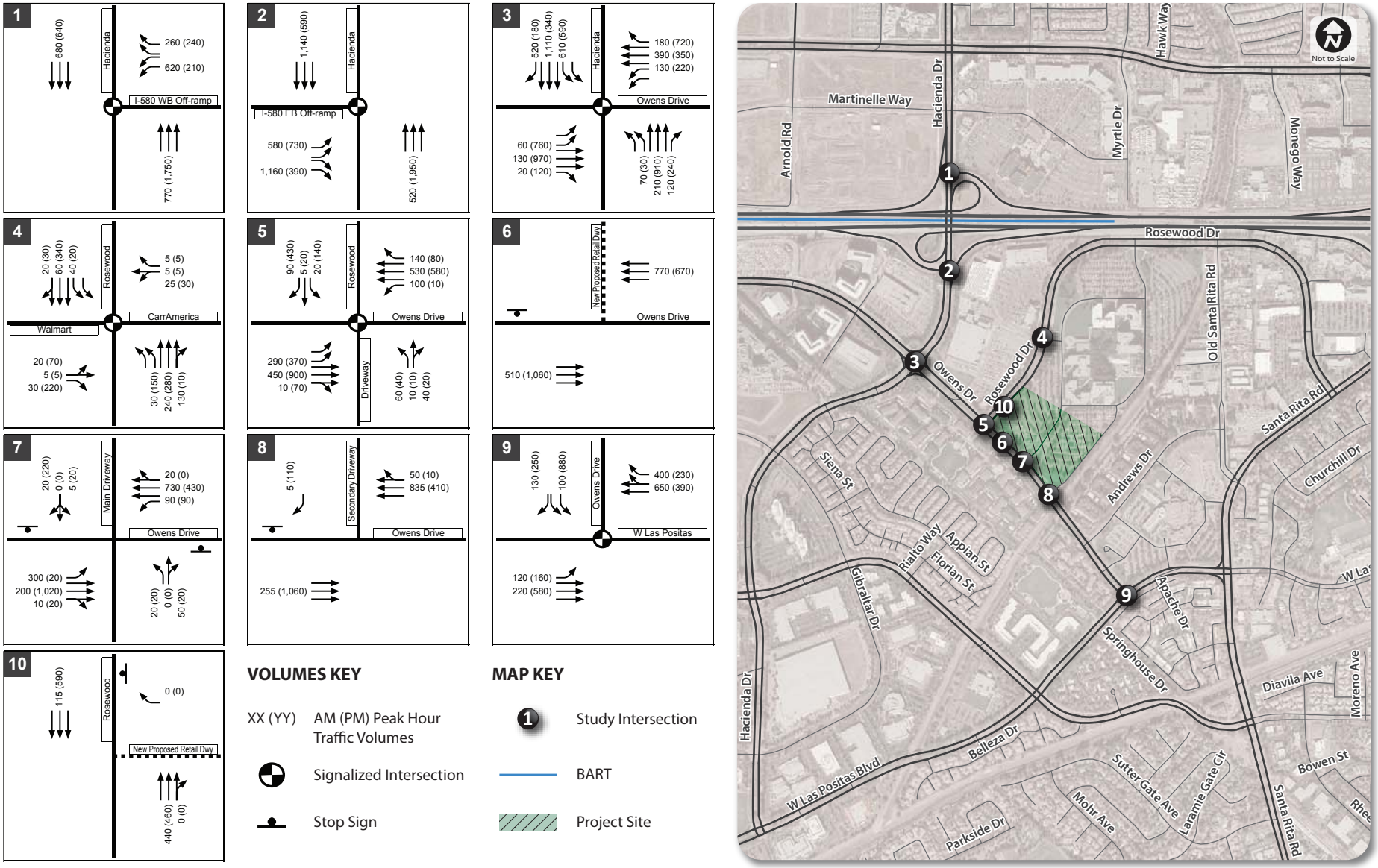
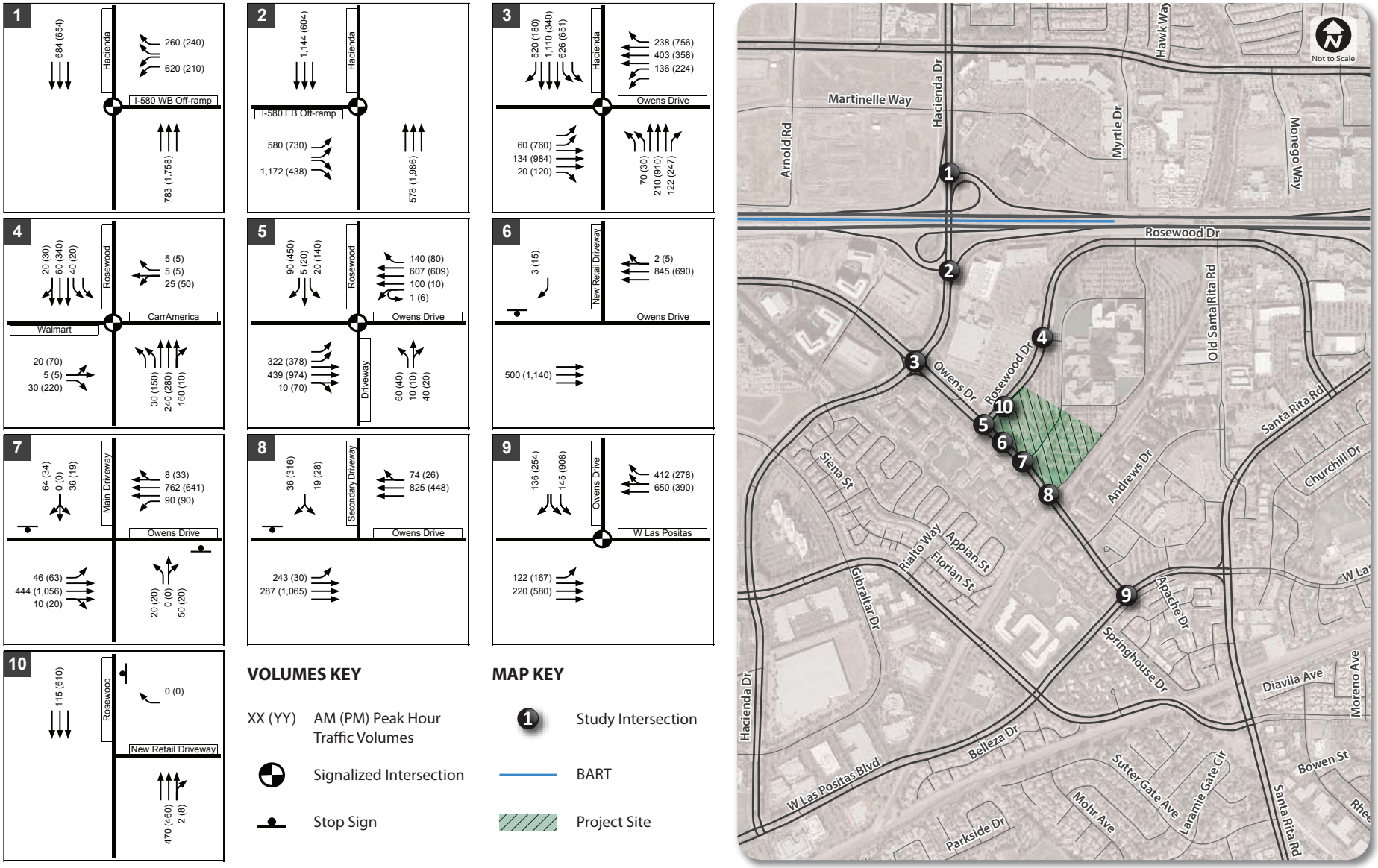


Figure 8.

Near-Term without Project Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_8_NTVols

FEHR PEERS



NOTE: Reflects traffic shifts associated with driveway modifications on Owens Drive.

Figure 9.

Near-Term Plus Project Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_9_NT+ProjVols

FEHR PEERS

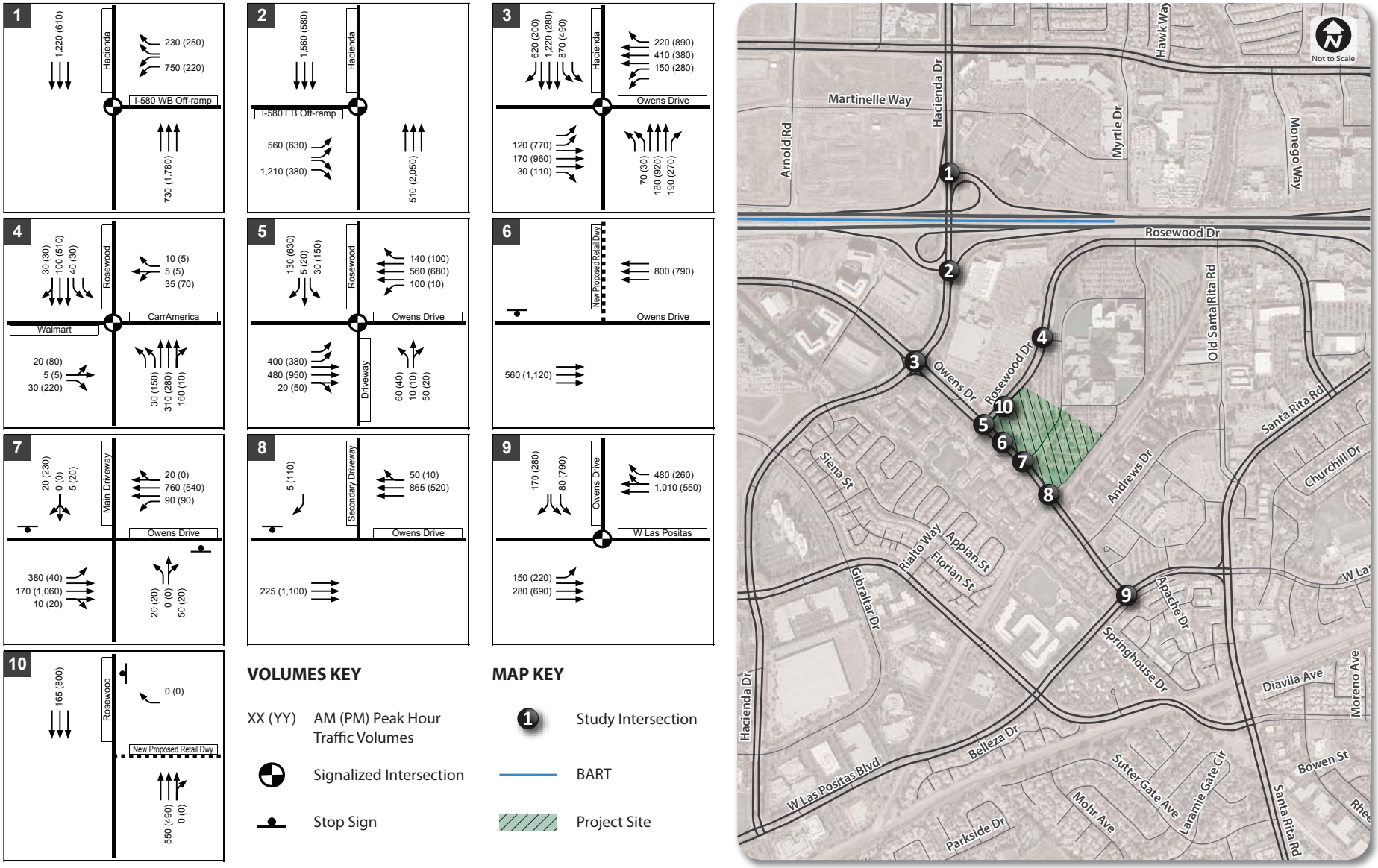
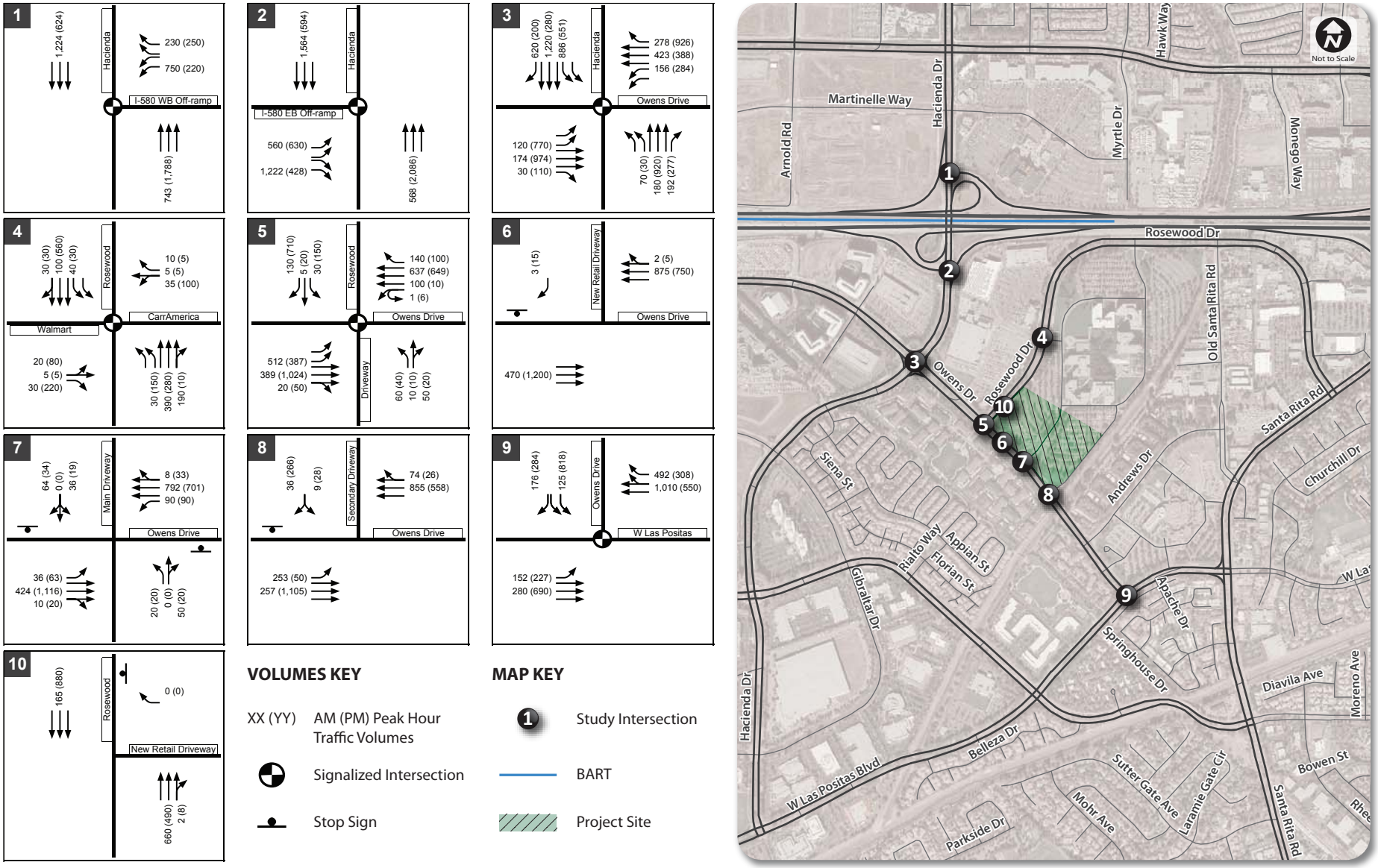


Figure 10.

Cumulative Without Project Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_10_CumuVols

FEHR PEERS



NOTE: Reflects traffic shifts associated with driveway modifications on Owens Drive.

Figure 11.

Cumulative Plus Project Peak Hour Intersection Volumes, Lane Configurations and Traffic Control

WC11-2878.01_11_Cumu+ProjVols

FEHR PEERS

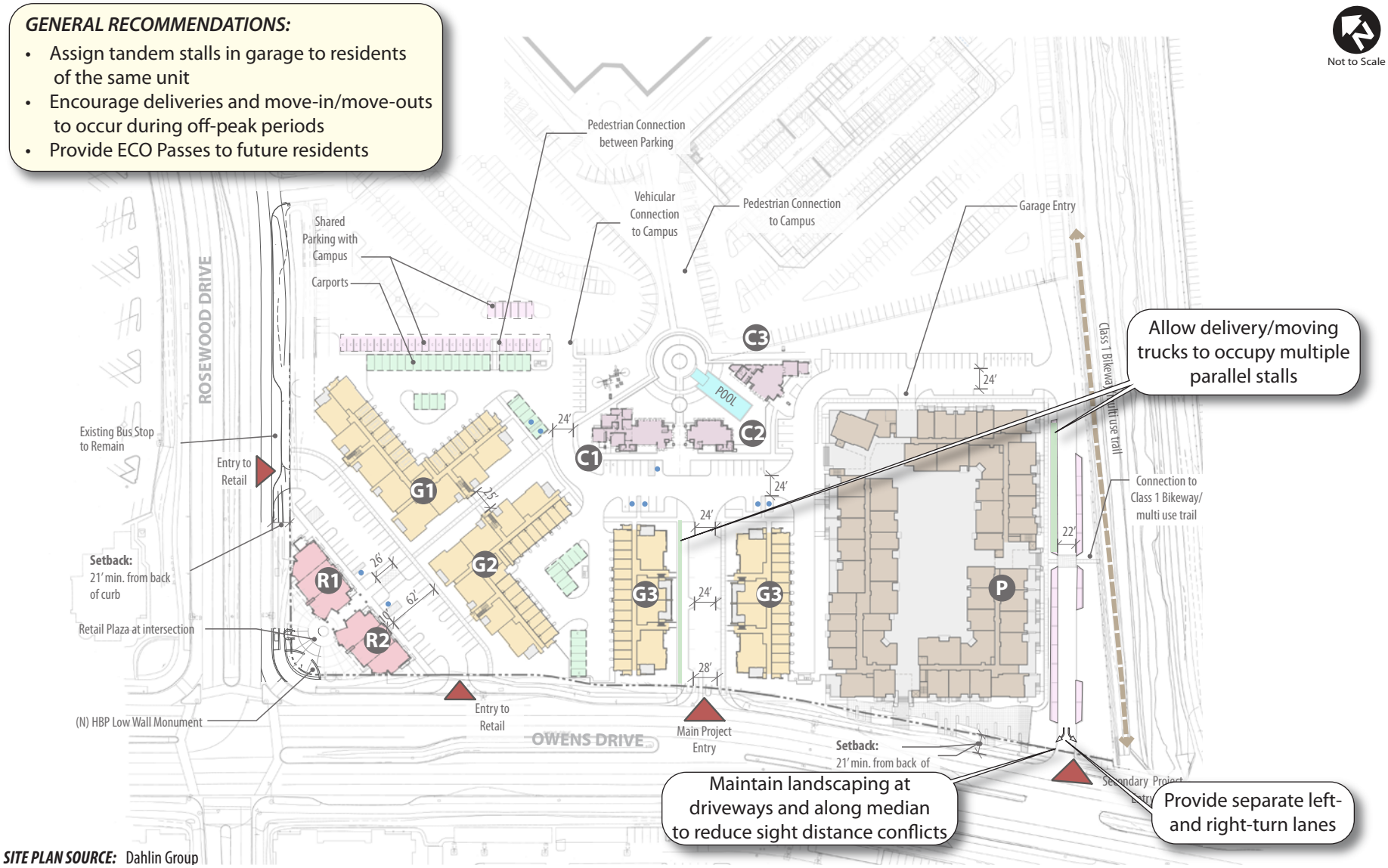


Figure 12.

Consultant Site Plan Recommendations

WC11-2878.01_12_SitePlanRec

FEHR PEERS

Figure 13.

Sight Distance Assessment of Secondary Driveway

WC11-2878.01_13_SightDist

FEHR PEERS