HEXAGON TRANSPORTATION CONSULTANTS, INC.

Memorandum

Date: May 9, 2019

To: Trevor Boucher, FF Realty III, LLC

From: Trisha Dudala, P.E. and Gary Black

Subject: 200 Airport Boulevard Traffic Study – South San Francisco, CA

Introduction

This report presents the results of the traffic study for the proposed mixed-use project at 200 Airport Boulevard in South San Francisco, CA. The project is bordered by Airport Boulevard to the west, Grand Avenue to the north, Caltrain tracks to the east and the recently approved residential development (150 Airport Boulevard) to the south (see Figure 1). The traffic analysis presented in this report assumes that the project would replace the existing mixed industrial/commercial uses with 94 dwelling units and 3,630 square feet (s.f.) of commercial uses within one building. The commercial uses would be located on the ground floor along Grand Avenue. Access to the project would be provided via a private driveway that would form the east leg of the signalized intersection of Airport Boulevard and Baden Avenue. This driveway would provide shared access to the proposed project and the approved 150 Airport Boulevard residential development to the south. As part of 150 Airport Boulevard development approval process, civil plans associated with adding a fourth leg to the signalized intersection of Airport Boulevard and Baden Avenue have been permitted.

The project is located in the Downtown Station Area Specific Plan, which covers properties within 0.5 miles of the City's Caltrain Station. The City of South San Francisco completed the Downtown Station Area Specific Plan (DSASP) and EIR that was adopted in February 2015. The proposed project site is designated as Downtown Transit Core (DTC). The DTC sub-district is focused within a quarter mile radius of the planned extension of the Caltrain Station. The DTC sub-district encourages active ground floor uses and high intensity development that will generate pedestrian traffic in the area. The land uses proposed for this project are consistent with those set forth in the DSASP EIR.

Scope of Study

Although the project is consistent with the DSASP EIR, this traffic study was conducted to determine if the mitigation measures of the DSASP EIR are consistent with the project development or if any additional mitigation measures would be required with the development of the proposed project.

The impacts of the project were evaluated following the standards and methodologies set forth by the City of South San Francisco, San Mateo County, Caltrans, and the applicable provisions of California Environmental Quality Act (CEQA). Traffic operations for the following 12 intersections were analyzed. Mitigation measures were identified for intersections 1 through 11 in the DSASP Mitigation Monitoring Report Program (MMRP).

Study Intersections

1. Miller Avenue/Linden Avenue

2. Miller Avenue/Airport Boulevard
3. Grand Avenue/Spruce Avenue
4. Grand Avenue/Linden Avenue
5. Grand Avenue/Airport Boulevard
6. E. Grand Avenue/Grand Avenue
7. E. Grand Avenue/Gateway Boulevard
8. Baden Avenue/Linden Avenue
9. San Mateo Avenue/Poletti Way/US-101 Northbound off-ramp
10. S. Airport Boulevard/Mitchell Avenue/Gateway Boulevard
11. S. Airport Boulevard/US 101 Northbound Ramps/Wonder Color Lane
12. Baden Avenue/Airport Boulevard

Traffic conditions at the intersections were analyzed for the weekday AM and PM peak hours of traffic. The AM peak hour of traffic is generally between 7:00 and 9:00 AM, and the PM peak hour is typically between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average weekday.

Traffic conditions were evaluated for the following scenarios:

1. ***Existing Conditions.*** Existing traffic conditions were evaluated based on the level of service analysis described in the DSASP EIR.

2. ***Existing Plus Project Conditions.*** Project-generated traffic was added to the existing traffic volumes to analyze existing plus project conditions. Project generated traffic was estimated using the vehicular trip generation rates recommended by the Institute of Transportation Engineers (ITE) manual entitled *Trip Generation, 9th Edition*. Although there are two commercial establishments that currently operate on site, no trip credits were taken for trips generated by existing uses, as the current establishments generate very few trips during the AM and PM peak hours. Intersection impacts associated with the development of the proposed project were evaluated relative to existing conditions.

3. ***Background Conditions.*** This condition analyzes traffic volumes that will exist with the completion of approved projects in the study area. Based on coordination with the City of South San Francisco Planning Division, eight approved projects were identified in the study area. Trip generation for the approved projects was either based on traffic studies conducted for these projects or based on the ITE trip generation manual. Trips generated by approved projects were added to existing conditions to analyze background conditions.

4. ***Background Plus Project Conditions.*** Traffic volumes with the project (hereafter called *project traffic volumes*) were estimated by adding trips generated by the proposed mixed-use project to the background conditions. Intersection impacts associated with the development of the proposed project were evaluated relative to background conditions.

LEGEND

= Project Site Location

= Study Intersection

Figure 1
Site Location and Study Intersections

NORTH
Not to Scale

Methodology

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The City of South San Francisco evaluates level of service at signalized intersections based on the *2000 Highway Capacity Manual* (HCM) level of service methodology. This method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Table 1 shows the level of service definitions for signalized intersections. The City of South San Francisco defines LOS A through D as acceptable, and LOS E and F as unacceptable. Intersection traffic operations were analyzed using Synchro traffic analysis software. The HCM 2000 methodology was chosen for intersection analysis based on direction from City staff and to maintain consistency with the South San Francisco DSASP EIR.

Table 1 – Signalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lenghts, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p10-16.

Vehicle Queuing at Intersections

95th percentile queue lengths were analyzed for study intersections in the vicinity of the freeway interchanges. Chapter 16 of the HCM 2000 outlines a methodology for calculating the 95th percentile queues at signalized intersections. The 95th percentile queue indicates that vehicle backups for each movement would only extend beyond this length 5 percent of the time during the analysis hour. The Synchro software program was used to determine 95th percentile vehicle queues

in accordance with the HCM 2000 methodology. The standard adopted by the City of South San Francisco and Caltrans is that the 95th percentile vehicle queue must be accommodated within available storage for each off-ramp and on the approaches to intersections nearby each off-ramp that accommodate a significant amount of off-ramp traffic. In addition, no off-ramp traffic is allowed to back up to the freeway mainline during the entire AM or PM peak traffic hour. 95th percentile vehicle queues were analyzed for the following five study intersections in the vicinity of freeway interchanges:

- #2. Miller Avenue/Airport Boulevard
- #5. Grand Avenue/Airport Boulevard
- #9. San Mateo Avenue/Airport Boulevard
- #10. S. Airport Boulevard/Mitchell Avenue/Gateway Boulevard
- #11. S. Airport Boulevard/US 101 Northbound Ramps/Wonder Color Lane

Regulatory Framework

Existing policies, laws and regulations that apply to the proposed project are summarized below. The City of South San Francisco has jurisdiction over all City streets and City-operated traffic signals. State Routes, including US-101, are under the jurisdiction of California Department of Transportation (Caltrans). Public transit agencies with operations in the study area are SamTrans, Caltrain, and BART.

Caltrans

Caltrans is responsible for the maintenance and operations of State routes and highways. In South San Francisco, Caltrans's facilities include US-101. The City recognizes that "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities"; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. In addition, Caltrans states that for existing State highway facilities operating worse than the target LOS, the existing LOS should be maintained.

City of South San Francisco General Plan

The transportation and Circulation Element of the City of South San Francisco General Plan addresses the location and extent of existing and planned transportation routes, terminals, and other public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the City.

Thresholds of Significance

The City of South San Francisco defines LOS A through D as acceptable, and LOS E and F as unacceptable. The following guidelines are outlined in the City of South San Francisco General Plan (City of South San Francisco 1999):

- Strive to maintain LOS D or better on arterial and collector streets.

- Accept LOS E or F after finding that there is no feasible and practical way to mitigate the lower level of service, and the uses resulting in the lower level of service are of clear overall public benefit.
- Exempt development within 0.25 mile of a Caltrain or BART station, or a ferry terminal, from LOS standards.

According to CEQA guidelines, a project would also have a significant impact if it would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit.
- Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards, and travel demand measures, or other standards established by a county congestion management agency for designated roadways.
- Result in inadequate emergency vehicle access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The significance criteria below are used to determine whether implementation of the proposed project would result in significant environmental impacts that require mitigation.

Intersection Impact Criteria

A project will result in a significant traffic impact at intersections:

- If a signalized intersection with base traffic volumes operating at an acceptable LOS (LOS D or better) deteriorates to an unacceptable operation (LOS E or F) with the addition of project traffic and the total traffic volume through the intersection increases by at least two percent (2%); or
- If a signalized intersection is already operating at an unacceptable LOS and the proposed project increases the total traffic volume at the intersection by at least two percent (2%); or
- If the addition of project traffic at intersections in the vicinity of freeway interchanges would increase acceptable baseline 95th percentile vehicle queues to unacceptable levels (as determined by the Synchro software program and the storage length of each movement), or, if baseline 95th percentile vehicle queues are already at unacceptable levels, the project would increase the traffic volume in the queue by at least one percent (1%).

Existing Roadway Network

Regional access to the project study area is provided by US 101.

US 101 is a north-south major freeway through eastern San Mateo County between San Francisco and San Jose. It is the primary north/south route connection to I-280 and I-80 north of South San Francisco. US-101 is typically congested in both directions during both peak periods as people commute to and from San Francisco and the Silicon Valley. Access to the freeway from the project site is provided via interchanges at Miller Avenue, Airport Boulevard, and E. Grand Avenue.

The following roadways provide local access to the site:

Airport Boulevard is a major north/south arterial route through South San Francisco parallel to US-101. North of Grand Avenue, Airport Boulevard has two travel lanes in each direction. Airport Boulevard provides access to the site via Baden Avenue.

Baden Avenue is primarily a two-lane local roadway that extends from Chestnut Avenue in the west to Airport Boulevard in the east. It widens to a four-lane roadway between Linden Avenue and Airport Boulevard. Direct access to the project would be provided by extending Baden Avenue to the east of Airport Boulevard. The east leg would provide access to the proposed project on the north side and the approved 150 Airport Boulevard residential development on the south side.

Grand Avenue is a two- to six-lane roadway that extends from Mission Road to its termination point at Point San Bruno Park. West of US-101, Grand Avenue has one travel lane in each direction with on-street angled parking on both sides of the street.

Miller Avenue is a two-lane local roadway that extends west from Airport Boulevard and terminates at Chestnut Avenue. There are traffic signals at its intersections with Airport Boulevard, Spruce Avenue, and Walnut Avenue, but the other intersections are controlled by stop signs.

Linden Avenue is a two-lane local roadway that extends north from San Mateo Avenue at the city limits and terminates at Airport Boulevard. There are traffic signals at most major intersections with the remainder of its intersections controlled by stop signs. Linden Avenue intersects Baden Avenue, Grand Avenue, and Miller Avenue in the vicinity of the project site.

Gateway Boulevard is a four-lane north/south roadway that extends between Oyster Point in the north and Mitchell Avenue in the south, east of US 101. It is the northern extension of South Airport Boulevard.

Existing Bicycle and Pedestrian Facilities

Bicycle facilities include bike paths, bike lanes, and bike routes. Bike paths (Class I facilities) are pathways, separate from roadways, which are designated for use by bicycles. Often, these pathways also allow pedestrian access. Bike lanes (Class II facilities) are lanes on roadways designated for use by bicycles with special lane markings, pavement legends, and signage. Bike routes (Class III) are existing rights-of-way that accommodate bicycles but are not separate from the existing travel lanes. Routes are typically designated only with signs.

According to the Bicycle Master Plan, the City has 48.3 miles of existing bikeways, though most of them are not signed. Figure 2 shows existing and proposed pedestrian and bicycle facilities consistent with the proposed pedestrian and bicycle facilities included in the DSASP EIR. Transit stations, schools, parks and retail centers are all accessible by these bikeways. The following bicycle facilities exist in the project study area.

Class I Bikeway (Multi-Use Path)

- **Grand Avenue** has a bike path that extends from Industrial Way, crosses over East Grand Avenue and ends at Harbor Way. This path connects to Class II bike lanes that begin on Gateway Boulevard south of Grand Avenue.

Class II Bikeway (Bike Lane)

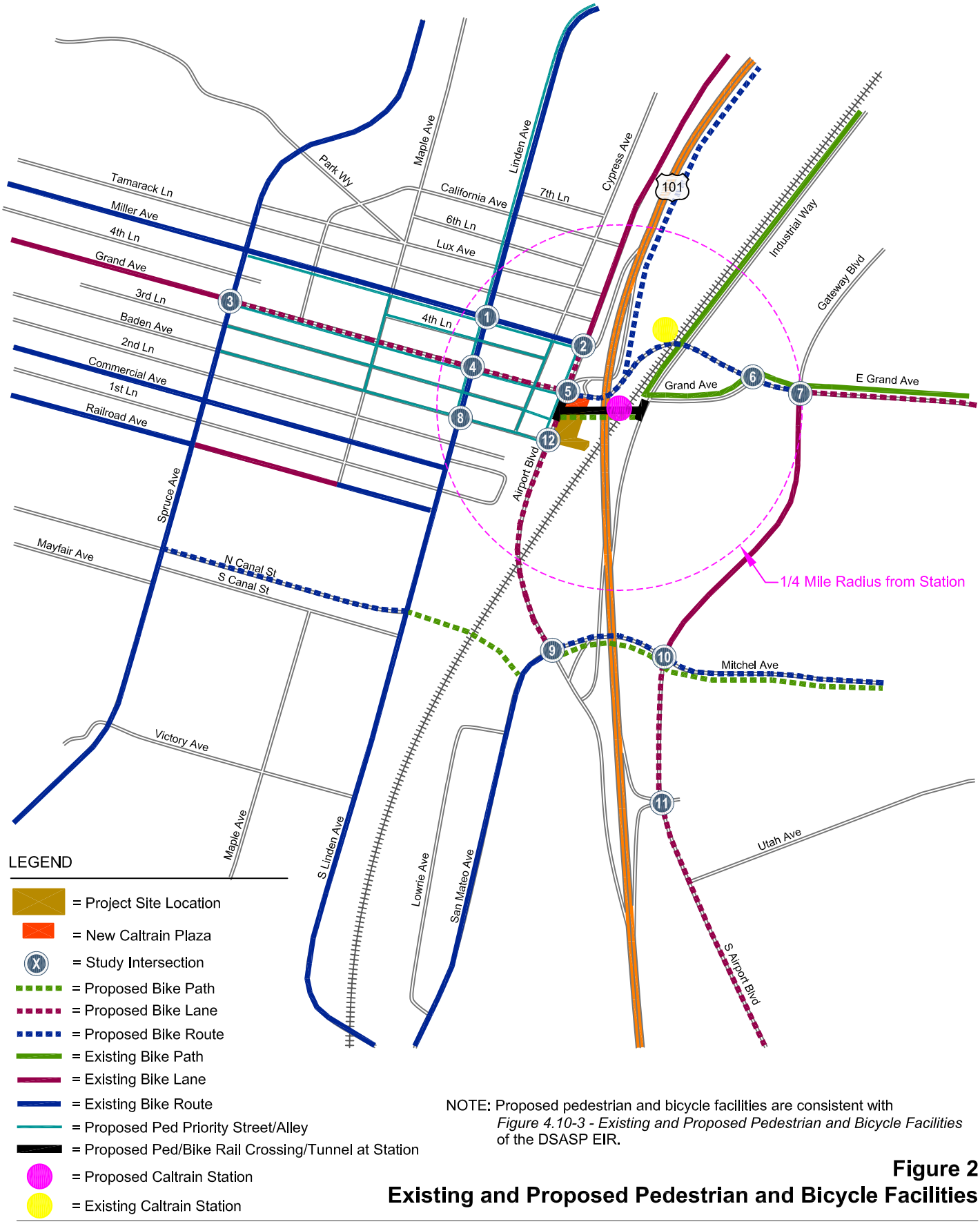
- **Airport Boulevard** has Class II bike lanes in both directions that begin north of Miller Avenue and connect to the Class III bicycle routes on Miller Avenue and Linden Avenue.
- **Gateway Boulevard** has Class II bike lanes in both directions that begin south of Grand Avenue and extend to South Airport Boulevard.
- **Grand Avenue** has Class II bike lanes in both directions that begin west of Spruce Avenue and connect to the Class III bicycle route on Spruce Avenue.
- **Railroad Avenue** has a Class II bike lane in the eastbound direction that extends east from Spruce Avenue to Maple Avenue, after which it becomes a Class III bicycle route with sharrows. This lane connects to the Class III bicycle route on Spruce Avenue.

Class III Bikeway (Bike Route)

- **San Mateo Avenue** is a Class III bicycle route without sharrow markings. The route extends from Airport Boulevard past South Linden Avenue, connecting to the Class III bicycle route on Linden Avenue.
- **Linden Avenue** is a Class III bicycle route without sharrow markings. The route extends south from Airport Boulevard to San Mateo Avenue.
- **Spruce Avenue** is a Class III bicycle route with sharrow markings between Grand Avenue and Victory Way. The route connects to Class II bicycle lanes on Grand Avenue.

The City of South San Francisco adopted its Citywide bicycle master plan in 2010, the goal of which is to expand the bicycle network to make it easier and safer for people to bicycle through the City. In the project vicinity, bike lanes are planned in both directions on Airport Boulevard between Miller Avenue and San Mateo Avenue. Bike lanes are also planned in both directions on Grand Avenue between Spruce Avenue and Airport Boulevard. As part of the proposed Caltrain Station reconstruction, a new ped/bike rail crossing tunnel is proposed at the Grand Avenue/Airport Boulevard intersection that would directly connect to the South San Francisco Caltrain station. The new ped/bike tunnel would also provide a good bicycle connection between the downtown and the employment zone to the east of US 101.

Sidewalks are provided on most streets in the immediate vicinity of the project. Sidewalks exist in both directions on Airport Boulevard and on the south side of Grand Avenue along the along the project frontage. In the immediate vicinity of the project, crosswalks exist at the signalized intersections of Airport Boulevard/Baden Avenue and Airport Boulevard/Grand Avenue for pedestrians to get to downtown destinations. Pedestrian access improvements are proposed in the area covered under the Specific Plan and citywide under the South San Francisco Pedestrian Master Plan. The plan calls for area-wide improvements, such as establishing a Downtown pedestrian-priority zone, making pedestrian-friendly alley improvements to Downtown lanes and completing the street grid to reduce block lengths immediately surrounding the Caltrain station.



NOTE: Proposed pedestrian and bicycle facilities are consistent with *Figure 4.10-3 - Existing and Proposed Pedestrian and Bicycle Facilities* of the DSASP EIR.

Figure 2
Existing and Proposed Pedestrian and Bicycle Facilities

Existing Transit Service

Transit services in the study area include local buses, express buses, shuttles, BART, Caltrain and ferry service. A majority of the public transit trips through the area are commuters who use the Caltrain station or connect from BART to Downtown and East of US-101 employers via employer shuttles. Employer sponsored shuttles connect to employment destinations east of the Caltrain station and other commuter connections in the area. These shuttles are available to individual riders not associated with sponsor employers for a monthly fee.

Caltrain

Caltrain provides commuter rail service between San Francisco and Gilroy. The project is located less than 0.25 miles (walking distance) southwest of the South San Francisco Caltrain station, which is located at 590 Dubuque Avenue, on the east side of US-101, immediately north of East Grand Avenue. The South San Francisco Caltrain Station serves local and limited trains. Weekday peak commute headways are between 20 and 60 minutes, with more frequent service for AM northbound and PM southbound trips.

Currently, the only access to the South San Francisco Caltrain station is from the west side of the train tracks, via the Grand Avenue overpass. This overpass requires a long and circuitous detour for people walking and bicycling, who have to cross Grand Avenue and descend either a tall metal staircase or walk/bike along Dubuque Avenue. Recently, the San Mateo County Transportation Authority (SMCTA) Board awarded a $59 million grant for station reconstruction to improve safety and connectivity to nearby businesses. The station reconstruction will include widening the center platform and building a pedestrian tunnel to connect the station directly to the east end of downtown's Grand Avenue. Passengers will be able to get to the station's center platform via ramps connecting to a tunnel underneath the tracks. The tunnel will connect to a pedestrian plaza at Grand Avenue and Airport Boulevard on the west side of the tracks and a transit plaza at the end of three-lane Grand Avenue on the east side of the tracks. Busses and shuttles will pick up and drop off Caltrain passengers from the new east-side plaza instead of the parking lot on the west side of the station. This will save time for passengers commuting to the City's biotech job center on the east side of the tracks. The pedestrian plaza on Grand Avenue would be located just north of the project.

Bus Service

Bus transit in the area is provided by San Mateo County Transit District (SamTrans). The following lines serve the project area:

- *SamTrans 130* stops at the Linden Avenue/Grand Avenue intersection and provides service between Downtown South San Francisco, South San Francisco BART station, and Daly City. This line provides service in both directions between 5:00 AM and 10:00 PM with 15-minute headways during peak weekday hours.

- *SamTrans 292* stops at the Airport Boulevard/Grand Avenue, and Airport Boulevard/Baden Avenue intersections. The route provides connection between Downtown San Francisco to the north and Brisbane, South San Francisco, Burlingame and San Mateo to the south. This line provides service in both directions between 4:00 AM and 2:00 AM, with 20- to 30-minute headways during peak weekday hours.
- *South SF Shuttle (SCS)* is operated by SamTrans and provides free service between the South San Francisco BART Station and the downtown Monday through Friday between 7:00

AM and 7:00 PM. The shuttle stops at the Linden Avenue/Grand Avenue intersection, which is within walking distance (less than 1,000 feet) of the project.

- *SamTrans 397* stops at the Airport Boulevard/Baden Avenue intersection and connects to Downtown San Francisco to the north and Palo Alto Transit Center to the south. This line provides service between 1:00 AM and 6:00 AM with 60-minute headways. This route does not operate mid-day or evenings.

Additional commuter bus service is provided by Commute.org. These shuttles provide commuter connections between the Caltrain Station and East of US-101 employers:

- The Oyster Point Caltrain Shuttle connects the South San Francisco Caltrain station to Oyster Point, Forbes Boulevard and Eccles Avenue. This line provides service during peak commute hours, between 6:30 AM and 10:00 AM, and between 3:00 PM and 6:00 PM with 30-minute headways.

- The Utah-Grand Caltrain Shuttle connects South San Francisco Caltrain station to East Grand Avenue and Utah Avenue. This line provides service during peak commute hours, between 5:30 AM and 9:30 AM, and between 4:00 PM and 6:15 PM with 30-minute headways.

The nearest bus stop for Route 130 and SCS is located near the Grand Avenue/Linden Avenue intersection, which is less than 1,000 feet walking distance from the project site. The nearest bus stops for Routes 292 and Route 397 going northbound are located on Airport Boulevard, just south of Baden Avenue, and the nearest stops for Route 292 and Route 397 going south bound are located on Airport Boulevard, just south of Grand Avenue. The shuttle services can be accessed at the Caltrain station, which is within walking distance of the project. Continuous sidewalks are present for pedestrians walking between the proposed project and the nearest bus stops.

BART

Bay Area Rapid Transit (BART) operates regional rail service in the Bay Area, connecting between San Francisco International Airport and the Millbrae Intermodal Station to the south, San Francisco to the north, and cities in the East Bay. The BART stations closest to the South San Francisco Caltrain station area are the San Bruno Station located near Huntington Avenue east of El Camino Real, and the South San Francisco Station, located on Mission Road and McLellan Drive. Both stations are located within 3 miles of the South San Francisco Caltrain station, and SamTrans provides service from the BART stations to Downtown South San Francisco. BART trains operate on 15-minute headways during peak hours and 20-minute headways during off-peak hours.

Existing Intersection Operations

This section describes existing operations based on the analysis presented in the South San Francisco DSASP EIR. Each study intersection was analyzed using existing lane configurations, existing AM and PM peak hour turning movement counts, and existing traffic signal timing data, as presented in the DSASP EIR, except at the following intersections:

Airport Boulevard/Grand Avenue – The DSASP EIR analyzed this intersection with a shared left-through lane and an exclusive right turn lane for the eastbound approach on Grand Avenue. Field observations show that the eastbound approach was modified to include an exclusive left-turn lane and a shared through-right lane as recommended by the mitigation measure MM4.10-3 in the EIR.

Baden Avenue/Linden Avenue – The DSASP EIR analyzed this intersection with permitted signal phasing on all approaches and showed that this intersection operated at LOS F during the PM peak hour. Field observations indicate that the eastbound/westbound approaches on Baden Avenue now operate with split phasing, and the level of service is improved. PM peak hour field observations did not indicate any significant traffic operational issues. Between 4:45 PM and 5:45 PM, the westbound left-turn queues on Baden Avenue frequently extended up to Airport Boulevard, and occasionally vehicles at the end of the queue could not clear until the next cycle. However, due to the short cycle length, the wait time for westbound vehicles on Baden Avenue that could not turn left onto Linden Avenue was not more than 60 seconds. The existing conditions analysis presented in this report reflects split phasing for the east/west approaches on Baden Avenue.

The existing lane configurations at the study intersections are shown on Figure 3 and the existing traffic volumes are shown on Figure 4.

The existing intersection LOS analysis shows that all study intersections are currently operating at an acceptable LOS D or better during both the AM and PM peak hours (see Table 2). Although the LOS is shown to be D, occasionally traffic operates at near-capacity conditions along Airport Boulevard. The LOS shown in Table 2 is based on the average weighted delay for all movements at the intersection. Although the average weighted delay is acceptable at most of the study intersections, at some intersections, some vehicle movements may operate worse than average, which indicates congestion and queues on some approaches but not others.

Vehicle queues for the five study intersections in the vicinity of freeway ramps were analyzed under existing AM and PM peak hours using Synchro software. As shown in Table 3, at most of the study intersections in the vicinity of freeway ramps, the 95th percentile vehicular queues for all turning movements are accommodated within the available storage length during the AM and PM peak hours except for the intersection of San Mateo Avenue and Airport Boulevard. The 95th percentile queue lengths for the westbound left-turn lane, westbound right-turn lane, northbound left-turn lane, and southbound left-turn lane exceed the available storage capacities during at least one of the peak hour periods.

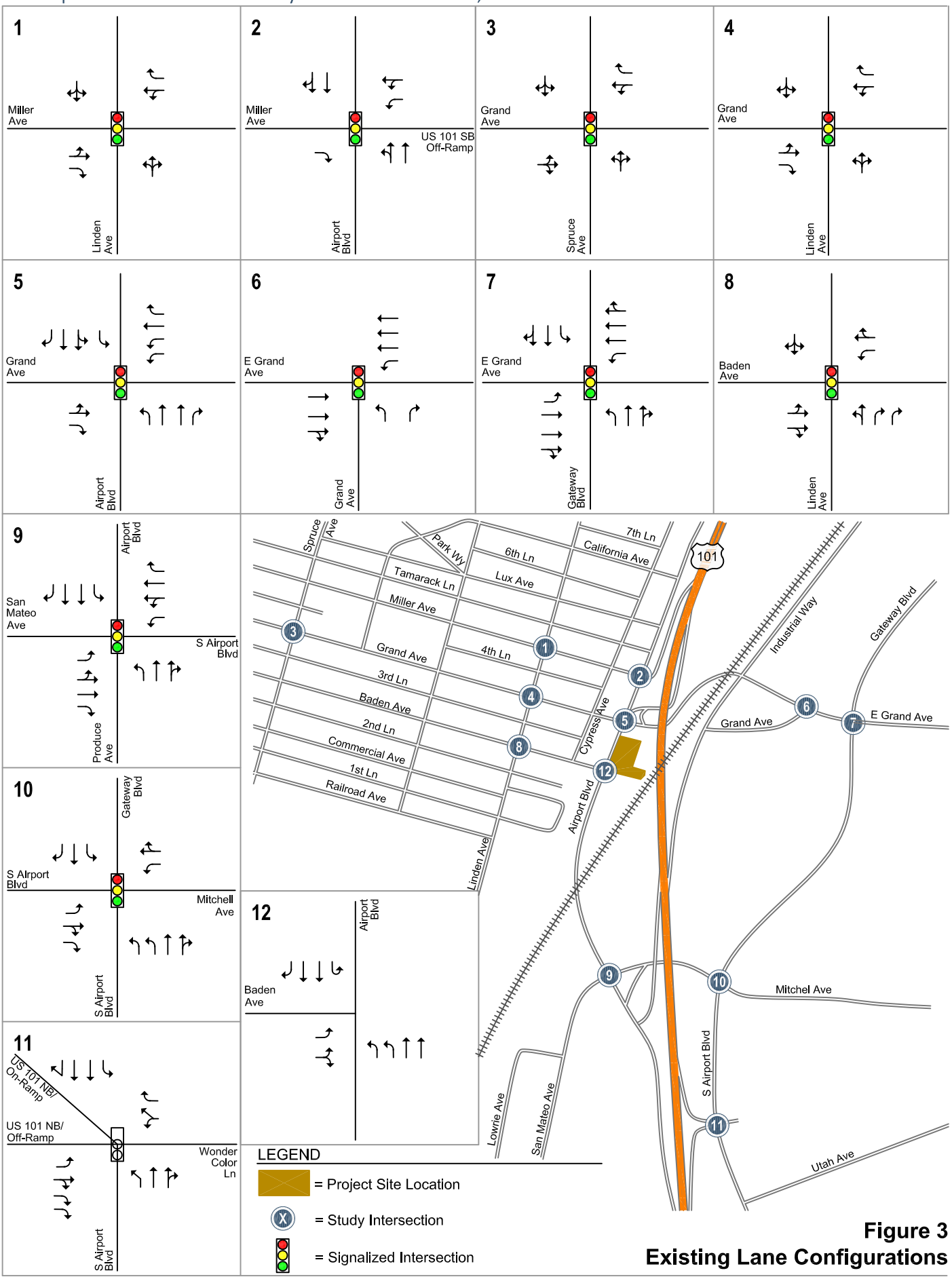


Figure 3
Existing Lane Configurations

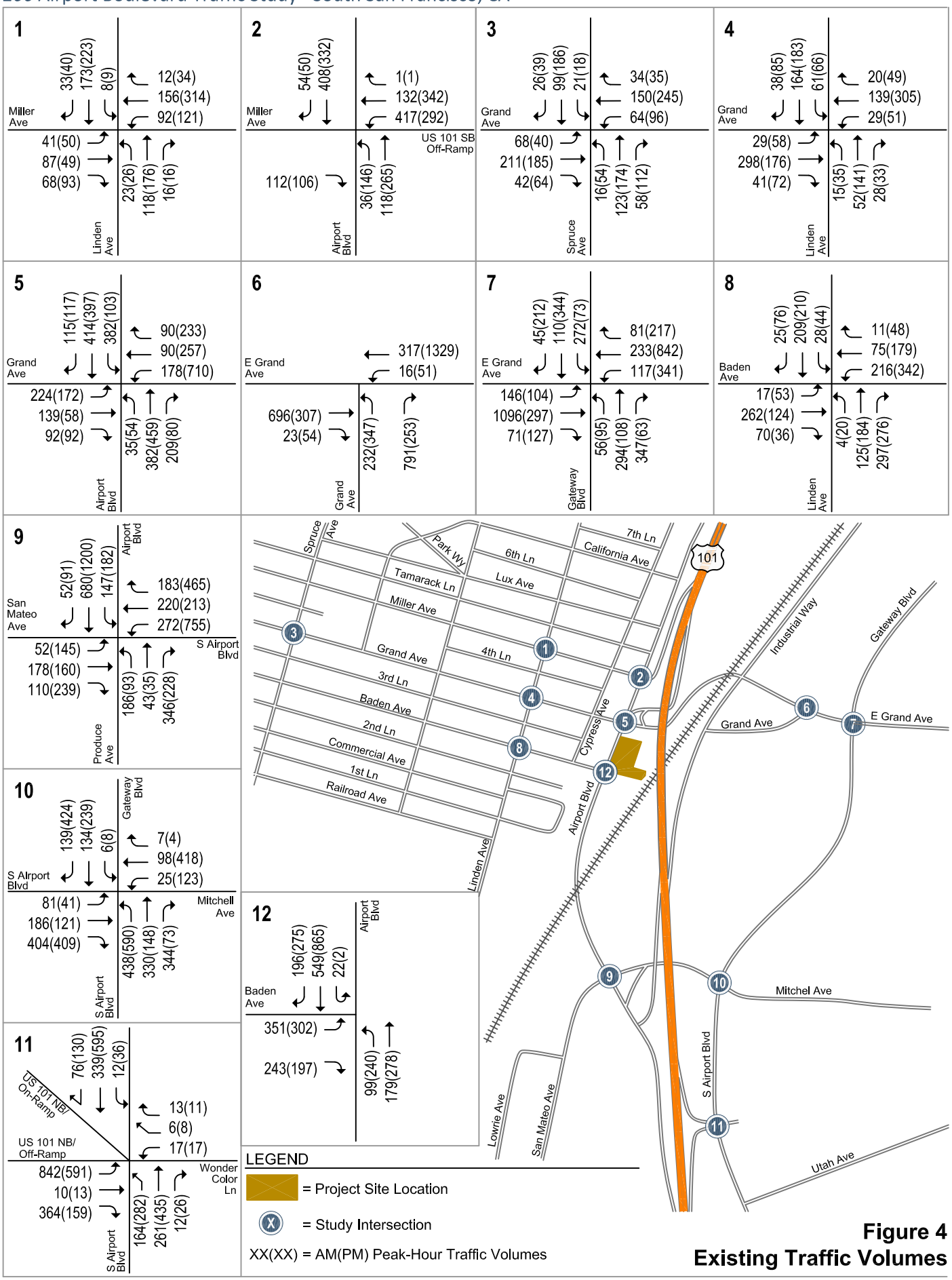


Figure 4
Existing Traffic Volumes

Table 2
Existing Conditions Intersection LOS Analysis

ID	Intersection	Peak Period	Existing Delay [1]	Existing LOS
1	Miller Ave/Linden Ave	AM	21.4	C
		PM	35.2	D
2	Miller Ave/Airport Blvd	AM	28.0	C
		PM	19.3	B
3	Grand Ave/Spruce Ave	AM	16.0	B
		PM	18.2	B
4	Grand Ave/Linden Ave	AM	12.9	B
		PM	13.5	B
5	Grand Ave/Airport Blvd [2]	AM	37.7	D
		PM	40.4	D
6	Grand Ave/E. Grand Ave	AM	21.3	C
		PM	16.8	B
7	E. Grand Ave/Gateway Blvd	AM	34.3	C
		PM	34.9	C
8	Baden Ave/Linden Ave [3]	AM	23.5	C
		PM	36.8	D
9	San Mateo Ave/Airport Blvd	AM	38.4	D
		PM	51.6	D
10	So. Airport Blvd/Gateway Blvd	AM	37.5	D
		PM	42.9	D
11	101 NB/So. Airport Blvd. Off Ramp & So. Airport Blvd	AM	30.1	C
		PM	33.2	C
12	Baden Ave/Airport Blvd	AM	25.3	C
		PM	30.9	C

Notes:

[1] Delay reported is the weighted average delay for all movements in seconds reported by Synchro 9 using HCM 2000 Methodology.

[2] Field observations showed that the improvements recommended in the DSASP EIR at the intersection of Grand Ave/Airport Blvd, which includes modifying the eastbound approach to include one left-turn pocket and one through-right shared lane have been implemented. The existing conditions analysis reflect these improvements in place.

[3] The analysis assumes split phasing for the eastbound/westbound approaches on Baden Avenue based on field observations.

Table 3
Existing Vehicle Queuing at Freeway Interchange Intersections

ID	Intersection - Movement	Storage Distance (feet)	95th Percentile Queue (feet) Existing AM Peak	95th Percentile Queue (feet) Existing PM Peak
2	**Miller Ave/Airport Blvd**			
	Eastbound Right Turn	680	120	60
	Westbound Left Turn	465	220	160
	Westbound Through	465	220	260
	Northbound Through	220	80	80
	Southbound Through	360	200	80
5	**Grand Ave/Airport Blvd**			
	Eastbound Through	665	200	180
	Eastbound Right Turn	665	200	100
	Westbound Left Turn	670	40	400
	Westbound Through	670	60	240
	Westbound Right Turn	240	20	60
	Northbound Left Turn	150	40	40
	Northbound Through	410	180	260
	Northbound Right Turn	410	120	20
	Southbound Left Turn	390	340	120
	Southbound Through	390	240	220
	Southbound Right Turn	180	40	40
9	**San Mateo Ave/Airport Blvd**			
	Eastbound Left Turn	150	60	120
	Eastbound Through	370	100	100
	Eastbound Right Turn	150	40	100
	Westbound Left Turn	225	200	**520**
	Westbound Through	810	160	340
	Westbound Right Turn	85	**100**	**240**
	Northbound Left Turn	130	**180**	100
	Northbound Through	300	60	40
	Southbound Left Turn	180	120	180
	Southbound Through	1550	360	540
	Southbound Right Turn	1550	20	20
10	**So. Airport Blvd/Gateway Blvd**			
	Eastbound Left Turn	140	80	60
	Eastbound Through	730	300	240
	Eastbound Right Turn	730	140	100
	Northbound Left Turn	300	100	180
	Northbound Through	930	80	40
11	**101 NB/So. Airport Blvd. Off Ramp & So. Airport Blvd**			
	Eastbound Left Turn	800	380	280
	Eastbound Through	800	360	280
	Eastbound Right Turn	225	40	20
	Westbound Through	200	0	0
	Westbound Right Turn	200	0	0
	Northbound Left Turn	295	80	160
	Northbound Through	635	40	100
	Southbound Left Turn	100	20	40
	Southbound Through	1080	180	380
	Southbound Right Turn	125	40	80

Bold and shaded= 95th percentile queue exceeds storage length.

Existing Plus Project Conditions

This section describes the impacts of the proposed project on existing conditions.

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic entering and exiting the site is estimated for the AM and PM peak hours. As part of the project trip distribution, an estimate is made of the directions to and from which the project trips would travel. In the project trip assignment, the project trips are assigned to specific streets. These procedures are described further in the following sections.

Project Trip Generation

AM and PM peak hour trip generation estimates for the proposed project are based on trip rates obtained from the Institute of Transportation Engineers' (ITE) publication *Trip Generation*, Ninth Edition for Apartments (ITE Land Use 220) and Shopping Center (ITE Land Use 820) and are shown in Table 4. Since the project is located in the downtown area within walking distance of numerous services and also within walking distance of transit connections, the vehicle trip rate per unit is expected to be less than the typical ITE trip generation rates. The Downtown Station Area Specific Plan applied a 20% reduction to vehicle trips that would be generated compared to typical ITE trip generation rates. Therefore a 20% reduction was applied to the trip generation analysis. To represent a conservative analysis, no credit was taken for trips generated by the existing commercial establishments on site.

As shown in Table 4 below, it is estimated that the proposed project would generate 43 new AM peak hour trips and 65 new PM peak hour trips on a regular weekday.

Table 4
Project Trip Generation

			Daily		AM Peak Hour						PM Peak Hour					
Land Use	**Size**	**Unit**	**Rate**	**Trips**	**Rate**	**In%**	**Out%**	**In**	**Out**	**Total**	**Rate**	**In%**	**Out%**	**In**	**Out**	**Total**
Proposed Uses																
Multi-Family Housing[1]	94	DU	7.4	693	0.53	20%	80%	10	40	50	0.74	65%	35%	45	24	69
Retail [2]	3.6	s.f.	42.7	154	0.96	62%	38%	2	2	4	3.71	48%	52%	6	7	13
20% Trip Reduction [3]				-169				(2)	(8)	(11)				(10)	(6)	(17)
Primary Project Trips				678				9	33	43				41	25	65

Notes:
1. Based on Fitted Curved Equation for Apartments (220) land use, Institute of Transportation Engineers, Trip Generation, 9th Edition.
2. Based on average trip generation rates for Shopping Center (820) lane use, Institute of Transportation Engineers, Trip Generation, 9th Edition.
3 Accounts for the diversity of land uses, density, and distance to transit (consistent with DSASP EIR).

Trip Distribution Pattern and Trip Assignment

The trip distribution pattern for the project was estimated consistent with the trip distribution assumptions presented in the DSASP EIR for the West area (west of US 101) and shown on Figure 5. These distribution estimates were developed based on the location of complementary land uses, existing travel patterns in the area, and the Metropolitan Transportation Commission (MTC) regional travel demand model. The net project trips assigned to the study intersections are shown on Figure 6.

Existing Plus Project Traffic Volumes

The project trips were added to the existing traffic volumes to obtain existing plus project traffic volumes (see Figure 7).

Project Condition Transportation Network

Under exiting plus project conditions, it is assumed that the signalized intersection of Airport Boulevard and Baden Avenue would be converted to a four-legged intersection. The east leg of the intersection would provide access to the proposed project. As part of 150 Airport Boulevard development approval process, civil plans associated with adding a fourth leg to the signalized intersection of Airport Boulevard and Baden Avenue have been permitted. The traffic signal modification plan is shown on Figure 8.

Existing plus Project Intersection Operations

As shown in Table 5, with the addition of project trips, all study intersections would continue to operate at an acceptable LOS D or better during both the AM and PM peak hour periods.

95th percentile vehicle queues for the five study intersections in the vicinity of freeway ramps were analyzed under existing plus project AM and PM peak hours using Synchro software. As shown in Table 6, under existing plus project conditions, the 95th percentile vehicular queues for all turning movements would be accommodated within the available storage capacities during the AM and PM peak hours at most intersections, except for the following intersection.

San Mateo Avenue/Airport Boulevard – The 95th percentile queues for the westbound left-turn, westbound right-turn, northbound left-turn, and southbound left-turn movements exceed the available storage capacity during at least one of the peak hours under existing conditions. The proposed project would add traffic to the westbound right-turn movement, increasing the 95th percentile queues under existing plus project conditions. The project would increase the traffic volume by more than 1% for the westbound right-turn movement. Although this would be considered a significant impact based on the intersection impact criteria, the 95th percentile queue length for the westbound right-turn lane would only increase by 20 feet (equivalent to 1 car length) during the PM peak hour with the proposed project and is not expected to block the through or the left-turn traffic. The excessive queue beyond the right-turn pocket would be contained within the adjacent westbound through lane and would be served along with the through traffic. It would cause only a marginal increase in delay to the through traffic. The following mitigation measures were identified for this intersection in the DSASP EIR.

> **Mitigation Measure MM4.10-5 in DSASP EIR** - With the implementation of the DSASP EIR, the intersection of San Mateo Avenue/Airport Boulevard is expected to operate at unacceptable LOS F during the PM peak hour under existing plus project conditions. Implementation of mitigation measure MM4.10-5 would improve traffic operations at this intersection during the AM and PM peak hours. The mitigation includes modifying the westbound approach to add a left-turn pocket, modifying the approach to include three left-turn lanes, one through lane, and one right-turn lane, and optimizing the traffic signal to reallocate green time to better serve future volumes. Implementation of this mitigation measure would cause the intersection to operate at acceptable conditions and accommodate the 95th percentile queues for all turning movements within the available storage capacity.

Based on the traffic volumes presented in the DSASP EIR, all the proposed projects within the DSASP would collectively add approximately 700 vehicles during the AM peak hour and 1,000 vehicles during the PM peak hour to this intersection. Compared to this magnitude, the proposed project would add only 18 vehicles (<1% of the proposed growth from DSASP projects) during the AM peak hour and 27 vehicles (<1% of the proposed growth from DSASP projects) during the PM peak hour.

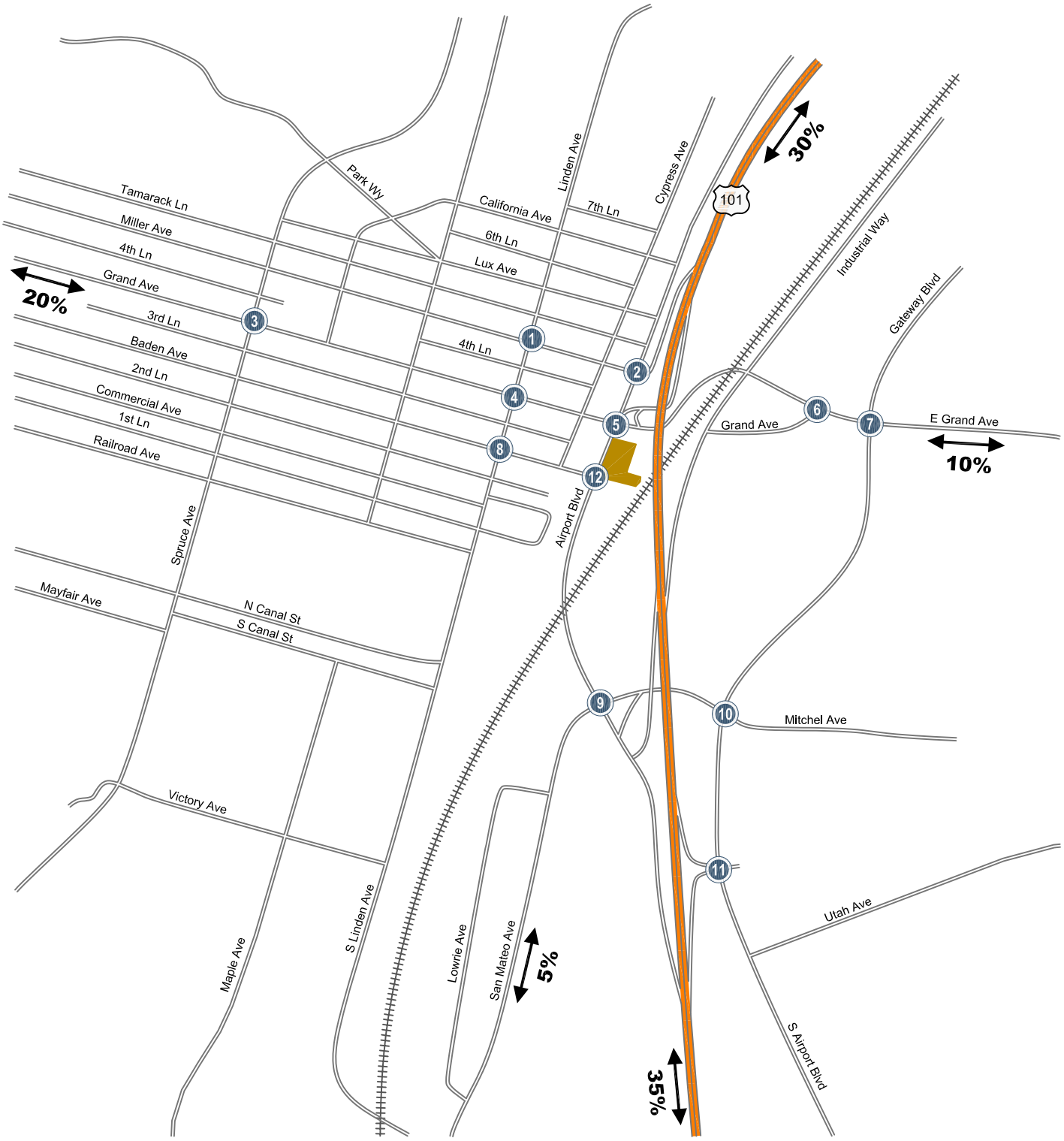
Table 5
Existing plus Project Intersection Operations

ID	Intersection	Peak Period	Existing		200 Airport Boulevard Existing Plus Project		DSASP Exising Plus Project	
			Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
1	Miller Ave/Linden Ave	AM	21.4	C	21.3	C	23.2	C
		PM	35.2	D	35.2	D	55.6	E
2	Miller Ave/Airport Blvd	AM	28.0	C	28.0	C	29.1	C
		PM	19.3	B	19.5	B	26.7	C
3	Grand Ave/Spruce Ave	AM	16.0	B	16.1	B	18.5	B
		PM	18.2	B	18.3	B	21.9	C
4	Grand Ave/Linden Ave	AM	12.9	B	12.9	B	19.4	B
		PM	13.5	B	13.5	B	44.5	D
5	Grand Ave/Airport Blvd [2]	AM	37.7	D	36.8	D	**>80(1.12)**	**F**
		PM	40.4	D	42.9	D	**>80(1.13)**	**F**
6	Grand Ave/E. Grand Ave	AM	21.3	C	21.3	C	23.2	C
		PM	16.8	B	16.9	B	42.0	D
7	E. Grand Ave/Gateway Blvd	AM	34.3	C	34.3	C	35.7	D
		PM	34.9	C	35.0	C	**61.7**	**E**
8	Baden Ave/Linden Ave [3]	AM	23.5	C	23.6	C	43.2	D
		PM	36.8	D	37.4	D	**>80(1.03)**	**F**
9	San Mateo Ave/Airport Blvd	AM	38.4	D	39.7	D	37.1	D
		PM	51.6	D	53.5	D	**>80(1.2)**	**F**
10	So. Airport Blvd/Gateway Blvd	AM	37.5	D	37.0	D	**67.7**	**E**
		PM	42.9	D	43.0	D	**>80(1.32)**	**F**
11	101 NB/So. Airport Blvd. Off Ramp & So. Airport Blvd	AM	30.1	C	30.1	C	28.2	C
		PM	33.2	C	33.9	D	48.5	D
12	Baden Ave/Airport Blvd	AM	25.3	C	36.6	D	24.3	C
		PM	30.9	C	38.4	D	31.1	C

[1] Delay reported is the weighted average delay for all movements in seconds reported by Synchro 9 using HCM 2000 Methodology.

[2] Field observations showed that the improvements recommended in the DSASP EIR at the intersection of Grand Ave/Airport Blvd, which includes modifying the eastbound approach to include one left-turn pocket and one through-right shared lane have been implemented. The existing conditions analysis reflect these improvements in place.

[3] The analysis assumes split phasing for the eastbound/westbound approaches on Baden Avenue based on field observations.



LEGEND

= Project Site Location

= Study Intersection

Figure 5
Project Trip Distribution

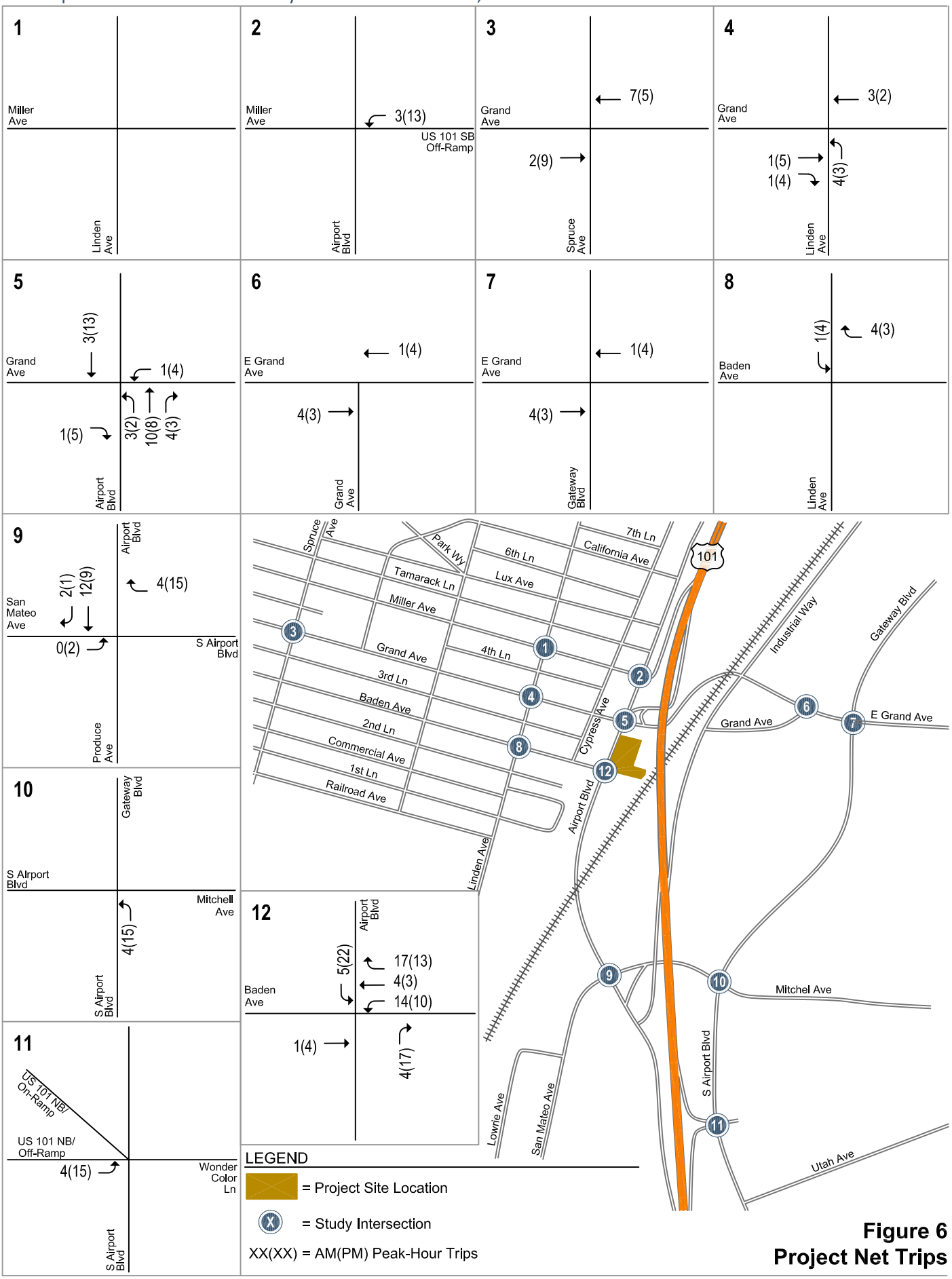


Figure 6
Project Net Trips

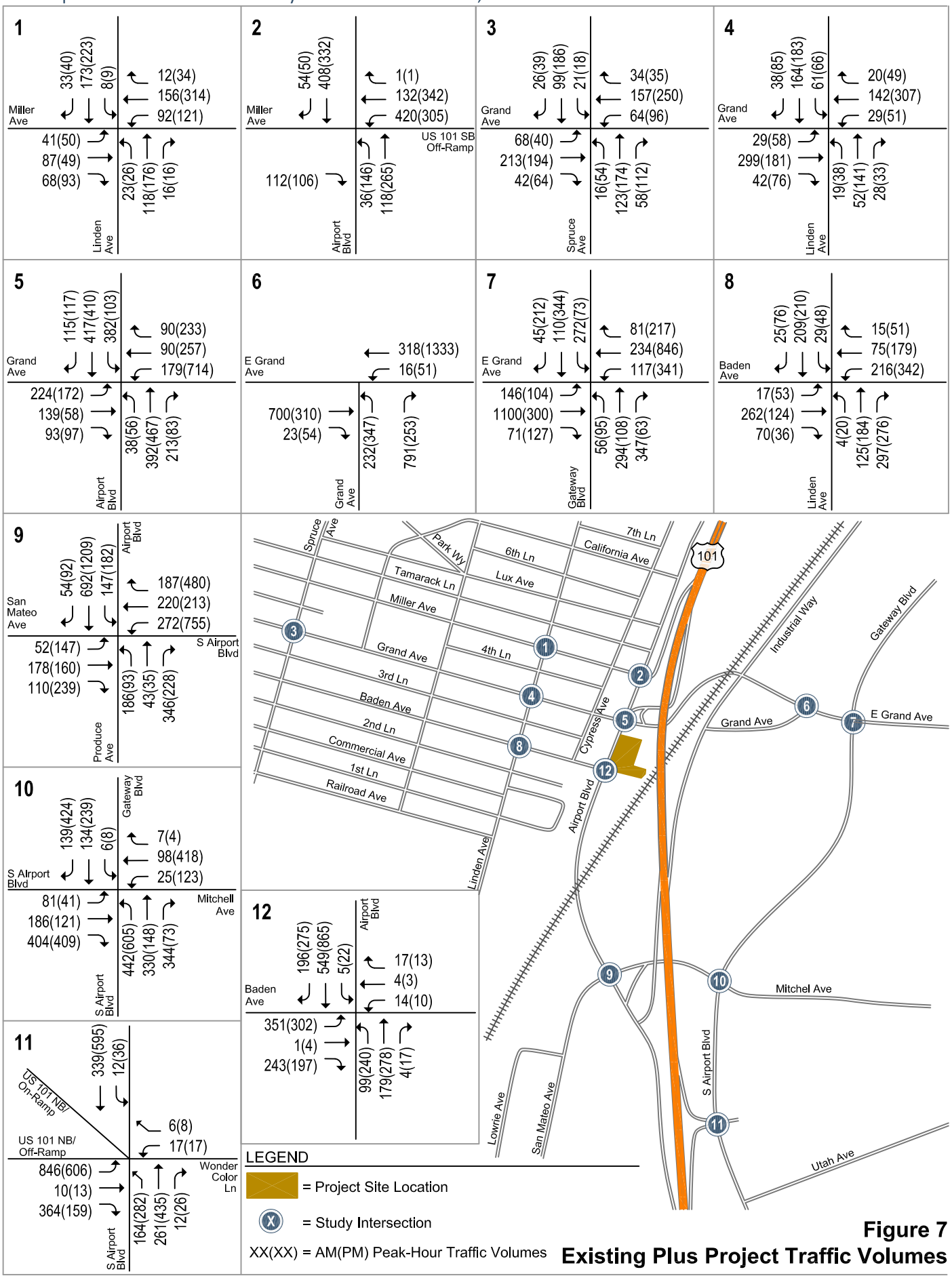


Figure 7
Existing Plus Project Traffic Volumes

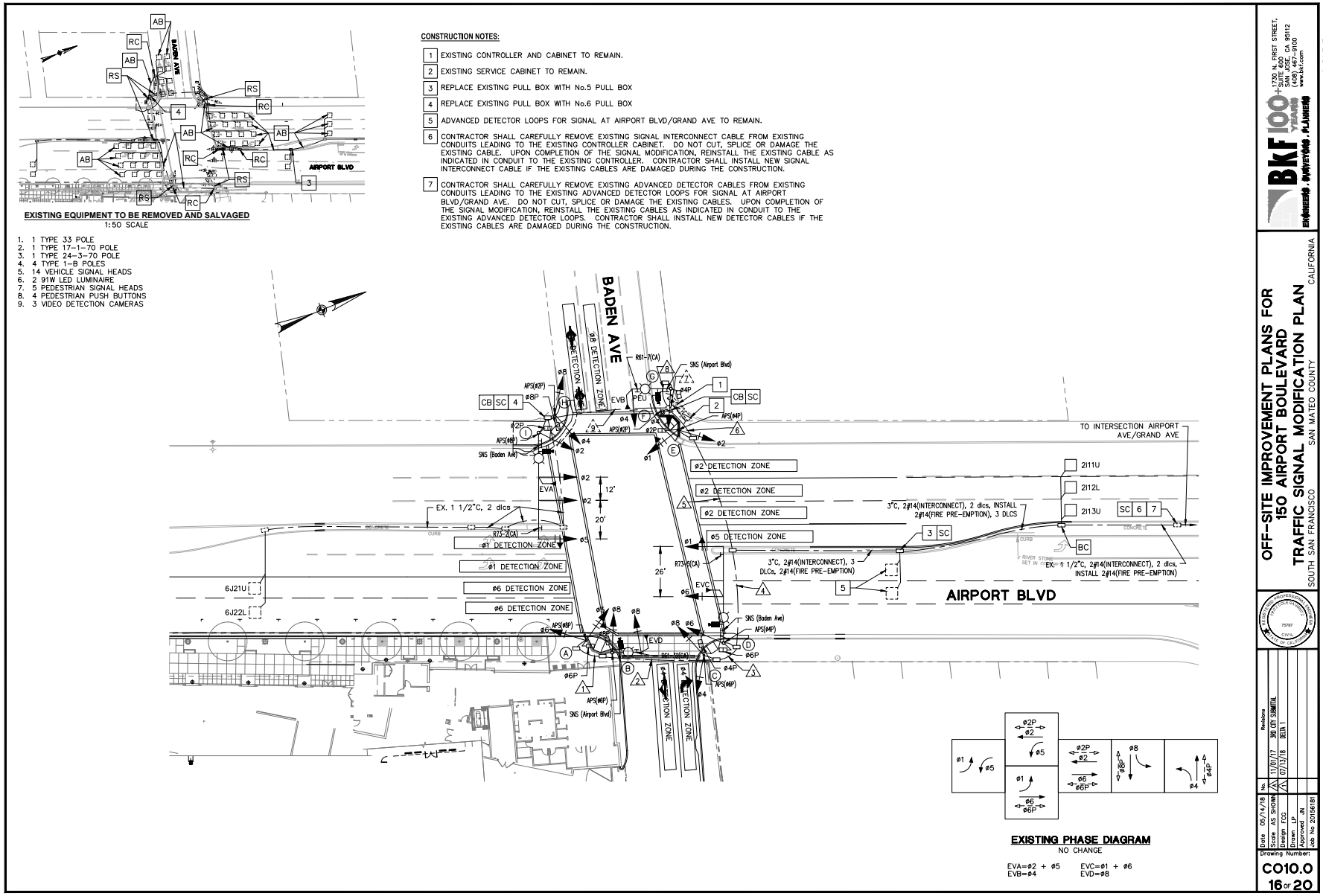


Figure 8
Airport Boulevard and Baden Avenue
Traffic Signal Modification Plan

Table 6
Existing plus Project 95th Percentile Vehicular Queues

ID	Intersection - Movement	Storage Distance (feet)	95th Percentile Queue (feet)				Percentage of Volume Increase[a]	
			Existing		Existing plus Project			
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
2	**Miller Ave/Airport Blvd**							
	Eastbound Right Turn	680	120	60	120	60	-	-
	Westbound Left Turn	465	220	160	220	180	-	-
	Westbound Through	465	220	260	220	260	-	-
	Northbound Through	220	80	80	80	80	-	-
	Southbound Through	360	200	80	200	80	-	-
5	**Grand Ave/Airport Blvd**							
	Eastbound Left	665	200	180	200	180	-	-
	Eastbound Through-Right	665	200	100	200	100	-	-
	Westbound Left Turn	670	40	400	40	400	-	-
	Westbound Through	670	60	240	60	240	-	-
	Westbound Right Turn	240	20	60	20	60	-	-
	Northbound Left Turn	150	40	40	60	80	-	-
	Northbound Through	410	180	260	180	260	-	-
	Northbound Right Turn	410	120	20	120	40	-	-
	Southbound Left Turn	390	340	120	340	120		-
	Southbound Through	390	240	220	240	240	-	-
	Southbound Right Turn	180	40	40	40	40	-	-
9	**San Mateo Ave/Airport Blvd**							
	Eastbound Left Turn	150	60	120	60	120	-	-
	Eastbound Through	370	100	100	100	100	-	-
	Eastbound Right Turn	150	40	100	40	100	-	-
	Westbound Left Turn	225	200	**520**	200	**520**	-	0%
	Westbound Through	810	160	340	160	340	-	-
	Westbound Right Turn	85	**100**	**240**	**100**	**260**	**2.1%**	**3.1%**
	Northbound Left Turn	130	**180**	100	**180**	100	0%	-
	Northbound Through	300	60	40	60	40	-	-
	Southbound Left Turn	180	120	180	120	180	-	-
	Southbound Through	1550	360	540	360	560	-	-
	Southbound Right Turn	1550	20	20	0	20	-	-
10	**So. Airport Blvd/Gateway Blvd**							
	Eastbound Left Turn	140	80	60	80	60	-	-
	Eastbound Through	730	300	240	300	240	-	-
	Eastbound Right Turn	730	140	100	140	100	-	-
	Northbound Left Turn	300	100	180	100	180	-	-
	Northbound Through	930	80	40	80	40	-	-
11	**101 NB/So. Airport Blvd. Off Ramp &**							
	Eastbound Left Turn	800	380	280	380	280	-	-
	Eastbound Through	800	360	280	360	280	-	-
	Eastbound Right Turn	225	40	20	40	20	-	-
	Westbound Through	200	0	0	0	0	-	-
	Westbound Right Turn	200	0	0	0	0	-	-
	Northbound Left Turn	295	80	160	80	160	-	-
	Northbound Through	635	40	100	40	100	-	-
	Southbound Left Turn	100	20	40	20	40	-	-
	Southbound Through	1080	180	380	180	400	-	-
	Southbound Right Turn	125	40	80	40	80	-	-

In existing condition, **Bold** and shaded= 95th percentile queue exceeds storage length; In Existing plus project, **Bold** and shaded = potentially significant impact

[a]Volume Increased is calculated as the increase in volume for that particular movement, and is only shown for movements that are already exceeding storage under baseline conditions.

Also, the project is located within 0.25 mile of the existing and proposed reconstruction of the South San Francisco Caltrain station. According to guidelines outlined in the City of South San Francisco General Plan (City of South San Francisco 1999), development within 0.25 mile of a Caltrain or BART station or Ferry terminal can be exempt from LOS standards.

Background and Background Plus Project Conditions

Traffic volumes for background conditions were developed by adding trips from approved projects in the vicinity of the proposed project to the existing traffic volumes. Based on consultation with City staff, the following projects were identified as approved/pending projects for consideration under background conditions.

- 418 Linden Avenue (Renamed to 488 Linden Avenue) – 38 apartment units
- 300 Miller Avenue – 81 senior housing units
- Sares Regis (Phase I) – 272 apartment units
- 255 Cypress Avenue – 46 apartment Units
- 211 Airport Boulevard – 69 apartment units
- 150 Airport Boulevard – 157 apartment units
- 200 Linden Avenue – 97 apartment units and 7,000 s.f. commercial
- Sares Regis (Phase II) – 196 apartment units

As shown in Table 7, the eight near-term projects are expected to generate a total of 420 trips during the AM peak hour and 553 trips during the PM peak hour. These trips were added to existing traffic volumes to obtain traffic volumes for analysis under background conditions. Trips from approved projects were assigned to the study intersections based on the trip distribution assumptions developed for the West area in the DSASP EIR.

Traffic volumes under background conditions are shown on Figure 9. Background plus project traffic volumes were developed by adding project trips to background volumes. Background plus project traffic volumes are shown on Figure 10. Under background and background plus project conditions, it is assumed that the signalized intersection of Airport Boulevard and Baden Avenue would be converted to a four-legged intersection. The east leg of the intersection would provide shared access to the proposed project that would be located to the north and the recently approved 150 Airport Boulevard residential development to the south. The east leg was analyzed with one inbound and one outbound lane. It was also assumed that the southbound left-turn lane on Airport Boulevard would be extended from 55 feet to 80 feet storage with a 50-foot taper to provide additional storage for the southbound left-turning vehicles (a condition of approval for the 150 Airport Boulevard residential development).

Table 7
Approved Project Trips

Land Use	Residential Units	Commercia ksf	Daily Trips	AM Trips In	AM Trips Out	AM Trips Total	PM Trips In	PM Trips Out	PM Trips Total
418 / 488 Linden [1]	38		539	9	35	44	40	22	62
300 Miller Avenue [2]	81		279	4	12	16	11	9	20
Sares Regis - Phase I [3]	260		1,713	22	105	127	99	49	148
255 Cypress Ave [4]	46		306	5	22	27	28	15	43
211 Airport Apt [5]	69		-170	-25	4	-21	-2	-15	-17
150 Airport Boulevard [6]	69		1,075	16	65	81	68	36	104
200 Linden Avenue [7]	97	7.03	740	10	36	46	41	27	68
Sares Regis - Phase II [8]	196		1,311	20	80	100	82	43	125
			Total	61	359	420	367	186	553

Notes:

[1]Trip generation based on fitted curve equation for Land Use 220 - 'Apartment' from the Institute of Transportation Engineers (*ITE) Trip Generation Manual* (9th Edition).

[2] Trip generation based on Traffic Impact Analysis (TIA) for the 300 Miller Avenue Senior Housing Project prepared by Abrams Associates in September 2015.

[3] Trip generation based on Traffic Study for the Miller/Cypress Residential Project prepared by Hexagon Transportation Consultants in October 2015 for Parcel A and Parcel D.

[4]Trip generation based on average rates for Land Use 220 - 'Apartment' from the Institute of Transportation Engineers (*ITE) Trip Generation Manual* (9th Edition).

[5] Trip generation based on Trip Generation Analysis for the 211 Airport Boulevard, prepared by LSA Associates in May 2015.

[6] Trip generation based on Traffic Impact Analysis for the 150 Airport Boulevard, prepared by Hexagon Transportation Consultants in October 2016.

[7] Trip generation based on Traffic Impact Analysis for the 200 Linden Avenue, prepared by Hexagon Transportation Consultants in October 2017.

[8] Trip generation based on Traffic Impact Analysis for the Miller-Cypress Phase II Residential, prepared by Hexagon Transportation Consultants in January 2018.

Table 8
Background and Background Plus Project Intersection Operations

ID	Intersection	Peak Period	Background		200 Airport Boulevard Background Plus Project			DSASP Exising Plus Project	
			Delay [1]	LOS	Delay [1]	LOS	Project Trips(%)	Delay [1]	LOS
1	Miller Ave/Linden Ave	AM	27.3	C	27.3	C		23.2	C
		PM	47.2	D	47.2	D		55.6	E
2	Miller Ave/Airport Blvd	AM	29.9	C	29.9	C		29.1	C
		PM	25.3	C	25.6	C		26.7	C
3	Grand Ave/Spruce Ave	AM	17.1	B	17.2	B		18.5	B
		PM	19.0	B	19.1	B		21.9	C
4	Grand Ave/Linden Ave	AM	14.6	B	14.6	B		19.4	B
		PM	14.8	B	14.9	B		44.5	D
5	Grand Ave/Airport Blvd [2]	AM	39.9	D	40.2	D		**>80(1.12)**	**F**
		PM	51.3	D	53.2	D		**>80(1.13)**	**F**
6	Grand Ave/E. Grand Ave	AM	20.9	C	20.8	C		23.2	C
		PM	19.6	B	19.6	B		42.0	D
7	E. Grand Ave/Gateway Blvd	AM	34.1	C	34.1	C		35.7	D
		PM	36.2	D	36.2	D		**61.7**	**E**
8	Baden Ave/Linden Ave [3]	AM	24.5	C	24.5	C		43.2	D
		PM	40.0	D	40.8	D		**>80(1.03)**	**F**
9	San Mateo Ave/Airport Blvd	AM	39.4	D	39.6	D		37.1	D
		PM	**59.4**	**E**	**60.5**	**E**	**27(0.68%)**	**>80(1.2)**	**F**
10	So. Airport Blvd/Gateway Blvd	AM	37.0	D	37.0	D		**67.7**	**E**
		PM	43.0	D	43.1	D		**>80(1.32)**	**F**
11	101 NB/So. Airport Blvd. Off Ramp & So. Airport Blvd	AM	30.2	C	30.1	C		28.2	C
		PM	35.2	D	36.1	D		48.5	D
12	Baden Ave/Airport Blvd	AM	37.3	D	38.4	D		24.3	C
		PM	40.3	D	42.6	D		31.1	C

[1] Delay reported is the weighted average delay for all movements in seconds reported by Synchro 9 using HCM 2000 Methodology.

[2] Field observations showed that the improvements recommended in the DSASP EIR at the intersection of Grand Ave/Airport Blvd, which includes modifying the eastbound approach to include one left-turn pocket and one through-right shared lane have been implemented. The existing conditions analysis for the 200 Airport Boulevard was revised to reflect these improvements.

[3] The analysis assumes split phasing for the eastbound/westbound approaches on Baden Avenue based on field observations.

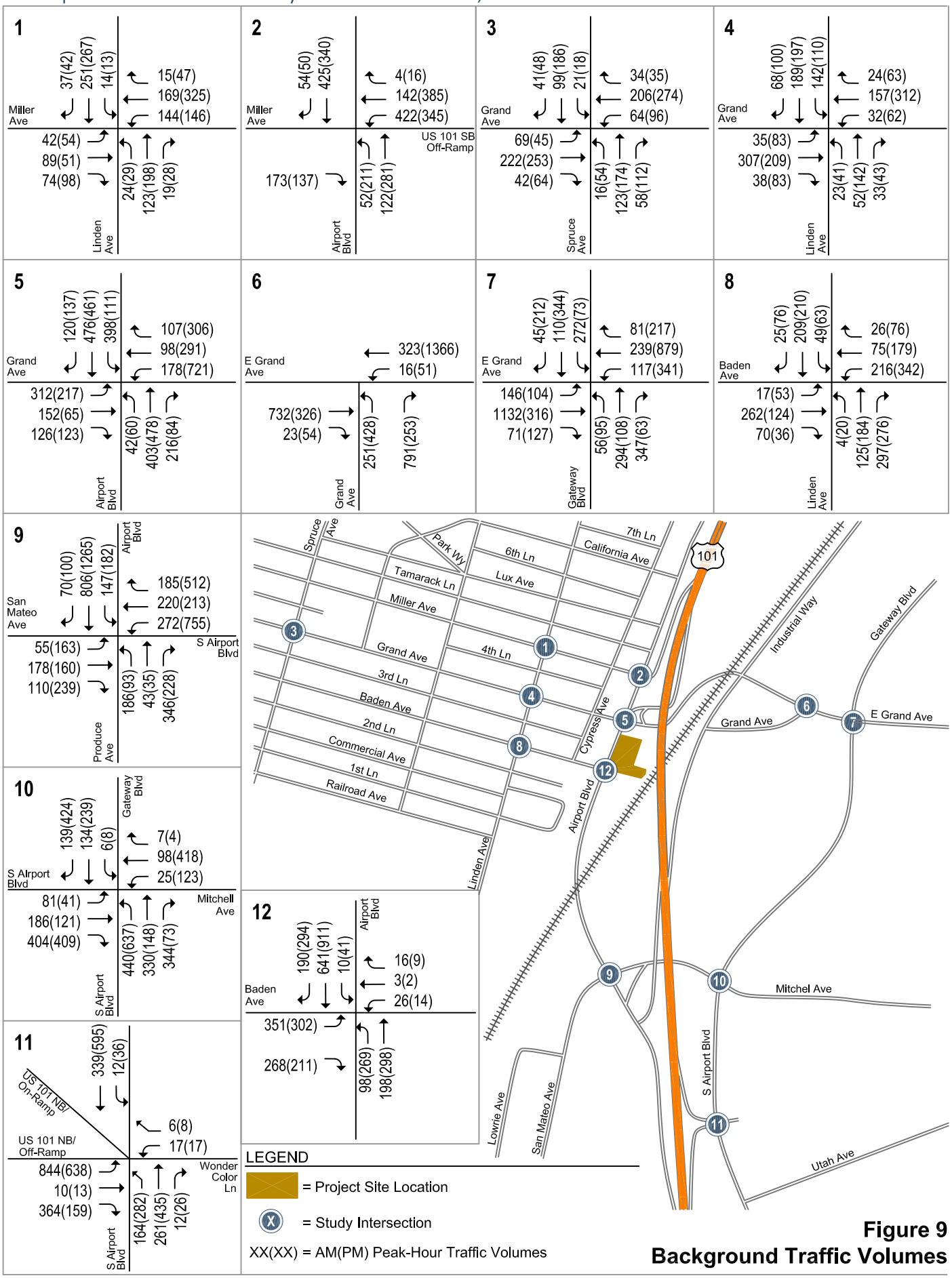


Figure 9
Background Traffic Volumes

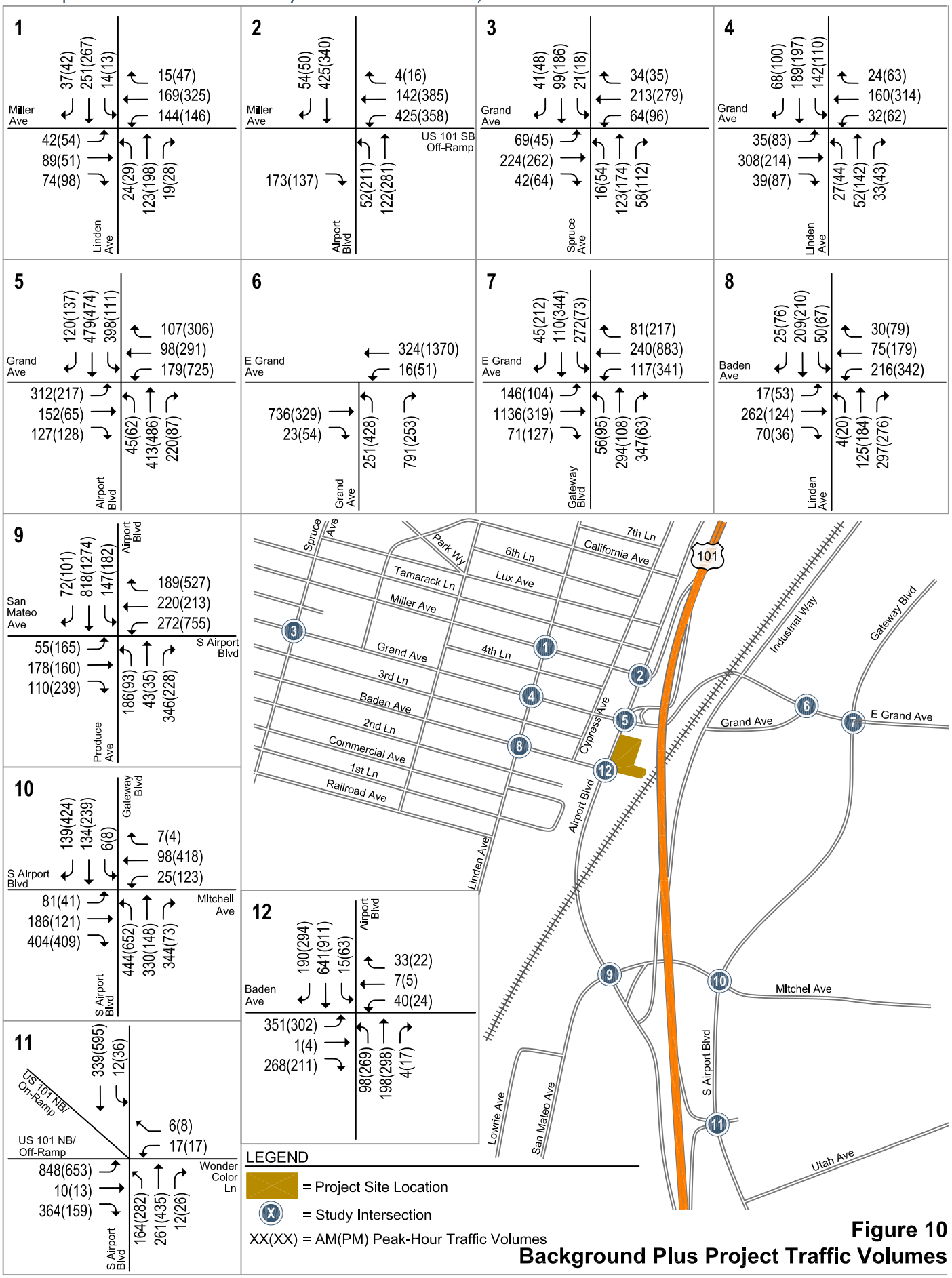


Figure 10
Background Plus Project Traffic Volumes

As shown in Table 8, most study intersections would continue to operate at acceptable LOS D or better during the AM and PM peak hours under background conditions and would continue to operate at acceptable conditions with the proposed project, except for the intersection of San Mateo Avenue/Airport Boulevard.

San Mateo Avenue/Airport Boulevard – The analysis shows that this intersection would operate at an unacceptable LOS E with 59.4 seconds of delay during the PM peak hour under background conditions. With the addition of project traffic, this intersection would continue to operate at LOS E with 60.5 seconds of delay. The project would add trips equivalent to less than 1% of the total traffic volume through the intersection. Since the project would add traffic less than 2% of the total traffic volume through the intersection, the project impact is considered less than significant. The DSASP EIR identified mitigation measures (MM4.10-5) at this intersection, which includes modifying the westbound approach to add a left-turn pocket, modifying the approach to include three left-turn lanes, one through lane, and one right-turn lane, and optimizing the traffic signal to reallocate green time to better serve future volumes. These mitigation measures are expected to improve traffic operations during the PM peak hour.

As shown in Table 9, under background and background plus project conditions, the 95th percentile vehicular queues for most turning movements are accommodated within the available storage length during the AM and PM peak hours, except for the intersection of San Mateo Avenue/Airport Boulevard.

San Mateo Avenue/Airport Boulevard – The analysis showed that the 95th percentile queues for the westbound left-turn, westbound right-turn, northbound left-turn, and southbound left-turn movements would exceed the available storage capacity during at least one of the peak hours under background conditions. The proposed project would add traffic to the westbound right-turn movement, increasing the 95th percentile queue under background plus project conditions. The project would increase the traffic volume by more than 1% for the westbound right-turn movement. Although this would be considered a significant impact based on the impact criteria, the 95th percentile queue length for the westbound right-turn lane would only increase by 20 feet (equivalent to 1 car length) during the PM peak hour with the proposed project and is not expected to block the through or the left-turn traffic. The queue beyond the right-turn pocket would be contained within the adjacent westbound through lane and would be served along with the through traffic. It would cause only a marginal increase in delay to the through traffic.

As discussed under existing plus project conditions, Mitigation Measure MM4.10-5 was identified under cumulative conditions in the DSASP EIR. The mitigation includes modifying the westbound approach to add a left-turn pocket, modifying the approach to include three left-turn lanes, one through lane, and one right-turn lane, and optimizing the traffic signal to reallocate green time to better serve future volumes. According to the DSASP EIR, implementation of this mitigation measure would allow the intersection to accommodate the 95th percentile queues for all turning movements within the available storage capacities. This mitigation measure was triggered by the high volume projected for the westbound left-turn movement at this intersection. The DSASP projects would collectively add approximately 700 vehicles during the AM peak hour and 1,000 vehicles during the PM peak hour to this intersection. The proposed project would add only 18 vehicles during the AM peak hour and 27 vehicles during the PM peak hour to this intersection. The project would add only 4 vehicles during the AM peak hour and 15 vehicles during the PM peak hour to the westbound right turn movement. Since the proposed project is one of many DSASP projects that contribute traffic to this intersection, the project should pay a fair-share cost towards the implementation of mitigation measure MM4.10-5.

However, the project is located less than 0.25-mile walking distance from the existing and the proposed reconstruction of the South San Francisco Caltrain station. According to guidelines outlined in the City of South San Francisco General Plan (City of South San Francisco 1999),

development within 0.25 mile of a Caltrain or BART station or Ferry terminal can be exempt from LOS standards. Also, the project is well situated to take advantage of the existing and planned pedestrian, bicycle, and transit services in the immediate vicinity. These services would allow project residents to access employment and many services without a car.

Table 9
Background and Background plus Project Conditions 95th Percentile Queue Lengths

ID	Intersection - Movement	Storage Distance (feet)	95th Percentile Queue (feet)				Percentage of Volume Increase[a]	
			Background		Background plus Project			
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
2	**Miller Ave/Airport Blvd**							
	Eastbound Right Turn	680	180	100	180	100	-	-
	Westbound Left Turn	465	240	200	240	220	-	-
	Westbound Through	465	260	320	260	320	-	-
	Northbound Through	220	100	140	100	140	-	-
	Southbound Through	360	200	80	200	80	-	-
5	**Grand Ave/Airport Blvd**							
	Eastbound Left	665	320	220	320	220	-	-
	Eastbound Through-Right	665	240	120	240	120	-	-
	Westbound Left Turn	670	40	440	40	440	-	-
	Westbound Through	670	60	320	60	320	-	-
	Westbound Right Turn	240	20	80	20	80	-	-
	Northbound Left Turn	150	60	80	60	80	-	-
	Northbound Through	410	180	280	180	280	-	-
	Northbound Right Turn	410	80	40	100	40	-	-
	Southbound Left Turn	390	**400**	120	**400**	120	0%	-
	Southbound Through	390	320	280	320	300	-	-
	Southbound Right Turn	180	60	40	60	40	-	-
9	**San Mateo Ave/Airport Blvd**							
	Eastbound Left Turn	150	80	120	80	120	-	-
	Eastbound Through	370	100	100	100	100	-	-
	Eastbound Right Turn	150	40	100	40	100	-	-
	Westbound Left Turn	225	200	**520**	200	**520**	-	0%
	Westbound Through	810	160	340	160	340	-	-
	Westbound Right Turn	85	**100**	**300**	**100**	**320**	**2.2%**	**2.9%**
	Northbound Left Turn	130	**180**	100	**180**	100	0%	-
	Northbound Through	300	60	40	60	40	-	-
	Southbound Left Turn	180	120	180	120	180	-	-
	Southbound Through	1550	440	600	460	620	-	-
	Southbound Right Turn	1550	20	20	20	40	-	-
10	**So. Airport Blvd/Gateway Blvd**							
	Eastbound Left Turn	140	80	60	80	60	-	-
	Eastbound Through	730	300	240	300	240	-	-
	Eastbound Right Turn	730	140	100	140	100	-	-
	Northbound Left Turn	300	100	200	100	200	-	-
	Northbound Through	930	80	40	80	40	-	-
11	**101 NB/So. Airport Blvd. Off Ramp & So. Airport Blvd**							
	Eastbound Left Turn	800	380	300	380	300	-	-
	Eastbound Through	800	360	300	360	300	-	-
	Eastbound Right Turn	225	40	20	40	20	-	-
	Westbound Through	200	0	0	0	0	-	-
	Westbound Right Turn	200	0	0	0	0	-	-
	Northbound Left Turn	295	80	160	80	160	-	-
	Northbound Through	635	40	120	40	140	-	-
	Southbound Left Turn	100	20	40	20	40	-	-
	Southbound Through	1080	180	400	180	420	-	-
	Southbound Right Turn	125	40	80	40	80	-	-

In Background condition, **Bold** and Shaded= 95th percentile queue exceeds storage length; In Background plus project condition, **Bold** and Shaded = potentially significant impact

[a]Volume Increased is calculated as the increase in volume for that particular movement, and is only shown for movements that are already exceeding storage under baseline conditions.

Site Access and On-Site Circulation

The site access and on-site circulation evaluation is based on the December 1, 2018 site plans prepared by Carrier Johnson +Culture (see Figure 11A, Figure 11B and Figure 11C). These plans show that the project would provide a total of 94 residential units and 3,630 square feet of retail uses.

Site Access

Vehicular access to the project would be provided via a signalized driveway on Airport Boulevard. This driveway would be located on the east side of the signalized intersection of Airport Boulevard/Baden Avenue and would provide shared access to the proposed project and the recently approved residential development at 150 Airport Boulevard. This driveway would provide direct access to level 1 of a two-level, 110-space parking garage, with 64 parking spaces on level 1 (see Figure 11B) and 46 parking spaces on level 2 (see Figure 11 C). With the extension of Baden Avenue, it was assumed in this analysis that the intersection of Airport Boulevard/Baden Avenue would operate with split phasing for the east-west approaches. Adequate pedestrian crossing time across Airport Boulevard was assumed in the signal timings for both the eastbound and westbound phases of Baden Avenue. The site plan shows both the parking levels to be connected. The site plan shows that the project driveway measures approximately 24 feet wide, which is adequate for vehicle ingress and egress for residential developments.

Sight Distance at the Project Driveways

In general, the project driveways should be free and clear of any obstructions to optimize sight distance. Any landscaping and signage should be located in such a way to ensure an unobstructed view for drivers exiting the site.

On-Site Circulation

On-site vehicular circulation was reviewed in accordance with the City of South San Francisco Zoning Ordinance and generally accepted traffic engineering standards.

Both the parking garage levels would contain 90-degree parking. The City's standard width for two-way drive aisles is 25 feet where 90-degree parking is provided. This allows sufficient room for vehicles to back out of parking spaces. According to the site plan, the drive aisles on both parking levels are shown to measure 24 feet wide. Based on generally accepted traffic engineering standards, a two-way drive aisle that is 24 feet wide would be adequate for vehicles to maneuver in and out of the 90-degree parking stalls. Other neighboring cities have allowed two-way drive aisles less than 25 feet. Since the City of South San Francisco evaluates each project design on a case-by-case basis, the project applicant should coordinate with City staff to determine if the proposed drive aisle widths are acceptable to serve the project.

The site plan shows that a total of 64 parking spaces will be provided on level 1 and 46 parking spaces on level 2. On level 1, out of the 64 parking spaces, 12 parking spaces will be dedicated for the retail uses and 52 parking spaces for residential use. Out of the 52 residential parking spaces on level 1, 50 spaces will be provided via 3-level puzzle lifts. The site plan shows two dead-end drive aisles on level 1; - one to the north near the retail parking spaces and one to the east adjacent to the puzzle lifts and one dead-end drive aisle on level 2 on the east end. In general, dead-end aisles can be problematic if they contain unassigned parking spaces, since drivers can enter the aisle and upon discovering that there is no available parking must either back out or conduct three-point maneuvers. Since the residential parking spaces will be assigned, the dead-end aisles adjacent to the residential parking spaces would not be problematic. The site plan shows that the parking spaces adjacent to the dead-end aisles will have adequate space to back out of the parking spaces.

Overall, vehicular circulation on both the parking garage levels would be adequate.

Truck Access

Garbage truck access would occur via the Baden Avenue extension. The maintenance staff would roll out the garbage bins during garbage collection times so that garbage truck access can occur along the extended section of Baden Avenue.

The project would utilize the loading area at the 150 Airport project (see Figure 11A), which is located off the shared access driveway. Additional loading could take place on Airport Boulevard, which has an 8-foot parking lane along the project frontage or at the east end of the shared access driveway. The eastern end of the private driveway could also be used by ridesharing vehicles such as Uber and Lyft to pick-up and drop-off residents.

Parking

Calculation of Vehicular Parking Requirement

The proposed project is located within the downtown area. Parking requirements are included in the City of South Francisco Parking Ordinance (20.330.007 - Downtown Parking). Parking requirements for the proposed project were calculated based on the following parking ratios for multi-family dwelling units and retail sales:
:

- One-bedroom or 500 to 800 sq ft - 1 space minimum and 1.5 spaces maximum per unit.
- Two-bedroom or 801 to 1,100 sq ft - 1.5 spaces minimum, 1.8 spaces maximum per unit.
- Three-bedroom or more than 1,100 sq ft – 1.5 spaces minimum, 2 spaces maximum per unit.
- Retail Sales – 1 space per 400 sq ft of floor area

The proposed project consists of 26 studios (approximately 586 sq ft), 39 one-bedroom units, and 29 two-bedroom units. Based on the downtown parking ratios, the minimum required number of residential parking spaces calculates to 109 spaces (26 studios x 1 parking space + 39 one-bed units x 1 parking space + 29 two-bed units x 1.5 parking space). The number of parking spaces required for the retail space calculates to 9 spaces (3,630 sq ft/ 400 sq ft). The project would need to provide a minimum of 118 parking spaces to meet the code. The site plan shows that the project would provide a total of 110 parking spaces on-site within the two levels of the parking garage. The total parking provided on site would be 8 spaces fewer than the minimum required spaces mandated by the parking ordinance.

The project will provide 12 retail/guest parking spaces on the first-floor and 98 residential parking spaces on the first and second floors. There would be an excess of 3 retail parking space and a deficit of 11 spaces for the residential parking with a total deficit of 8 spaces (7% deficit). However, given the project's proximity to the Caltrain station, it is expected that many residents would use public transportation and would not need a car. The project should implement a TDM (Travel Demand Management) Program to implement strategies (such as providing building residents and retail employees with annual transit passes, providing bike parking facilities on-site, TDM coordinator to educate new residents on TDM program, etc.) to encourage residents to use transit and off-set the parking deficit.

Per the California Building Code (CBC) Table 11B-6, based on the parking provision of 110 parking spaces, the project would need to dedicate five of those parking spaces as accessible stalls, one of which is required to be van accessible. The project site plan shows that five accessible parking spaces will be provided on the first floor with all of them being van accessible. Thus, the project would meet the parking requirements for ADA (American Disability Act) compliant parking spaces.

Parking Dimensions

Based on the site plan, the proposed parking would consist of a mix of standard, car stackers, and ADA compliant parking stalls. The total parking spaces would consist of 56 standard parking spaces, 50 parking spaces via 3-level parking lifts and four ADA compliant parking spaces. The minimum basic dimension for standard parking spaces is 8.5 feet by 18 feet, where 90-degree parking is provided. The site plan shows that all parking spaces conform to the minimum required dimensions for standard parking spaces. The car stackers should be high enough to accommodate suburban vehicles and passenger trucks.

Calculation of Bicycle Parking Spaces

Bicycle parking requirements were calculated based on the following criteria from the zoning ordinance.

- Short-term bicycle parking spaces shall be provided at a rate of 10 percent of the number of required automobile parking spaces.
- A minimum of one long term bicycle parking space shall be provided for every four units for multi-unit residential and group residential projects**.**

With a total of 94 dwelling units and 118 minimum required parking spaces, the proposed project would require 12 short-term bicycle parking spaces (10% of 118 required parking spaces) and 24 long-term bicycle parking spaces (1/4 of 94 dwelling units).

The site plan shows a total of 12 short-term bicycle parking spaces (see Figure 11A); 6 parking spaces along the project frontage on Airport Boulevard near Baden Avenue and 6 parking spaces along the project frontage on Airport Boulevard near Grand Avenue. The site plan shows a bicycle storage room located on the first-floor parking level for long-term parking (see Figure 11B). A total of 36 vertical spaces will be provided in the bicycle storage room for maximum space efficiency and to accommodate different bicycle styles. Thus, the project will provide adequate short-term and long-term bicycle parking on site.

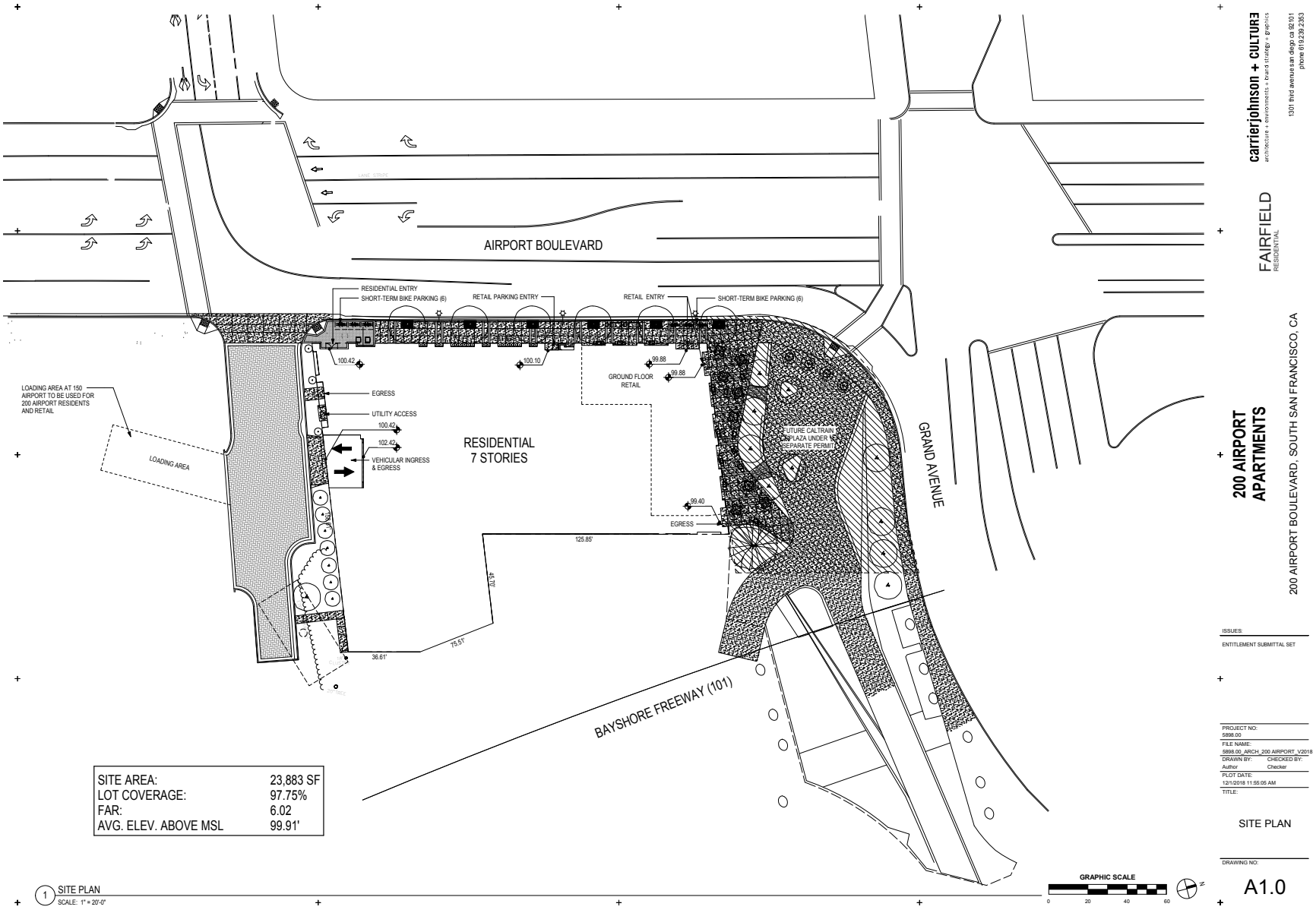


Figure 11A
Project Location and Site Access

NORTH
Not to Scale

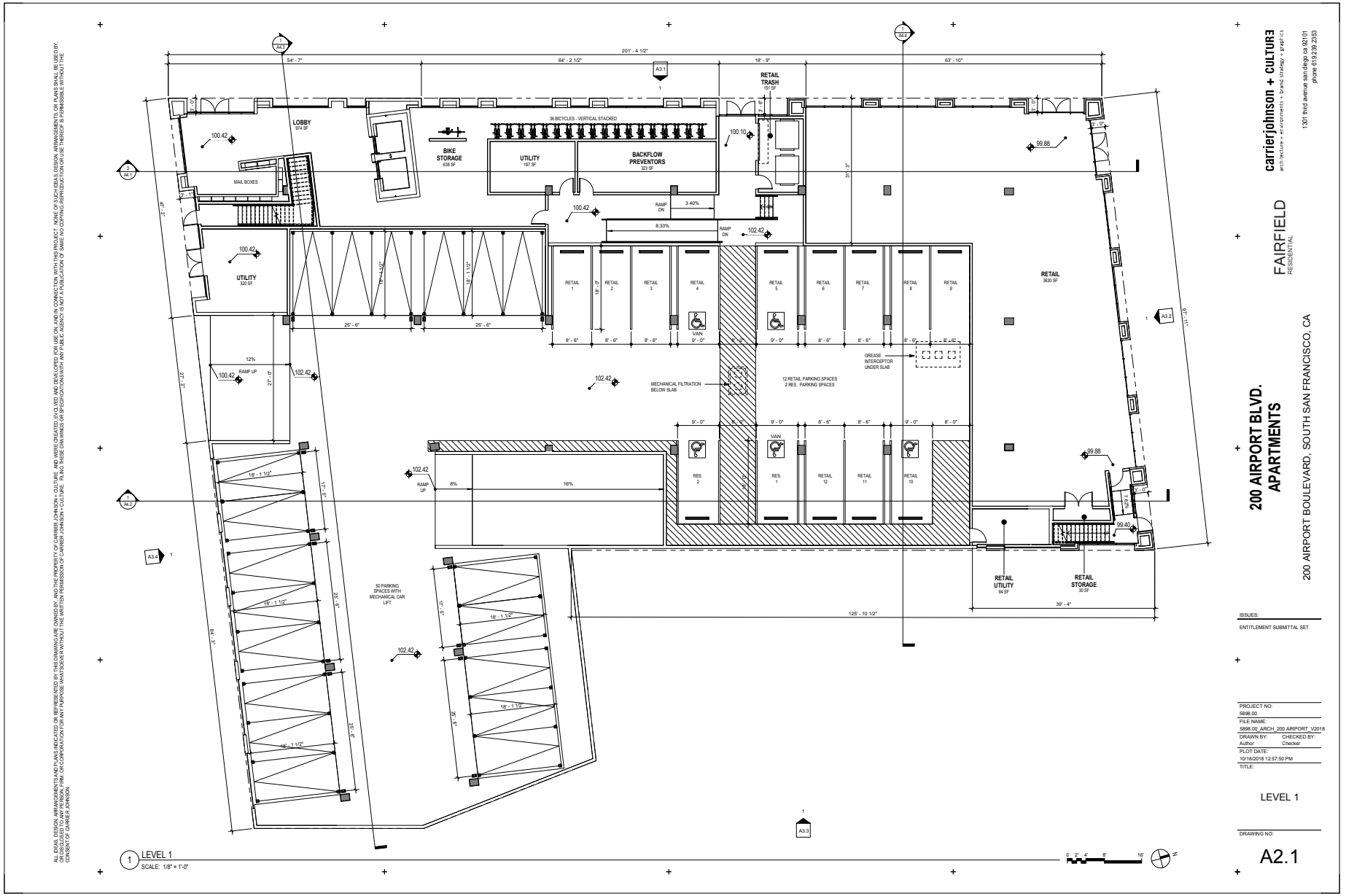


Figure 11B
Level 1 Floor Plan

NORTH
Not to Scale

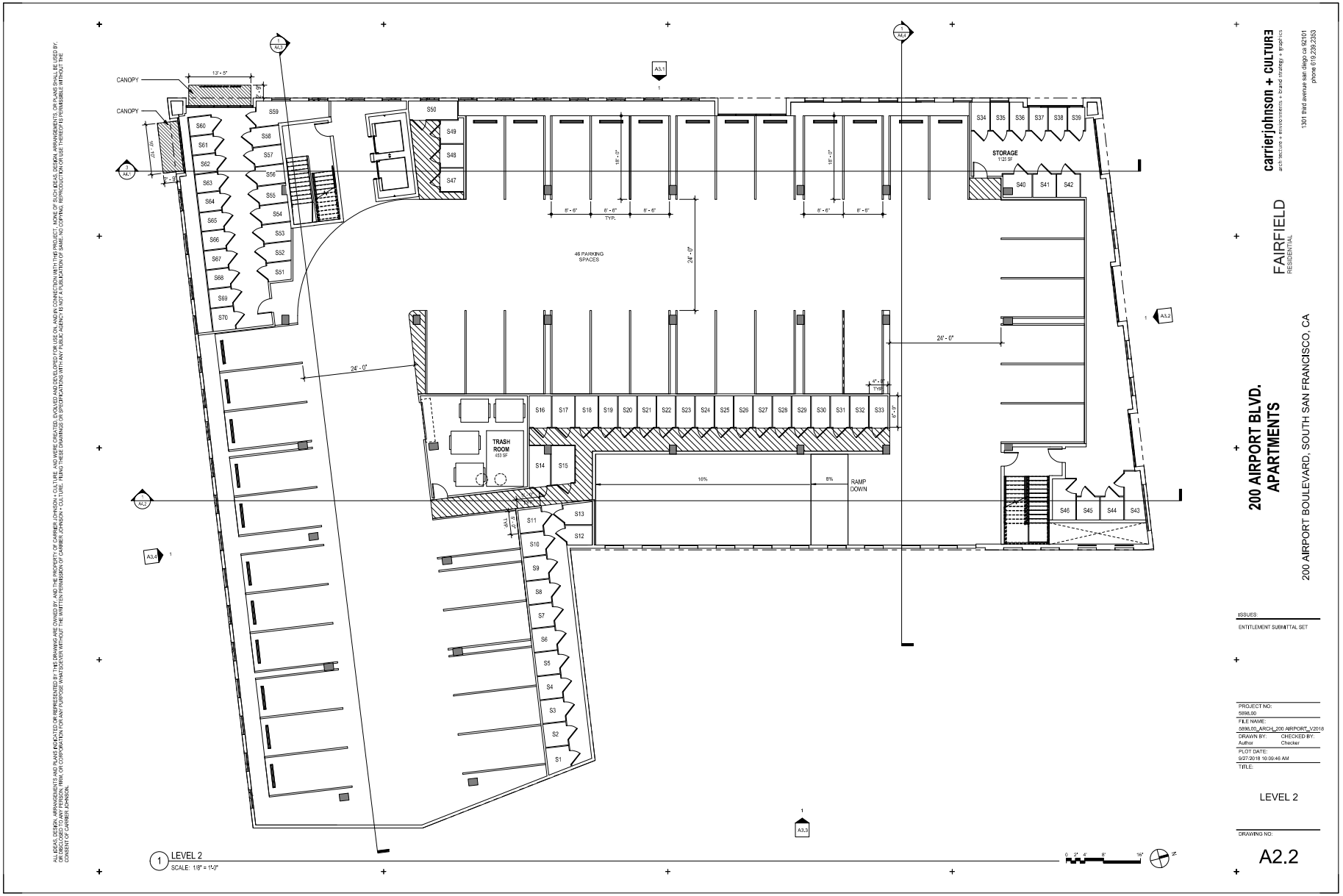


Figure 11C
Level 2 Floor Plan

NORTH
Not to Scale

Transit, Pedestrian and Bicycle Impacts

The project is well situated to take advantage of the existing and planned pedestrian, bicycle, and transit services in the immediate vicinity. These services would allow project residents to access employment and many services without a car. The new Caltrain station connections will allow easy access to transit services and will also provide a good bicycle connection to the employment zone to the east. There are also many planned new bike lanes in the vicinity. The project will construct a 12-foot sidewalk along its frontages on Airport Boulevard and Grand Avenue. Pedestrians can access the project site to/from other parts of the downtown via existing sidewalks and cross-walks at signalized intersections.

Conclusions

The potential impacts of the project were evaluated in the context of the Downtown Station Area Specific Plan (DSASP) EIR. The traffic generated by the project was found to be consistent with the EIR. The study included the analysis of AM and PM peak hour traffic operations for 12 signalized intersections that were analyzed in the DSASP EIR. Site access and on-site circulation were also evaluated based on the site plan dated December 1, 2018 prepared by Carrier Johnson +Culture.

Intersection and Queueing Operations

San Mateo Avenue/Airport Boulevard

The analysis of traffic operations under existing and background conditions showed that the project would cause a queuing impact at the intersection of San Mateo Avenue and Airport Boulevard during the PM peak hour. The queuing analysis showed that the 95th percentile queue at San Mateo Avenue/Airport Boulevard for some movements exceeded the available storage during at least one of the peak hours under existing and background conditions. The proposed project would add traffic to the westbound right-turn movement, increasing the 95th percentile queues under existing plus project and background plus project conditions. The project would increase the traffic volume by more than 1% for the westbound right-turn movement. Although this would be considered a significant impact based on the intersection significant impact criteria, the 95th percentile queue length for the westbound right-turn lane would only increase by 20 feet (equivalent to 1 vehicle) during the PM peak hour with the proposed project and is not expected to block the through or the left-turn traffic. The queue beyond the right-turn pocket would be contained within the adjacent westbound through lane and would be served along with the through traffic. It would cause only a marginal increase in delay to the through traffic.

The DSASP EIR identified Mitigation measure MM4.10-5 under cumulative conditions. The mitigation includes modifying the westbound approach to add a left-turn pocket, modifying the approach to include three left-turn lanes, one through lane, and one right-turn lane, and optimizing the traffic signal to reallocate green time to better serve future volumes. According to the DSASP EIR, implementation of this mitigation measure would allow the intersection to accommodate the 95th percentile queues for all turning movements within the available storage capacities. Since the proposed project is one of many DSASP projects that contribute traffic to this intersection, the project should pay a fair-share cost towards the implementation of mitigation measure MM4.10-5.

However, with the reconstruction of the South San Francisco Caltrain station, the project will be located less than 0.25 mile and within a 5-minute walking distance from the station. According to guidelines outlined in the City of South San Francisco General Plan (City of South San Francisco 1999), development within 0.25 mile of a Caltrain or BART station or Ferry terminal can be exempt from LOS standards.

Airport Boulevard and Baden Avenue

The intersection of Airport Boulevard and Baden Avenue would be converted to a four-legged intersection, with the east leg of the intersection providing shared access to the proposed project that would be located to the north and the recently approved 150 Airport Boulevard residential development to the south. The signal timings at this intersection will be updated to reflect new projects and changes to the intersection.

Site Access and On-site Circulation

A review of the site plan for the proposed project showed that adequate driveway access and circulation would be provided. Signal timings at the intersection of Airport Boulevard and Baden Avenue will be updated to reflect new projects and changes to the intersection. The site plan shows a dead-end parking aisle near the retail parking spaces.

The project would utilize the loading area at the 150 Airport project (see Figure 11A), which is located off the shared access driveway. Additional loading could take place on Airport Boulevard, which has an 8-foot parking lane along the project frontage or at the east end of the shared access driveway. The eastern end of the private driveway could also be used by ridesharing vehicles such as Uber and Lyft to pick-up and drop-off residents.

The site plan shows that the total parking provided on-site would be 8 spaces fewer than the minimum required spaces mandated by the parking ordinance. Given the proximity of the project to the Caltrain station and neighborhood retail, it is expected that a significant number of project residents would access employment and many services without a car. The project should implement a TDM (Travel Demand Management) Program to implement strategies (such as providing building residents and retail employees with annual transit passes, providing expanded bike parking facilities on-site, providing on-site car sharing facilities, and a TDM coordinator to educate new residents on TDM program) to encourage residents to use transit and off-set the parking deficit.

Transit, Pedestrian and Bicycle Impacts

The project is well situated to take advantage of the existing and planned pedestrian, bicycle, and transit services in the immediate vicinity. These services would allow project residents to access employment and many services without a car. With the reconstruction of the South San Francisco Caltrain station, the project would be within a 5-minute walking distance from the station. The project will construct a 12-foot sidewalk along its project frontage on Airport Boulevard. The project will provide adequate short-term and long-term bicycle parking spaces on site as required by the zoning ordinance.