HEXAGON TRANSPORTATION CONSULTANTS, INC.

Amendment to the Mineta San Jose International Airport Master Plan

Draft Transportation Analysis

Prepared for:

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Executive Summary

This report presents the results of the transportation analysis (TA) conducted for a proposed Amendment to the San Jose Airport Master Plan. The airport currently serves 14.8 million annual passengers, and the forecast is for the airport to serve 22.5 million annual passengers in 2037. There also would be an increase in air cargo and general aviation operations.

This study was conducted for the purpose of identifying potential traffic effects related to the proposed development. The potential effects of the project were evaluated in accordance with the standards set forth by the City of San Jose, City of Santa Clara, and the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP).

CEQA Transportation Analysis

Project-Level VMT Effect Analysis

The project-level effect analysis under CEQA uses the VMT metric to evaluate a project's transportation effects by comparing against the VMT thresholds of significance as established in the City of San Jose's Transportation Analysis Policy (Policy 5-1). While the policy includes thresholds of significance for many land use categories, it does not address airports. Therefore, City staff determined that the threshold would be an increase in per passenger VMT compared to existing conditions.

Using the San Jose travel demand model, the existing VMT for the airport calculates to 755,742 miles per day. This includes all types of trips: passengers, employees, air cargo, general aviation, etc. Dividing by the number of daily passengers yields a VMT per passenger number of 18.64 miles. While the number is expressed per passenger, it actually represents all trips. Performing the same calculation for the buildout of the Master Plan (year 2037) yields an estimate of 18.44 miles per passenger. Since this value is lower than the existing VMT per passenger, it can be concluded that the project's effect on VMT would be less than significant. The reason the VMT would decrease is that the growth in airport activity would be to serve growth in population and employment in San Jose and nearby cities. According to the San Jose General Plan, future growth is more concentrated in existing developed areas, which are nearer to the airport than outlying areas. This will result in slightly shorter trip lengths for airport trips.

Cumulative VMT Effect Analysis

The project is consistent with the General Plan goals and policies for the following reasons:

- The project site provides bicycle lanes along Coleman Avenue and connections to the Guadalupe River Trail.
- Route 60 provides transit service to and from the San Jose Airport.
- The project site provides bus stops with the site and bus stops along Coleman Avenue.
- The project would increase the employment density in the project area.

Non-CEQA Local Transportation Analysis

Santa Clara Intersection Analysis

Four of the study intersections are located in the City of Santa Clara. Of the four study intersections within the City of Santa Clara, the project would have an adverse effect at three of the study intersections.

De La Cruz Boulevard and Central Expressway

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hour under all future scenarios including background, background plus project and cumulative conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on the CMP's level of service effect criteria.

Improvement Measure. This intersection is controlled by Santa Clara County. The Comprehensive County Expressway Planning Study identifies the conversion of HOV to mixed-flow lanes on Central Expressway as a Tier 1A project. The City Place development in Santa Clara also identifies adding a second southbound right-turn lane and a third northbound left-turn lane as an improvement. With implementation of these improvements, the intersection would operate at an unacceptable LOS F during the PM peak hour, but the average delay would be better than background conditions. It is assumed that City Place, in conjunction with Santa Clara County will implement this improvement.

De La Cruz Boulevard and Martin Avenue

Adverse Effect: This intersection is expected to operate at LOS F during the AM peak hour under cumulative plus project conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on Santa Clara's level of service effect criteria.

Improvement Measure. To address this deficiency a second eastbound to northbound left-turn lane could be added to Martin Avenue. This improvement can be achieved by restriping the eastbound lane configuration to add an additional left-turn lane. With the implementation of this improvement, the intersection would operate at LOS C during the AM peak hour under background plus project conditions. This improvement does not require Martin Avenue to be widened.

Coleman Avenue and Brokaw Road

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hour under all future scenarios including background, background plus project and cumulative conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on the City of Santa Clara's level of service effect criteria.

Improvement Measure. The recommended improvement is to add a third southbound through on Coleman Avenue by removing the pork chop island, squaring off the corner, and restriping to provide exclusive southbound through and right turn lanes. In addition, it would be necessary to restripe the east and west legs of the intersection to provide exclusive right turn lanes. This would require modifications to the signal phasing. With implementation of these improvements, the intersection would operate at an acceptable LOS C during the PM peak hour under background plus project conditions. This measure does not require Brokaw Road to be widened. However, to accommodate future bike lanes, Brokaw Road would need to be widened by 10 feet. This improvement already has been conditioned on approved projects in Santa Clara.

San Jose Intersection Operation Analysis

The remaining nine study intersections are under the City of San Jose's jurisdiction. The analysis shows that all but one of the signalized study intersections in San Jose would operate at an acceptable level of service (LOS D or better) under all future scenarios during the AM and PM peak hours.

The intersection of N. First Street and Brokaw Road is expected to operate at LOS E during the PM peak hour under background plus project conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause a non-CEQA adverse effect on the intersection operations at this location.

The City, VTA, and Caltrans are currently pursuing a project that would implement roadway improvements adjacent to the N. First Street/Brokaw Road intersection. These improvements include the reconfiguration and consolidation of the northbound US 101 ramps at First/Brokaw, a new overcrossing of US 101 at Zanker Road/Fourth Street, and the extension of Skyport Drive from First to Fourth Streets. These improvements are intended to improve traffic operations in this area, including at the N. First Street/Brokaw Road intersection.

Freeway Segment Analysis

The results show that the project would cause increases in traffic volumes that are one percent or more of freeway capacity on the following study freeway segments currently operating at LOS F, and none of the study freeway segments currently operating at LOS E or better would worsen to LOS F as a result of the project.

- US 101, from SR 87 to Trimble - Northbound and Southbound
- US 101, from I-880 to Old Bayshore Highway – Northbound
- I-880, from The Alameda to Coleman Avenue – Northbound and Southbound
- SR 87, from Skyport Drive to US 101

Table ES 1
Santa Clara Intersection Level of Service Summary

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions		Background Conditions						Cumulative Conditions					
							No Project		with Project				No Project		with Project			
					Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C
1	De La Cruz Boulevard and Central Expressway	AM	11/27/18	Signal	41.7	D	52.4	D-	53.6	D-	1.8	0.032	**126.8**	**F**	**132.8**	**F**	**9.2**	**0.032**
	*(Santa Clara)**	PM	10/4/16		**82.5**	**F**	**129.6**	**F**	**141.3**	**F**	**17.3**	**0.041**	**431.8**	**F**	**440.6**	**F**	**10.1**	**0.029**
2	De La Cruz Boulevard and Martin Avenue	AM	11/27/18	Signal	30.1	C	29.7	C	33.4	C-	4.9	0.051	**122.0**	**F**	**134.6**	**F**	**13.9**	**0.035**
	(Santa Clara)	PM	11/27/18		32.9	C-	33.3	C-	34.0	C-	0.0	0.004	**115.3**	**F**	**116.4**	**F**	**1.3**	**0.004**
3	De La Cruz Boulevard and Reed Street	AM	11/27/18	Signal	11.2	B+	11.3	B+	11.7	B+	0.2	0.006	15.3	B	15.7	B	0.1	0.001
	(Santa Clara)	PM	11/27/18		18.8	B-	18.9	B-	19.5	B-	0.7	0.011	23.6	C	24.0	C	0.5	0.006
4	Coleman Avenue and Brokaw Road	AM	11/27/18	Signal	26.9	C	26.4	C	26.9	C	0.1	0.013	34.3	C-	35.2	D+	0.4	0.013
	(Santa Clara)	PM	11/27/18		**84.5**	**F**	**91.0**	**F**	**97.8**	**F**	**9.4**	**0.028**	**144.9**	**F**	**152.4**	**F**	**12.0**	**0.028**

Note:
* Denotes the CMP designated Intersection
Bold indicates a substandard level of service.
Bold indicates adverse effect caused by the project.

Table ES 2
San Jose Intersection Level of Service Summary

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions Avg. Delay (sec)	Existing Conditions LOS	Background Conditions No Project Avg. Delay (sec)	Background Conditions No Project LOS	Background Conditions with Project Avg. Delay (sec)	Background Conditions with Project LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C
5	US 101 NB Off-Ramp and Brokaw Road*	AM	11/27/18	Signal	31.1	C	35.4	D+	36.9	D+	1.9	0.058
		PM	11/30/16		20.7	C+	23.4	C	23.7	C	-0.4	0.024
6	N. 1st Street and Brokaw Road*	AM	11/27/18	Signal	37.8	D+	43.6	D	44.2	D	1.3	0.011
		PM	10/19/16		40.8	D	52.2	D-	**63.3**	**E**	**19.5**	**0.070**
7	US 101 SB Off-Ramp and Brokaw Road	AM	11/27/18	Signal	45.5	D	47.4	D	51.5	D-	4.4	0.119
		PM	11/27/18		34.0	C-	35.4	D+	34.6	C-	1.6	0.044
8	Technology Drive and Brokaw Road	AM	11/27/18	Signal	28.1	C	28.7	C	28.4	C	-0.7	0.072
		PM	11/27/18		35.7	D+	36.4	D+	36.3	D+	1.4	0.056
9	N. 1st Street and Skyport Drive	AM	11/27/18	Signal	26.3	C	27.2	C	27.0	C	0.2	0.035
		PM	11/27/18		29.9	C	46.2	D	50.7	D	5.8	0.026
10	SR 87 Ramps and Skyport Drive	AM	11/27/18	Signal	17.7	B	21.7	C+	25.7	C	8.6	0.104
		PM	11/27/18		15.6	B	15.9	B	19.5	B-	4.5	0.100
11	Coleman Avenue and Airport Boulevard	AM	11/27/18	Signal	12.5	B	12.7	B	18.4	B-	5.9	0.044
		PM	11/27/18		19.5	B-	18.9	B-	24.4	C	4.3	0.034
12	Coleman Avenue and I-880 SB Off-Ramp*	AM	11/27/18	Signal	22.5	C+	32.6	C-	41.9	D	11.9	0.059
		PM	11/10/16		19.1	B-	21.0	C+	22.4	C+	1.6	0.037
13	Coleman Avenue and I-880 NB Off-Ramp*	AM	11/27/18	Signal	33.3	C-	39.8	D	46.5	D	8.5	0.055
		PM	11/10/16		25.5	C	28.3	C	31.2	C	2.8	0.056

Note:
* Denotes the CMP designated Intersection
Bold indicates a substandard level of service.
Bold indicates an adverse effect on intersection operations caused by the project.

1. Introduction and Overview of the Project

This report presents the results of the transportation analysis (TA) conducted for a proposed Amendment to the Norman Y. Mineta San Jose International Airport Master Plan (the "Project"). The Airport is located on an approximately 1,000-acre site bounded by US 101 on the north, SR 87 on the east, I-880 on the south, and Coleman Avenue/De La Cruz Boulevard on the west.

The existing Airport Master Plan, which was approved in 1997, consists of a comprehensive and integrated package of improvements to airside and landside facilities at the Airport, such improved facilities having the design capacity to fully accommodate the forecast demand for air passenger, air cargo, and general aviation services through 2017 in a comfortable and efficient manner. The 73 capital improvement projects identified in the Airport Master Plan included the reconstruction and lengthening of the Airport's two main runways, numerous taxiway improvements, new and reconstructed passenger terminals with up to 49 air carrier gates, new air cargo and general aviation facilities, several multi-story parking garages, and a new fuel storage facility.

Subsequent to the approval of the Airport Master Plan in 1997, many of the 73 capital improvement projects have been constructed. This includes the majority of the airfield improvement projects such as the extension of the Airport's two main runways to 11,000 feet each and associated taxiway improvements. On the east side of the Airport are new and remodeled passenger terminals, a customs facility for international flights, new/expanded parking lots and garages, and a new consolidated rental car facility. A new fuel storage facility has been constructed, as have numerous upgrades to the Airport's roadway system. On the west side of the Airport, new general aviation facilities have been constructed that include over 300,000 s.f. of aircraft hangars and associated support facilities.

Like most master plans that contain numerous individual projects that are implemented over a multi-year period, the City has amended the 1997 Airport Master Plan multiple times to reflect changed conditions in the aviation industry. The City desires to amend the Airport Master Plan again so that facilities at the Airport reflect the latest aviation demand forecasts and FAA design standards.

The Project consists of new and expanded facilities at the Airport to accommodate the projected demand for air transportation services through a horizon year of 2037. Key facilities in the Project include the construction of the South Concourse of Terminal B, two parking garages, expanded air cargo and general aviation facilities, expanded fuel storage facilities, and modifications to various taxiways on the airfield.

In 2018, the Airport served 14.8 million annual passengers, and the forecast is for the Airport to serve 22.5 million annual passengers in 2037. There also would be an increase in air cargo and general aviation operations. This increase will occur with or without the construction of additional facilities at the

Airport.[1] For the purposes of this TA, however, it is conservatively assumed that all of the growth in Airport activity levels between 2018 and 2037 is attributable to the Project.

This study was conducted for the purpose of satisfying the requirements of the California Environmental Quality Act (CEQA) and the City of San Jose. The potential effects of the Project were evaluated in accordance with the standards set forth by the Cities of San Jose and Santa Clara, and the Santa Clara Valley Transportation Authority (VTA). The VTA administers the Santa Clara County Congestion Management Program (CMP).

The transportation effects of the Project were evaluated following the standards and methodologies set forth in the City of San Jose's *Transportation Analysis Handbook 2018*. Based on the City of San Jose's Transportation Analysis Policy and *Transportation Analysis Handbook 2018*, the TA report for the Project includes a CEQA transportation analysis and a non-CEQA local transportation analysis (LTA).

The Airport and the surrounding study area are shown on Figure 1.

Transportation Policies

In adherence to State of California Senate Bill 743 (SB 743), the City of San Jose has adopted a new Transportation Analysis Policy, Council Policy 5-1. The policy replaces its predecessor (Policy 5-3) and establishes the thresholds for transportation effects under CEQA based on vehicle miles traveled (VMT) instead of intersection level of service (LOS). The intent of this change is to shift the focus of transportation analysis under CEQA from vehicle delay and roadway auto capacity to a reduction in vehicle emissions, and the creation of robust multimodal networks that support integrated land uses. All new projects are required to analyze transportation effects using the VMT metric and conform to Council Policy 5-1. The new Transportation Analysis Policy took effect on March 29, 2018.

The Circulation Element of the *Envision San José 2040 General Plan* includes a set of balanced, long-range, multi-modal transportation goals and policies that provide for a transportation network that is safe, efficient and sustainable (minimizes environmental, financial, and neighborhood effects). These transportation goals and policies are intended to improve multi-modal accessibility to all land uses and create a city where people are less reliant on driving to meet their daily needs. The Envision San Jose 2040 General Plan contains the following policies to encourage the use of non-automobile transportation modes to minimize vehicle trip generation and reduce VMT:

- Consider effects on overall mobility and all travel modes when evaluating transportation effects of new developments or infrastructure projects (TR-1.2);
- Through the entitlement process for new development, projects shall be required to fund, or construct needed transportation improvements for all transportation modes, giving first consideration to improvement of biking, walking and transit facilities and services that encourage reduced vehicle travel demand (TR-1.4);
- Actively coordinate with regional transportation, land use planning, and transit agencies to develop a transportation network with complementary land uses that encourage travel by

[1] This statement is based on the following: 1) the fact that the airline industry is deregulated, meaning that the City has no control over flights to/from the Airport; and 2) the fact that many airports have activity levels in excess of design standards.

bicycling, walking and transit, and ensure that regional greenhouse gas emissions standards are met (TR-1.8);

- Coordinate the planning and implementation of citywide bicycle and pedestrian facilities and supporting infrastructure. Give priority to bicycle and pedestrian safety and access improvements at street crossings and near areas with higher pedestrian concentrations (school, transit, shopping, hospital, and mixed-use areas) (TR-2.1);

- Provide a continuous pedestrian and bicycle system to enhance connectivity throughout the City by completing missing segments. Eliminate or minimize physical obstacles and barriers that impede pedestrian and bicycle movement on City streets. Include consideration of grade-separated crossings at railroad tracks and freeways. Provide safe bicycle and pedestrian connections to all facilities regularly accessed by the public, including the Mineta San Jose International Airport (TR-2.2);

- Integrate the financing, design and construction of pedestrian and bicycle facilities with street projects. Build pedestrian and bicycle improvements at the same time as improvements for vehicular circulation (TR-2.5);

- Require new development where feasible to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements (TR-2.8);

- As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute towards transit ridership. In addition, require that new development is designed to accommodate and to provide direct access to transit facilities (TR-3.3);

- Discourage, as part of the entitlement process, the provision of parking spaces significantly above the number of spaces required by code for a given use (TR-8.4);

- Allow reduced parking requirements for mixed-use developments and for developments providing shared parking or a comprehensive transportation demand management (TDM) program, or developments located near major transit hubs or within Villages and Corridors and other growth areas (TR-8.6);

- Encourage private property owners to share their underutilized parking supplies with the general public and/or other adjacent private developments (TR-8.7);

- Within new development, create and maintain a pedestrian-friendly environment by connecting the internal components with safe, convenient, accessible, and pleasant pedestrian facilities and by requiring pedestrian connections between building entrances, other site features, and adjacent public streets (CD-3.3);

- Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas (LU-9.1);

- Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location. Use the City's Parkland Dedication Ordinance and Park Effect Ordinance to have residential developers build trails when new residential development occurs adjacent to a designated trail location, consistent with other parkland priorities. Encourage developers or property owners to enter into formal agreements with the City to maintain trails adjacent to their properties (PR-8.5).

CEQA Transportation Analysis Scope

The CEQA Transportation Analysis consists of an evaluation of VMT.

VMT Analysis

The City of San Jose's Transportation Analysis Policy establishes procedures for determining project effects on VMT based on a project's description, characteristics, and/or location. The City of San Jose defines VMT as the total miles of travel by personal motorized vehicles that a project is expected to generate in a day.

A project's VMT is compared to the appropriate thresholds of significance based on the project location and type of development. Currently, the VMT policy addresses residential, office, retail, and industrial projects. However, there are no VMT guidelines for airport projects. Therefore, in conjunction with City Staff, a methodology was developed. The total VMT per airport user was calculated. Any increase in VMT per airport user compared to existing conditions would be considered an effect.

The San Jose travel demand forecasting model was used to compare per capita (airport user) VMT under existing conditions to per capita VMT in 2037 with the Project. The VMT was calculated based on the number of enplanements, which was considered representative of all airport users. Even though passengers are used as the denominator of the VMT calculation, the VMT includes all Airport activities, which includes passengers, employees, air cargo and general aviation.

Non-CEQA/Local Transportation Analysis Scope

The Local Transportation Analysis (LTA) supplements the VMT analysis by identifying transportation operational issues that may arise due to a new development, as well as evaluating the effects of a new development on transportation, access, circulation, and other safety-related elements in the proximate area of the Project. The LTA also evaluated the effects of the Project on transit, bicycle, and pedestrian facilities.

The LTA comprises an analysis of AM and PM peak hour traffic conditions for thirteen signalized intersections in the vicinity of the Airport.

Study Intersections

1. De La Cruz Boulevard & Central Expressway (Santa Clara) (CMP)
2. De La Cruz Boulevard & Martin Avenue (Santa Clara)
3. De La Cruz Boulevard & Reed Street (Santa Clara)
4. Coleman Avenue & Brokaw Road (Santa Clara)
5. US 101 NB Off-Ramp & Brokaw Road (CMP)
6. N. 1st Street & Brokaw Road (CMP)
7. US 101 SB Off-Ramp & Brokaw Road
8. Technology Drive & Airport Parkway
9. N. 1st Street & Skyport Drive

10. SR 87 Ramps & Skyport Drive
11. Coleman Avenue & Airport Boulevard
12. Coleman Avenue & I-880 SB Off-Ramp (CMP)
13. Coleman Avenue & I-880 NB Off-Ramp (CMP)

Analysis of Santa Clara Study Intersections

The City of Santa Clara has not adopted CEQA thresholds based on VMT and still uses intersection level of service to evaluate a project's transportation effects.

Analysis of Freeway Segments

The Project is expected to add more than 100 net peak-hour vehicle trips; thus, a CMP analysis is required. A freeway level of service analysis in accordance with VTA CMP methods was conducted to evaluate potential project effects on the following six freeway segments:

Study Freeway Segments

- US 101, between SR 87 and Trimble Road
- US 101, between I-880 and Old Bayshore Highway
- US 101, between I-880 and 4th Street
- I-880, between The Alameda and Coleman Avenue
- I-880, between Coleman Avenue and 1st Street
- SR 87, between Skyport Drive and US 101

Freeway ramp operations are captured in the intersection analysis because all ramps are signalized.

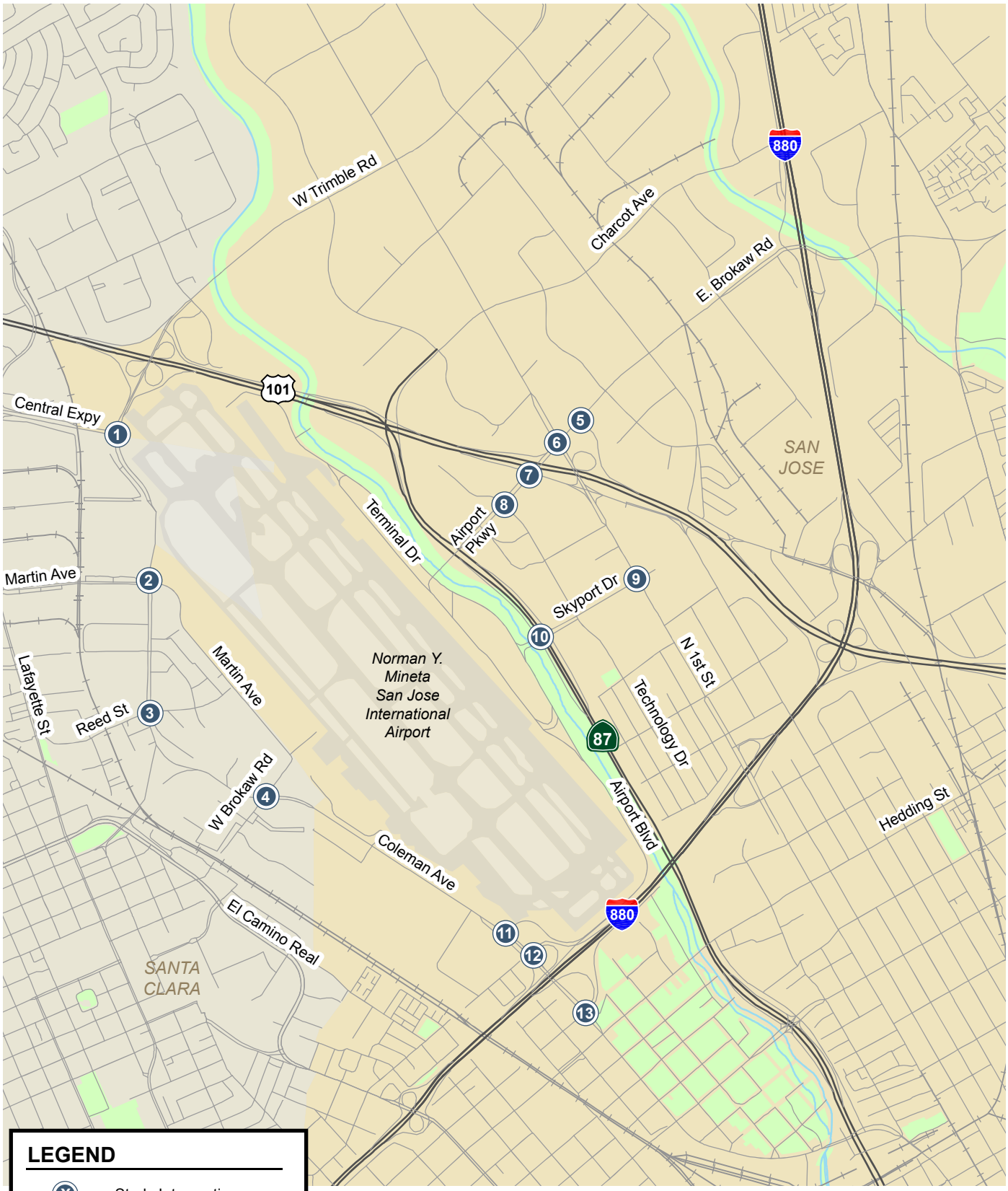


Figure 1
Study Intersections

As previously stated, traffic conditions at the study intersections were analyzed for both the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour is expected to occur between 7:00 AM and 9:00 AM and the PM peak hour is expected to occur between 4:00 PM and 6:00 PM on a regular weekday. These are the peak commute hours during which most traffic congestion occurs on the roadways.

As part of the LTA, traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing traffic volumes at study intersections were based on traffic counts conducted in November 2018. The thirteen study intersections were evaluated with a level of service analysis using TRAFFIX software in accordance with the *2000 Highway Capacity Manual* methodology.

Scenario 2: *Background Conditions.* Background traffic volumes reflect traffic added by nearby approved projects that have not been completed or occupied. The added traffic from approved but not yet completed developments within the City of San Jose was provided by City staff in the form of the Approved Trips Inventory (ATI).

Scenario 3: *Background plus Project Conditions.* Background traffic volumes with the Project (hereafter called Project traffic volumes) were estimated by adding to background traffic volumes the additional traffic generated by the Project. Background plus Project conditions were evaluated relative to background conditions in order to determine potential Project effects.

Scenario 4: *Cumulative Conditions.* Cumulative traffic volumes reflect projected traffic volumes on the planned roadway network with model forecasts for Year 2037 conditions. Cumulative conditions were analyzed only for Santa Clara intersections. San Jose LTA guidelines do not require cumulative analysis.

The LTA also includes an analysis of effects to transit, bicycle, and pedestrian access.

Intersection Operations Analysis Methodology

This section presents the methods used to evaluate traffic operations at all 13 study intersections. It includes descriptions of the data requirements, the analysis methodologies, the applicable level of service standards, and the criteria defining adverse effects at study intersections in San Jose and Santa Clara.

Data Requirements

The data required for the analysis were obtained from new traffic counts, the City of San Jose, the VTA, Congestion Management Program (CMP), and field observations. The following data were collected from these sources:

- existing traffic volumes
- existing lane configurations
- signal timing and phasing
- approved and pending project trips

Level of Service Standards and Analysis Methodologies

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 various analysis methods are described below.

All study intersections in both the City of San Jose and Santa Clara were evaluated based on the *2000 Highway Capacity Manual* (HCM) level of service methodology using the TRAFFIX software. This method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. TRAFFIX is also the CMP-designated intersection level of service methodology, thus, the City of San Jose employs the CMP default values for the analysis parameters. The correlation between average control delay and level of service at signalized intersections is shown in Table 1.

Signalized study intersections are subject to the local municipalities' level of service standards. The City of San Jose has established LOS D as the minimum acceptable intersection operations standard for all signalized intersections unless superseded by an Area Development Policy. The City of Santa Clara level of service standard for signalized intersections is LOS D or better at City-controlled intersections and LOS E or better at expressways and designated CMP intersections.

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

Level of Service	Description	Average Control Delay Per Vehicle (Sec.)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	Up to 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operation with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	Greater than 80.0

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

City of San Jose Definition of Adverse Intersection Operations Effects

According to the City of San Jose's *Transportation Analysis Handbook 2018*, an adverse effect on intersection operations occurs if for either peak hour:

1. The level of service at the intersection degrades from an acceptable level (LOS D or better) under background conditions to an unacceptable level under background plus project conditions, or

2. The level of service at the intersection is an unacceptable level (LOS E or F) under background conditions and the addition of project trips cause both the critical-movement delay at the intersection to increase by four or more seconds *and* the volume-to-capacity ratio (V/C) to increase by one percent (.01) or more.

The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements, i.e., the change in average control delay for critical movements are negative. In this case, the threshold is when the project increases the critical v/c value by 0.01 or more.

Negative effects at signalized intersections can be addressed by the following approaches:

- Reduce project vehicle-trips to eliminate the adverse effects and restore the intersection operations to background conditions.
- Construct improvements to the subject intersection or other parts of the citywide transportation system to increase overall multi-modal capacity;

City of Santa Clara Definition of Adverse Intersection Effects

Criteria are used to establish what constitutes an effect on intersection operations. For this analysis, the criteria used to determine adverse effects on the signalized intersections in Santa Clara is based on the City of Santa Clara level of service standard.

A project is said to create an effect on traffic conditions at a signalized intersection in the City of Santa Clara if for either peak hour:

1. The level of service at the intersection degrades from an acceptable level under background conditions to an unacceptable level under background plus project conditions, or

2. The level of service at the intersection is an unacceptable level under background conditions and the addition of project trips cause both the critical-movement delay at the intersection to increase by four or more seconds *and* the volume-to-capacity ratio (V/C) to increase by one percent (.01) or more.

The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements, i.e., the change in average control delay for critical movements are negative. In this case, the threshold is when the project increases the critical v/c value by 0.01 or more.

An adverse effect by the City of Santa Clara standard is said to be satisfactorily addressed when measures are implemented that would restore intersection level of service to background conditions or better.

Santa Clara County Freeway CMP Guidelines

As prescribed in the CMP technical guidelines, the level of service for freeway segments is estimated based on vehicle density. Density is calculated by the following formula:

$$D = V / (N*S)$$

where:

D= density, in vehicles per mile per lane (vpmpl)

V= peak hour volume, in vehicles per hour (vph)

N= number of travel lanes

S= average travel speed, in miles per hour (mph)

The vehicle density on a segment is correlated to level of service as shown in Table 2. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from high-occupancy vehicle (HOV) lanes (otherwise known as carpool lanes). The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments three lanes or wider in one direction and a capacity of 2,200 vphpl be used for segments two lanes wide in one direction. HOV lanes are specified as having a capacity of 1,800 vphpl. The CMP defines an acceptable level of service for freeway segments as LOS E or better.

CMP Definition of Adverse Freeway Segment Effects

A project is said to create an adverse effect on traffic conditions on a CMP freeway segment if for either peak hour:

1. The level of service on the freeway segment degrades from an acceptable LOS E or better under background conditions to an unacceptable LOS F under background plus project conditions, or

2. The level of service on the freeway segment is an unacceptable LOS F under background plus project conditions and the number of project trips on that segment constitutes at least one percent of capacity on that segment.

An adverse effect by CMP standards is said to be satisfactorily addressed when measures are implemented that would restore freeway conditions to better than background conditions.

Table 2
Freeway Segment Level of Service Definitions Based on Density

Level of Service	Description	Density (vehicles/mile/lane)
A	Average operating speeds at the free-flow speed generally prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	0-11
B	Speeds at the free-flow speed are generally maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.	<11-18
C	Speeds at or near the free-flow speed of the freeway prevail. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more vigilance on the part of the driver.	<18-26
D	Speeds begin to decline slightly with increased flows at this level. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels.	<26-46
E	At this level, the freeway operates at or near capacity. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream, leaving little room to maneuver within the traffic stream.	<46-58
F	Vehicular flow breakdowns occurs. Large queues form behind breakdown points.	<58

Source: Santa Clara Valley Transportation Authority, Transportation Effect Analysis Guidelines, Updated March 2009 (Based on the *Highway Capacity Manual* (2000), Washington D.C.)

Report Organization

The remainder of this report is divided into four chapters. Chapter 2 describes existing transportation conditions including the existing roadway network, transit services, bicycle and pedestrian facilities. Chapter 3 describes the CEQA transportation analysis, including the project VMT and cumulative transportation analysis. Chapter 4 describes the local transportation analysis including the method by which project traffic is estimated, intersection operations analysis for background plus project conditions, any adverse intersection traffic effects caused by the project, intersection vehicle queuing analysis, and effects on bicycle, pedestrian, and transit facilities. Chapter 5 presents the conclusions of the transportation analysis.

2. Existing Conditions

This chapter describes the existing conditions for transportation facilities in the vicinity of the Airport, including the roadway network, transit service, pedestrian and bicycle facilities, and the existing levels of service of the key intersections in the study area.

Existing Roadway Network

Regional access to the Airport is provided via US 101, SR 87, and I-880. These roadways are described below.

US 101 is a north/south freeway that extends from San Francisco through San Mateo and Santa Clara Counties. In San Jose, US 101 is eight lanes wide, including two HOV lanes (one in each direction). US 101 provides access to the Airport via SR 87 and via an interchange at Brokaw Road.

SR 87 is a north/south freeway that extends from US 101 to SR 85 in San Jose. SR 87 is six to eight lanes wide, including two HOV lanes (one in each direction). SR 87 provides access to the Airport via a full interchange at Skyport Drive.

I-880 is a north/south freeway that extends from Oakland through Santa Clara County. In San Jose, I-880 is six lanes wide with three mixed-flow lanes in each direction. I-880 provides access to the Airport via a full interchange at Coleman Avenue.

Local access to the Airport is provided via De La Cruz Boulevard, Brokaw Road, Airport Parkway, Skyport Drive, and Coleman Avenue. These roadways are described below.

De La Cruz Boulevard is a north/south roadway that extends from US 101 to Lewis Street, where it connects to Coleman Avenue. De La Cruz Boulevard is four-to-six lanes wide and has a posted speed limit of 40 mph. De La Cruz Boulevard has mostly discontinuous sidewalks throughout the segment. In the vicinity of the Airport, on-street parking is permitted from Martin Avenue to Reed Street.

Brokaw Road is a west/east roadway that extends from Oakland Road to the US 101 Southbound (SB) Off-Ramp, where it changes names to Airport Parkway. Brokaw Road is six-lanes wide and has continuous sidewalks from Zanker Road to North 1St Street. The posted speed limit is 40 mph. Brokaw

Road has bicycle lanes from Oakland Road to North 1St Street. To the west, Brokaw Road becomes Airport Parkway.

Airport Parkway is a west/east roadway that extends from the US 101 SB Off-Ramp to the Airport. Airport Parkway is three-to-four lanes wide, and the posted speed limit is 35 mph. Airport Parkway has bicycle lanes throughout the segment, and on-street parking is permitted between Technology Place and SR 87. The on-street parking near the Airport is the designated cellphone waiting area. Airport Parkway also has continuous sidewalks from the US 101 SB Off-Ramp to the Airport. Airport Parkway becomes Brokaw Road east of Matrix Boulevard.

Skyport Drive is a west/east roadway that extends from the Airport to N. 1st Street. Skyport Drive is two-to-six lanes wide and the posted speed limit is 40 mph. Skyport Drive has bicycle lanes between N. 1st Street and Technology Drive and on-street parking is prohibited. Skyport Drive also has continuous sidewalks throughout the segment but has no sidewalks on the north side of Skyport Drive from the Airport to Technology Drive. In addition, Skyport Drive does not have crosswalks for pedestrians to access the terminals at the Airport. Skyport Drive becomes Airport Boulevard upon entering the Airport.

Coleman Avenue is a north/south roadway that extends from Julian Street to Reed Street. Coleman Avenue becomes De La Cruz Boulevard north of Reed Street. Coleman Avenue is six-lanes wide, and the posted speed limit is 40 mph. Coleman Avenue has bicycle lanes from Santa Teresa Street to Taylor Street and from I-880 to Aviation Avenue. Coleman Avenue has sidewalks along both sides of the street. However, there are discontinuous sidewalks on the east side of the street between the Coleman Avenue/I-880 NB Off-Ramp intersection and the Coleman Avenue/I-880 SB Off-Ramp intersection. In the vicinity of the Airport, Coleman Avenue has sidewalks on both sides of the street.

Existing Pedestrian and Bicycle Facilities

Existing Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the Airport vicinity, sidewalks exist along portions of De La Cruz Boulevard, Martin Avenue, Reed Street, Brokaw Road, Aviation Avenue, Airport Boulevard, Airport Parkway, Skyport Drive, and Coleman Avenue. Marked crosswalks with pedestrian signal heads and push buttons are provided at all of the signalized study intersections except for the Coleman Avenue & I-880 SB Off-Ramp. However, in general there is a lack of pedestrian facilities to access the Airport and to walk between the parking lots and the terminals. There are no pedestrian facilities to get from Skyport Drive to the terminals. There are no pedestrian facilities to get from Coleman Avenue to the terminals or the air cargo area. Sidewalks to access the general aviation buildings are discontinuous on Brokaw Road and Martin Avenue. To get to the Airport from De La Cruz Boulevard, there is an opening in the fence line at the Central Expressway & De La Cruz intersection, but there are no sidewalks within the Airport on Ewert Road. There are no sidewalks to get from the long-term parking lot to Terminal A. Figure 2 shows where sidewalks are discontinuous.

Figure 2
Locations with No Sidewalks

Existing Bicycle Facilities

In the vicinity of the Airport, bicycle lanes exist along Coleman Avenue from Aviation Avenue to Taylor Street, along Airport Parkway/Brokaw Road from SR 87 to Oakland Road, along Technology Drive from Airport Parkway to Skyport Drive, and along Skyport Drive from Technology Drive to 1st Street. There are also bike lanes on Ewert Road, which provide a connection from the west side of the airport to the east side. The existing bicycle facilities within the study area are shown on Figure 3.

Guadalupe River Park Trail

The Guadalupe River/Los Alamitos Creek multi-use trail system runs through the City of San Jose along the Guadalupe River and separates bicyclists from motor vehicle traffic. The Guadalupe River trail is a continuous Class 1/paved path from W Virginia Street in the south to Alviso Marina County Park in the north. Within the Airport vicinity, the trail runs north-south along the east side of the Airport. The trail provides a connection to the Airport at Airport Parkway but not at Skyport Drive.

Existing Transit Service

Public Transit Service

Existing public transit service to the Airport is described below and shown on Figure 4.

VTA Bus Route 60 provides service to the Airport terminals from the Metro Airport light rail transit (LRT) station on North First Street and from the Santa Clara Transit Center/Caltrain Station.[2] Thus, Route 60 provides a bus connection from the west side of the airport to the east side. Route 60 also connects to the Milpitas BART Station, which is scheduled to open in December 2019.

The VTA's LRT system operates along North First Street approximately 0.5-mile east of the Airport. The LRT serves San Jose, Milpitas, Santa Clara, Sunnyvale, Mountain View, and Campbell. The LRT also serves the San Jose Diridon Station with connections, to Caltrain, Altamont Commuter Express (ACE), Capitol Corridor, and Amtrak trains. As noted above, VTA Bus Route 60 provides service between the Metro/Airport LRT Station and the Airport terminals.

The Santa Clara Caltrain Station is located approximately 0.5-mile west of the Airport Caltrain operates between San Francisco on the north and Gilroy on the south. Currently, there are 92 trains each weekday, 28 trains on Saturdays, and 24 trains on Sundays. As noted above, VTA Bus Route 60 provides service between the Santa Clara Caltrain Station and the Airport terminals.

In addition to the above, the Airport operates an on-Airport shuttle bus system that provides connections between the passenger terminals, rental car center, and the economy parking lot.

Existing Private Transportation Service

Numerous private entities provide transportation service to and from the Airport. These include shuttles between hotels and off-airport parking sites, as well as taxis and limos. Transportation network companies (TNCs) such as Lyft and Uber also serve the Airport. Twelve rental car companies currently operate at the Airport in the Rental Car Center, which is located near Terminal B.

Scheduled private bus service includes 1) Greyhound Route 86, which runs between King City and San Jose (Airport and Downtown); and 2) Monterey Airbus, which provides service between Monterey and San Francisco International Airport (SFO), with stops at the San Jose Airport.

[2] In 2019, VTA Bus Route 10 was integrated into Route 60.

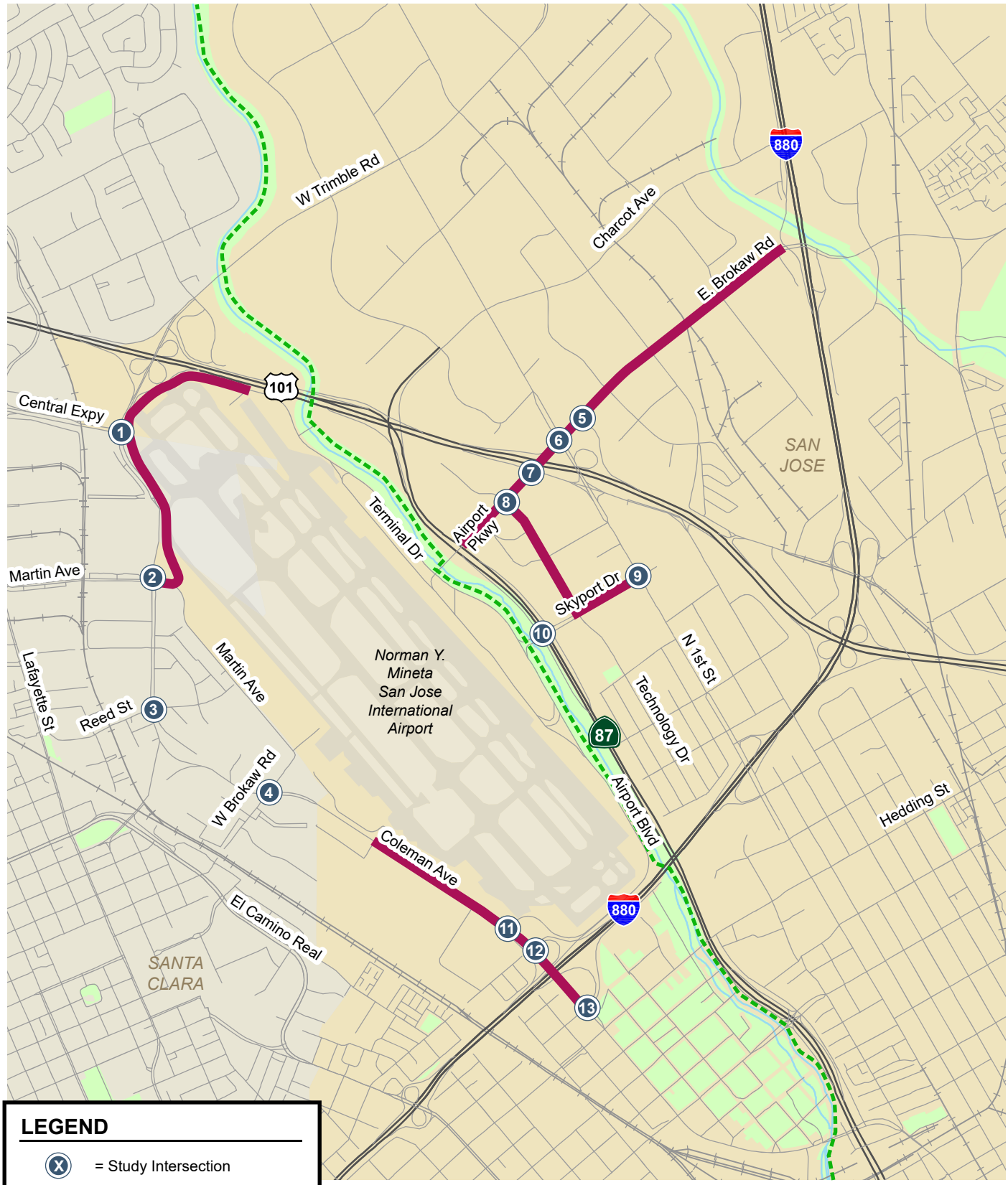


Figure 3
Existing Bicycle Facilities

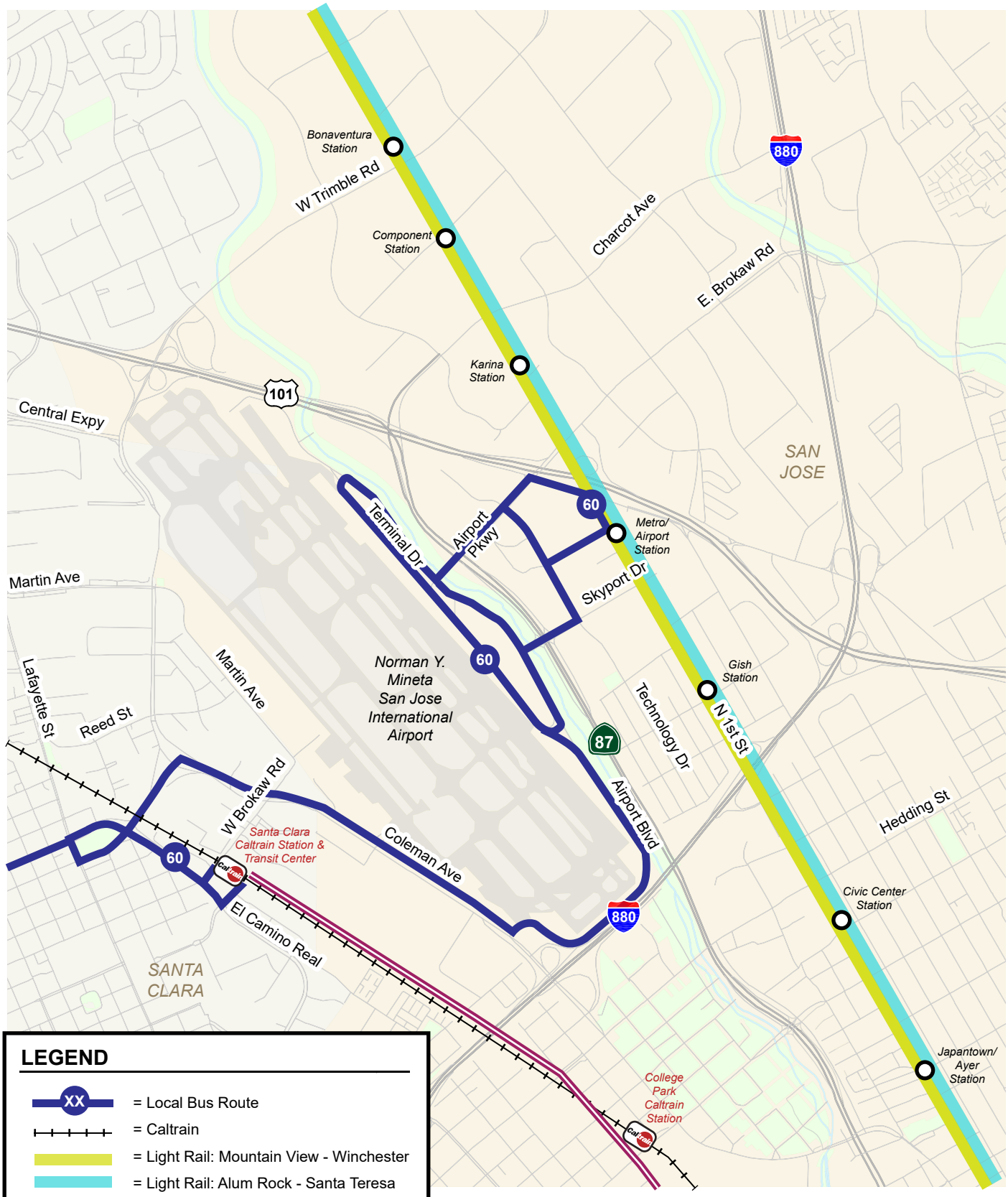


Figure 4
Existing Transit Services

Existing Intersection Lane Configurations

The existing lane configurations at the study intersections were determined by observations in the field and are shown on Figure 5.

Existing Traffic Volumes

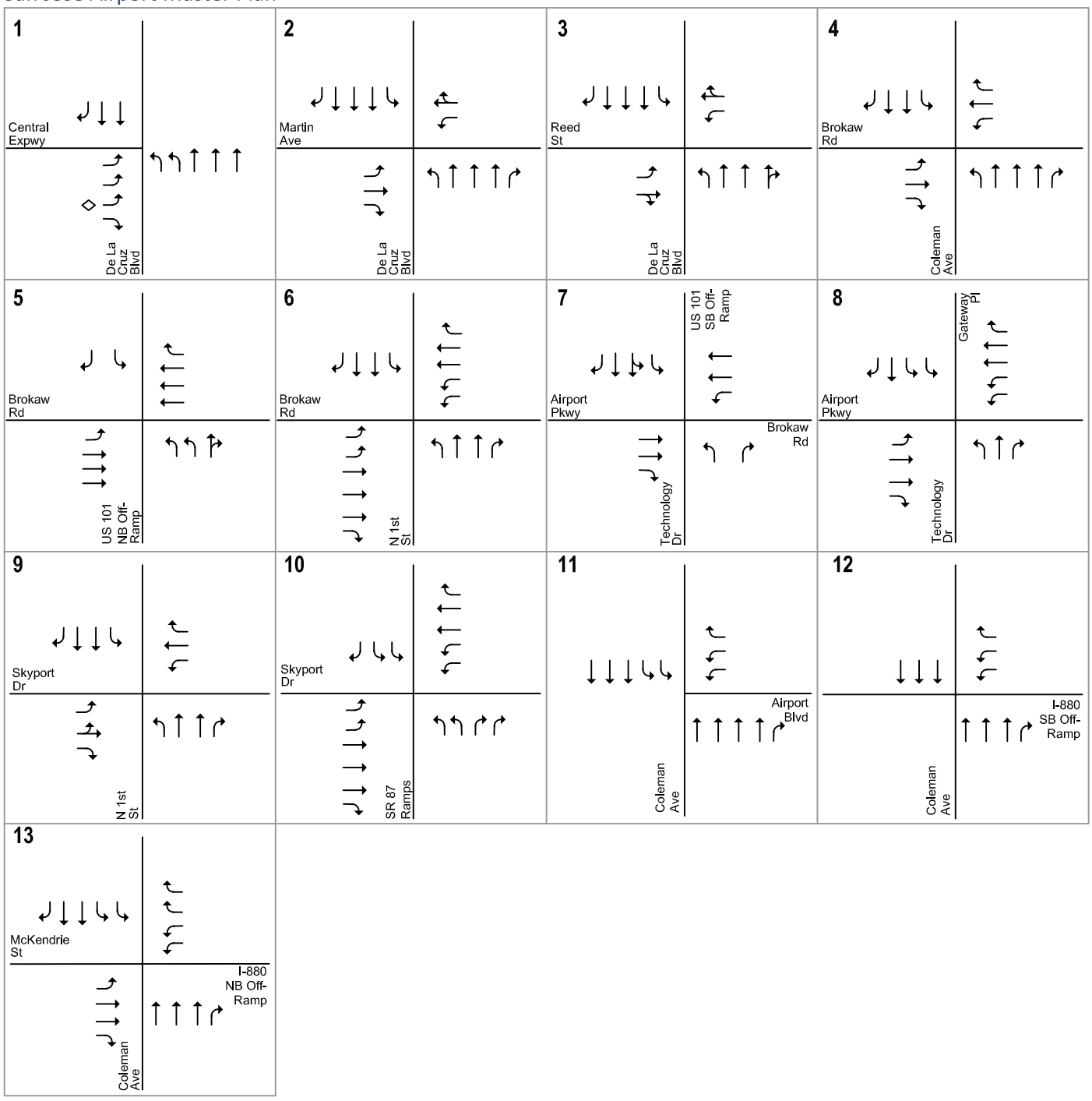
Existing AM and PM peak hour traffic volumes for the study intersections were obtained from new manual turning movement counts conducted in November 2018. The PM peak hour volumes for the CMP study intersections of De La Cruz Boulevard/Central Expressway, US 101 NB Off-Ramp/Brokaw Road, North 1st Street/Brokaw Road, Coleman Avenue/I-880 SB Off-Ramp, and Coleman Avenue/I-880 NB Off-Ramp were obtained from the VTA traffic count database. The existing peak-hour intersection volumes are shown in Figure 6. Intersection turning-movement counts conducted for this analysis are presented in Appendix A.

Existing Intersection Traffic Operations

Intersection traffic operations were evaluated against the standards of the Cities of San Jose and Santa Clara. The results of the intersection level of service analysis under existing conditions are summarized in Table 3.

The results of the analysis show that many of the study intersection operate within their Level of Service (LOS) standard. However, the De La Cruz Boulevard/Central Expressway and Coleman Avenue/Brokaw Road intersections currently operate at LOS F during the PM peak hour.

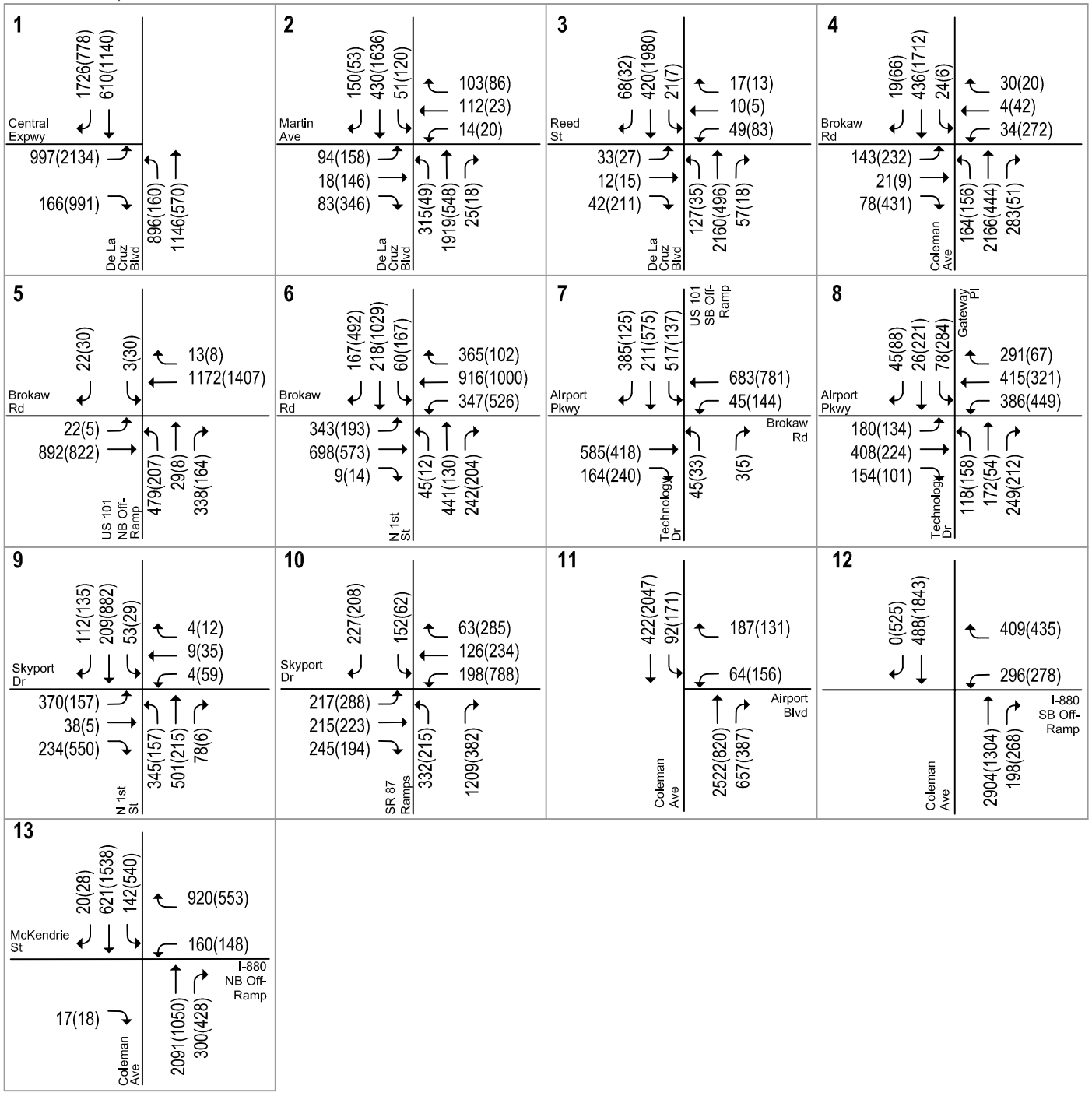
The intersection levels of service calculation sheets are included in Appendix C.



LEGEND

◇ = HOV Lane

Figure 5
Existing Lane Configurations



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 6
Existing Traffic Volumes

Table 3
Existing Intersection Levels of Service

Study Number	Intersection	Peak Hour	Count Date	LOS Standard	Existing Conditions Avg. Delay (sec)	Existing Conditions LOS
1	De La Cruz Boulevard and Central Expressway (Santa Clara)*	AM PM	11/27/18 10/04/16	E	41.7 **82.5**	D **F**
2	De La Cruz Boulevard and Martin Avenue (Santa Clara)	AM PM	11/27/18 11/27/18	D	30.1 32.9	C C-
3	De La Cruz Boulevard and Reed Street (Santa Clara)	AM PM	11/27/18 11/27/18	D	11.2 18.8	B+ B-
4	Coleman Avenue and Brokaw Road (Santa Clara)	AM PM	11/27/18 11/27/18	D	26.9 **84.5**	C **F**
5	US 101 NB Off-Ramp and Brokaw Road*	AM PM	11/27/18 11/30/16	E	31.1 20.7	C C+
6	N. 1st Street and Brokaw Road*	AM PM	11/27/18 10/19/16	E	37.8 40.8	D+ D
7	US 101 SB Off-Ramp and Brokaw Road	AM PM	11/27/18 11/27/18	D	45.5 34.0	D C-
8	Technology Drive and Brokaw Road	AM PM	11/27/18 11/27/18	D	28.1 35.7	C D+
9	N. 1st Street and Skyport Drive	AM PM	11/27/18 11/27/18	D	26.3 29.9	C C
10	SR 87 Ramps and Skyport Drive	AM PM	11/27/18 11/27/18	D	17.7 15.6	B B
11	Coleman Avenue and Airport Boulevard	AM PM	11/27/18 11/27/18	D	12.5 19.5	B B-
12	Coleman Avenue and I-880 SB Off-Ramp*	AM PM	11/27/18 11/10/16	E	22.5 19.1	C+ B-
13	Coleman Avenue and I-880 NB Off-Ramp*	AM PM	11/27/18 11/10/16	E	33.3 25.5	C- C

Note:
* Denotes the CMP designated Intersection
Bold indicates a substandard level of service.
Bold indicates an adverse effect on intersection operations caused by the project.

Existing Freeway Levels of Service

Existing weekday AM and PM peak-hour traffic volumes on the study freeway segments were obtained from the 2017 CMP Annual Monitoring and Conformance Report. The existing freeway levels of service during the weekday peak hours of traffic are summarized in Table 4. Several freeway segments near the airport currently operate at LOS F during peak hours.

Table 4
Existing Freeway Levels of Service in Santa Clara County

Freeway	Dir.	Segment	Peak Hour	Existing Conditions - Mixed Flow Lanes[1] Avg. Speed (mph)	# of Lanes	Capacity	Density (pc/mi/ln)	Volume	LOS[2]
US 101	NB	SR 87 On-Ramp to Trimble Rd Off-Ramp	AM	8	3	6,900	**87.4**	**2,112**	**F**
			PM	63	3	6,900	24.0	4,551	C
US 101	NB	I-880 On-Ramp to Old Bayshore Hwy On-Ramp	AM	10	4	9,200	**84.2**	**3,256**	**F**
			PM	61	4	9,200	28.9	7,000	D
US 101	SB	4th St On-Ramp to I-880 Off-Ramp	AM	57	4	9,200	33.4	7,620	D
			PM	9	4	9,200	**86.4**	**2,944**	**F**
US 101	NB	Trimble Rd On-Ramp to SR 87 Off-Ramp	AM	51	3	6,900	38.8	5,964	D
			PM	28	3	6,900	**58.6**	**4,932**	**F**
I-880	NB	The Alameda On-Ramp to Coleman Ave Off-Ramp	AM	14	3	6,900	**75.9**	**3,291**	**F**
			PM	8	3	6,900	**86.8**	**2,175**	**F**
I-880	SB	Coleman Ave On-Ramp to 1st St Off-Ramp	AM	17	3	6,900	**72.7**	**3,603**	**F**
			PM	15	3	6,900	**75.2**	**3,360**	**F**
I-880	SB	1st St On-Ramp to Coleman Ave Off-Ramp	AM	39	3	6,900	48.3	5,706	E
			PM	21	3	6,900	**66.9**	**4,173**	**F**
I-880	SB	Coleman Ave On-Ramp to The Alameda Off-Ramp	AM	56	3	6,900	34.2	5,772	D
			PM	26	3	6,900	**61.0**	**4,719**	**F**
SR 87	SB	Skyport Dr On-Ramp to US 101 Off-Ramp	AM	12	2	4,400	**79.3**	**1,960**	**F**
			PM	57	2	4,400	33.3	3,800	D
SR 87	SB	US 101 On-Ramp to Skyport Dr Off-Ramp	AM	52	2	4,400	37.8	3,964	D
			PM	38	2	4,400	49.2	3,770	E

Notes

Dir. = direction, NB = northbound, SB = southbound, mph = miles per hour, pc/mi/ln = passenger cars per mile per lane

[1] Existing freeway conditions information is published in the Santa Clara Valley Transportation Authority (VTA) *2017 CMP Monitoring and Conformance Report*.

[2] The Santa Clara VTA report references the Freeway LOS criteria presented in the *Traffic Level of Service Analysis Guidelines (June 2003)* published by Santa Clara VTA.

BOLD indicates substandard level of service.

Observed Existing Traffic Conditions

Traffic conditions were observed in the field in order to identify existing operational deficiencies and to confirm the accuracy of calculated intersection levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, and (2) to identify any locations where the level of service analysis does not accurately reflect existing traffic conditions. The following two intersections were observed to have some operational problems.

Central Expressway/De La Cruz Boulevard

During the AM peak hour, there was a long vehicle queue in the northbound left-turn lanes on De La Cruz Boulevard due to high traffic volume. Typically, the last one or two vehicles in the left turn queue were observed to take more than one cycle to get through the intersection. In addition, the northbound left-turn lanes exceed the maximum storage length.

During the PM peak hour, there were long vehicle queues in the eastbound left-turn lanes on Central Expressway due to high traffic volume. The eastbound left-turn traffic creates a spill back due to vehicles heading to the US 101 SB On-Ramp. However, there is enough green time given to allow the queued vehicles to cross through the intersection.

Coleman Avenue/Brokaw Road

During the PM peak hour, there was a long queue in the westbound left-turn lane on Brokaw Road. The long vehicle queue extends beyond the Brokaw Road/Martin Avenue bend. Typically, there are four to five vehicles that require more than one cycle to clear the intersection.

3. CEQA Transportation Analysis

This chapter describes the CEQA transportation analysis, which investigates potential project effects on VMT.

VMT Effect Analysis

In San Jose the transportation effect analysis under CEQA uses the VMT metric to evaluate a project's transportation effects by comparing against the VMT thresholds of significance as established in San Jose's Transportation Analysis Policy. While the policy addresses many land use categories, it does not address airports. Therefore, City staff determined that the threshold would be an increase in per airport user VMT compared to existing conditions.

Hexagon used the San Jose travel demand forecasting model to calculate airport VMT under existing and future conditions. The following paragraphs describe the modeling process for the airport.

Modeling of Airport Travel

One of the components of the City of San Jose Travel Forecasting Model ("CSJ model") is the Air Passenger Model (APM). The APM estimates trips made by air passengers traveling to and from the airport. The model uses the daily number of enplanements, socio-economic characteristics, travel time, cost and distance to estimate trips generated by airport users. The APM model was used to forecast the change in (ground) traffic associated with the project's projected increase in air passenger activity.

Land Use Assumptions

The San Jose International Airport (SJIA) is represented by four traffic analysis zones (taz's) in the CSJ model. Two taz's represent the area west of the runways, one taz is used to model the employees working at the terminals and one zone represents the airline passengers arriving at and departing from the airport. The CSJ 2015 base year land use data includes about 3,600 airport jobs and, according to the *California Air Traffic Statistical Reports*, the annual number of air passengers at the SJIA was 9,800,000 in 2015 and 14,300,000 in 2018. Hence, the number of air passengers did increase by 46% between 2015 and 2018. It was assumed that employment at the airport increased at the same rate, resulting in 5,200 jobs by 2018.

Airport Model Validation

The APM estimates the number of arriving and departing passengers by mode of travel, i.e., personal vehicles (self-drive and drop-off), public transit, and on-call transportation (taxi, limousine). Note that the AMP does not explicitly model ride sharing services or Transportation Network Vehicles (TNC's) such as LYFT and UBER since the APM model was developed from 1990 travel data when these

services were not available. However, ride sharing vehicles are accounted for in the model's vehicle trip generation estimates since these vehicles are included in the traffic counts.

Trip Generation

Two types of trips are generated by the airport: work trips made by airport employees and air passenger trips, made by passengers arriving at and leaving from the airport. Model validation of airport trips was aimed at matching existing (2018) peak hour and daily vehicle and transit trips made by both airport employees and air passengers. AM and PM peak hour traffic counts were obtained at all driveways and intersections surrounding the airport. Daily traffic volumes generated by the airport were estimated by factoring the AM and PM peak hour trips. The CSJ model was run for the year 2018 and the model estimated vehicle trips were compared to the 2018 traffic counts. A comparison of model estimated trip generation and the number of observed vehicle trips made by the SJIA is presented in Table 5 below.

Table 5
Observed and Modeled Vehicle Trip Generation Comparison

		AM Peak Hour			PM Peak Hour		
	Daily	In	Out	Total	In	Out	Total
Observed	56,380	2,273	1,930	4,203	1,974	1,638	3,612
Modeled	56,054	2168	2065	4,233	2043	1669	3,712
Modeled/Observed	0.99	0.95	1.07	1.01	1.03	1.02	1.03

Trip Distribution

The trip distribution pattern of the work trips was estimated with the home-based work distribution sub-model of the CSJ model. The trip lengths and directional orientation of the work trips made by airport employees assumed the same distribution patterns as other work trips made by employed residents in the county. The distribution of the air passenger trips was estimated based on travel characteristics derived from the MTC's 1990 Air Passenger Survey. This survey was conducted to obtain travel characteristics of air passengers at the three major airports in the Bay Area (San Francisco, Oakland and San Jose). This comprehensive survey provides insight in travel patterns of four different trip purposes (resident-business, resident-nonbusiness, non-resident business and non-resident non-business) at each of the airports. The distribution of SJIA trips was based on percentages of airport trips made by residents and business travelers with origins and destinations in the nearby counties. The share of passenger trips for each county was obtained from the 1990 Air Passenger Survey. The passenger trips by county were then disaggregated to the traffic analysis zone level based on socio-economic characteristics (household population, employed residents and number of jobs).

Mode Choice

The air passenger mode choice model estimates the number of trips by mode for each of the four aforementioned trip purposes made by air passengers. Air passenger trips by mode are estimated for personal vehicles (self-drive and drop off), transit and on-call. While the model could not be validated for auto and on-call vehicle trips separately since the traffic counts can't be split out into personal and on-call vehicles, the modeled transit trips of workers and air passengers were compared to the daily transit trips. Although the Monterey Salinas Transit Route 86 (two trips per day) and VTA route 304 (eight trips per day) also serve the airport, Route 10, which runs with 15-minute headways all day, from 5:00 AM until 11:00 PM, serves almost all public transportation trips to and from the airport. The model estimates 1,522 transit trips to and from the airport. This estimate compares very well with the average daily ridership in 2015 of 1,499 boardings on Route 10. The number of vehicle trips associated with airport travel is shown in Table 5 and compares very well with the traffic counts.

Vehicle Miles Traveled

Using the CSJ model, existing VMT for the airport was calculated. Existing VMT was calculated by multiplying the number of daily vehicle trip by the trip distance length between the airport zones and all other zones in the model. The existing VMT for airport trips was calculated to be 755,742 miles per day.

Future Forecasts

The CSJ model was used to develop future forecasts for the airport expansion project. The land use data for the airport zones was updated to reflect horizon year 2037 project conditions. The annual number of air passengers is projected to increase by 52%, from 14.8 million in 2018 and to 22.5 million in 2037. It was assumed that the 52% increase in air passengers would also result in an increase of 52% of airport jobs to serve the growth in passenger activity at the airport. Thus, the number of airport jobs was increased from 5,200 in 2018 to 8,200 in 2037. For the areas outside the SJIA, the City of San Jose's 2040 General Plan land use assumptions were used. Major transportation improvement projects such as the Phase II BART Extension to Santa Clara, the conversion of two-person HOV lanes to Express Lanes on the freeways and the Caltrain electrification project were assumed to be operational by 2037.

Year 2037 travel forecasts were developed with the CSJ model to predict vehicular traffic, transit ridership, intersection turning movements at the study intersections, and daily traffic volumes on roadways in the vicinity of the airport. In addition, daily VMT was calculated for the trips associated with airport travel.

Results

Using the San Jose travel demand model, the existing VMT for the Airport calculates to 755,742 miles per day (see Table 6). This includes all types of trips: passengers, employees, air cargo, general aviation, etc. While the trips represent all airport users, the number of passengers is used as a representative statistic because that number is how airport usage is typically tracked and forecasted. As the number of passengers increases, so increases other airport users such as employees and air cargo.

Table 6
VMT Analysis

VMT San Jose Airport	2018	2037
Annual Passengers	14,800,000	22,500,000
Number of Daily Passengers [Assume 365 Days]	40,548	61,644
Daily Vehicle Trips [Modeled]	56,055	84,883
Daily VMT	755,742	1,136,790
Daily VMT/Passenger	18.64	18.44

Dividing by the number of daily passengers yields a VMT per airport user number of 18.64 miles. While the number is expressed per passenger it actually represents all Airport-related trips. Performing the same calculation for the buildout of the Master Plan (year 2037) yields an estimate of 18.44 miles per airport user. Since this value is lower than the existing VMT per passenger, it can be concluded that the Project's effect on VMT would be less than significant.

Table 7 shows a breakdown of airport VMT by distance. The table shows that there would be a slight difference in VMT by distance with the Master Plan (2037). Overall, the VMT per vehicle for the existing airport is calculated to be 13.48 and with the Master Plan it would be 13.39.

Table 7
Airport VMT's by Distance Interval

Distance from Airport in Miles	No Project		Project	
	VMT	% of Total VMT	VMT	% of Total VMT
0 - 3	3,229	0.4	7,495	0.7
3 - 6	51,468	6.8	75,943	6.7
6 - 9	90,463	12.0	135,557	11.9
9 - 12	117,324	15.5	153,482	13.5
12 - 15	90,766	12.0	162,386	14.2
15 - 18	53,049	7.0	96,085	8.4
18 - 21	10,672	1.4	25,734	2.3
21 - 24	15,831	2.1	33,556	2.9
24 - 27	40,921	5.4	28,532	2.5
27 - 30	35,305	4.7	54,553	4.8
30 - 33	25,524	3.4	37,440	3.3
33 - 36	47,331	6.3	36,490	3.2
36 - 39	31,923	4.2	81,895	7.2
39 - 42	24,674	3.3	57,375	5.0
42 - 45	31,093	4.1	48,917	4.3
45 - 48	39,093	5.2	48,735	4.3
48 - 51	22,182	2.9	11,707	1.0
51 - 54	10,564	1.4	11,839	1.0
54 - 57	5,633	0.7	9,503	0.8
57 - 60	2,456	0.3	6,723	0.6
60 - 63	1,682	0.2	2,653	0.2
63 - 66	1,151	0.2	3,724	0.3
66 - 69	906	0.1	4,121	0.4
69 - 72	105	0.0	525	0.0
72 - 75	158	0.0	233	0.0
75 - 78	248	0.0	446	0.0
78 - 81	185	0.0	150	0.0
81 - 84	1,806	0.2	5,170	0.5

The reduced trip length for airport users in the future is consistent with the goals of the San Jose General Plan to focus future development in centralized, already developed areas rather than on the outskirts of town. The San Jose Airport primarily serves the local market of San Jose and nearby cities since there are also airports in San Francisco and Oakland to serve other Bay Area travelers. The reason the San Jose Airport is predicting an increase in air travel is because of the expected growth in households and jobs in the South Bay. Because that growth will be relatively closer to the airport in the future than it is today, the average trip lengths are expected to be reduced.

Cumulative VMT Effectt Analysis

Projects must demonstrate consistency with the *Envision San José 2040 General Plan* to address cumulative effects. Consistency with the City's General Plan is based on the project's density, design, and conformance to the General Plan goals and policies. If a project is determined to be inconsistent with the General Plan, a cumulative effect analysis is required as part of the City's *Transportation Analysis Handbook*.

The Project is consistent with the General Plan goals and policies for the following reasons:

- The Project site provides bicycle lanes along Coleman Avenue and connections to the Guadalupe River Trail.
- Route 60 provides transit service to and from the San Jose Airport.
- The Project site provides bus stops with the site and bus stops along Coleman Avenue.
- The Project would increase the employment density in the project area.

Therefore, based on the project description, the proposed Project would be consistent with the *Envision San José 2040 General Plan*. Thus, the Project would be considered as part of the cumulative solution to meet the General Plan's long-range transportation goals.

4. Local Transportation Analysis

San José Transportation Policy 5.1 requires preparation of a Local Transportation Analysis (LTA) to analyze non-CEQA transportation issues, including local transportation operations, intersection level of service, site access and circulation, and neighborhood transportation issues such as pedestrian and bicycle access, and recommend needed transportation improvements. The conclusions reached in the LTA are not effects under CEQA.

It is recognized that the City of Santa Clara, Santa Clara County Roads & Airports Department, and VTA's CMP continue to use LOS for CEQA for their actions as lead agencies. However, the City of San José as lead agency for this Project has the discretion under the SB 743-related CEQA Guidelines amendments that took effect in December 2018 to evaluate LOS outside of CEQA. Stated another way, San José is not obligated to use LOS to evaluate Santa Clara or CMP intersections or freeway segments for purposes of disclosing environmental effects. Therefore, disclosure of LOS conditions in this LTA is being done outside of the framework of CEQA, despite other agencies continuing to use LOS in their own CEQA documents.

Project Trip Estimates

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, the directions to and from which the project trips would travel are estimated. In the project trip assignment, the project trips are assigned to specific streets and intersections. These procedures are described below.

Trip Generation

The trip generation of the Airport was determined through intersection and driveway counts. AM and PM peak hour trips were counted on November 2018. The peak hour trips were counted at all intersections and driveways that serve Airport facilities. These include all types of trips: passengers, employees, air cargo, general aviation, etc. The existing daily trips were estimated by factoring the AM and PM peak hour trips based on the number of daily passengers compared to peak-hour passengers derived from Airport data (see Appendix A). The total Airport trip generation was divided by the average number of passengers in November 2018 because that number is tracked by the airport (see Table 6). While passengers were used as the independent variable, the trip rates represent all Airport trips for all purposes.

The projected AM and PM peak hour trips associated with increased Airport activity through 2037 were estimated by applying the trip rates to the estimated increase in passengers. It is assumed that there will also be proportional increases in employees, air cargo, and general aviation. Based on the Airport rates, the increase in Airport activity through 2037 is estimated to generate a total of 29,332 new daily vehicle trips, with 2,187 new trips occurring during the AM peak hour and 1,879 new trips occurring during the PM peak hour (see Table 8).

Table 8
Project Trip Generation Estimates

Land Use	Size[1]	Unit	Daily		AM Peak Hour					PM Peak Hour				
			Rate	Trips[4]	Rate	In %	In	Out	Total	Rate	In %	In	Out	Total
Proposed Use														
Projected Airport Trip Gen[2]	22.5	million-passengers	3,809.43	85,712	283.99	53%	3,387	3,003	6,390	244.05	55%	3,020	2,471	5,491
Existing Use														
Existing Airport Trip Gen[3]	14.8	million-passengers	3,809.43	56,380	283.99		2,273	1,930	4,203	244.05		1,974	1,638	3,612
Net Project Trips				**29,332**			**1,114**	**1,073**	**2,187**			**1,046**	**833**	**1,879**

Notes:
1. Current airport trip generation size is taken from San Jose Airport Monthly Activity Report for 11/01/2018 to 11/30/2018. Projected airport generation size is taken from 2037 forecast.
2. Project airport trip generation, rates expressed in trips per million-passengers are used.
3. Existing airport trip generation based on driveway counts conducted by Hexagon on November 2018.
4. Daily trips for existing airport trip generation were estimated by factoring the AM and PM peak hour trips based on the ratio of AM and PM passengers compared to daily passengers.

Trip Distribution and Trip Assignment

The trip distribution pattern for the Airport was developed based on counts of existing roads and driveways serving the Airport. The projected increase in peak-hour vehicle trips, as compared to existing conditions, were assigned to the roadway network in accordance with the trip distribution pattern. Figure 7 shows the trip distribution pattern and Figure 8 shows the net trip assignment of Airport traffic on the local transportation network.

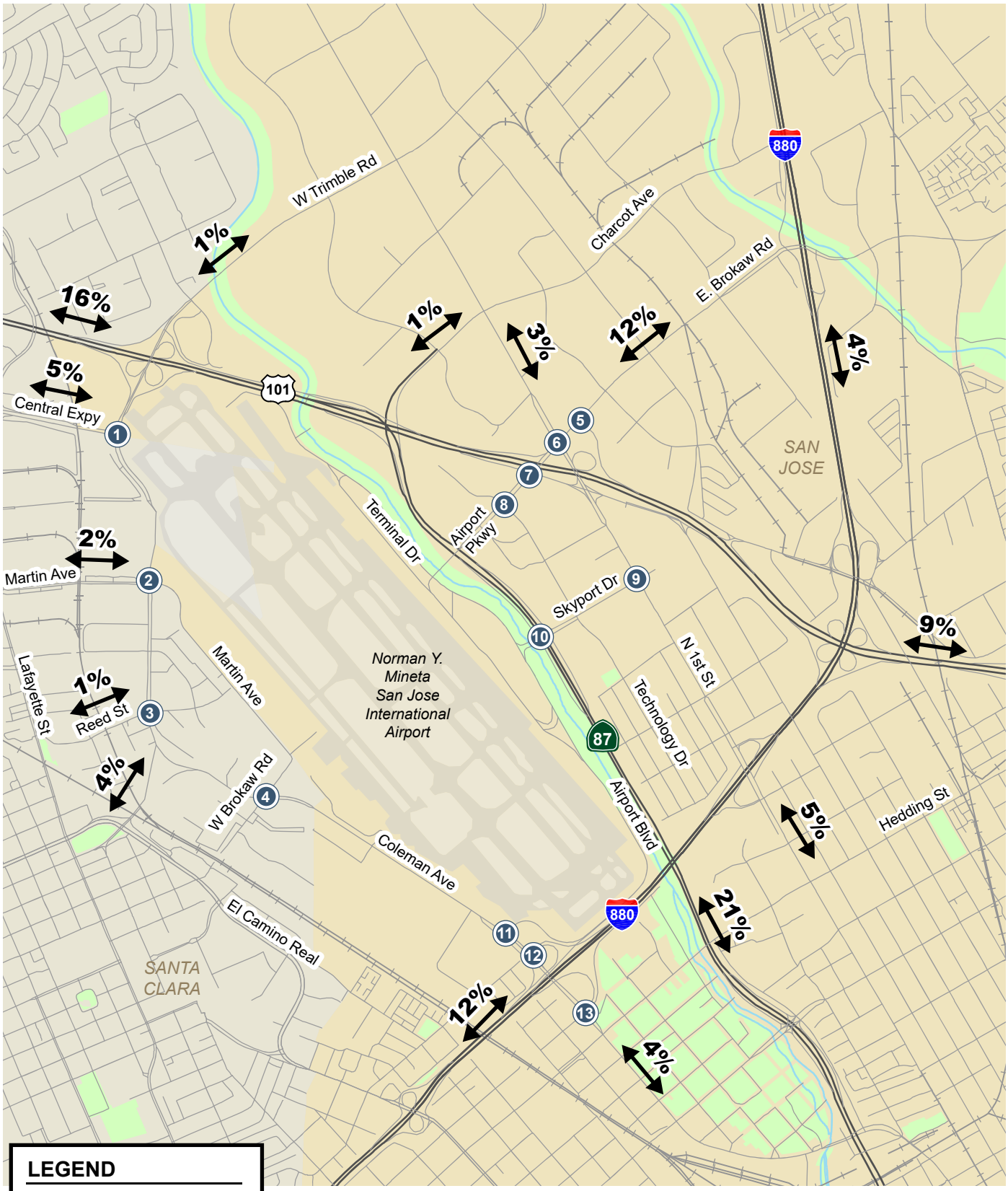
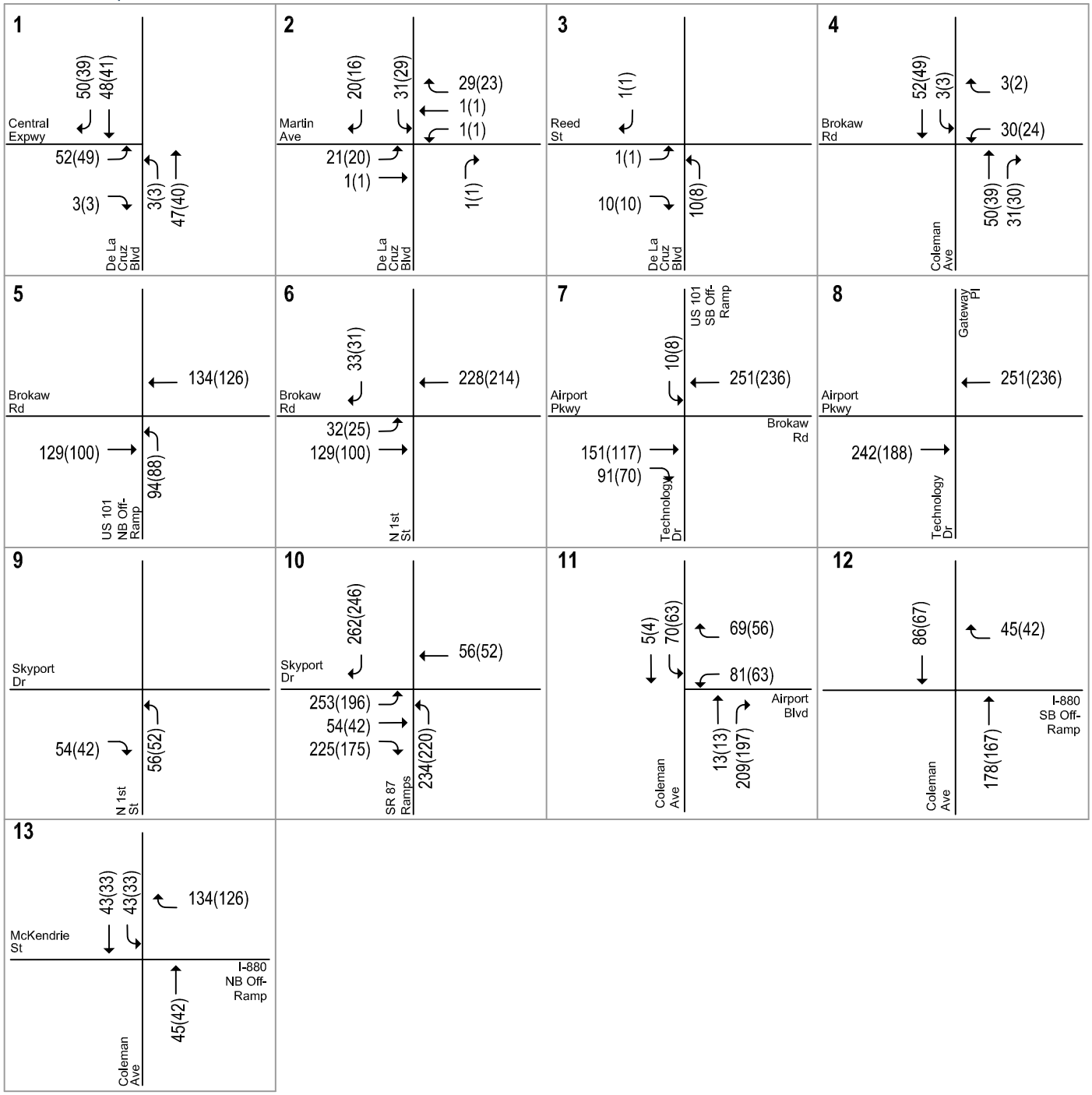


Figure 7
Project Trip Distribution Pattern



LEGEND

XX(XX) = AM(PM) Peak-Hour Trips

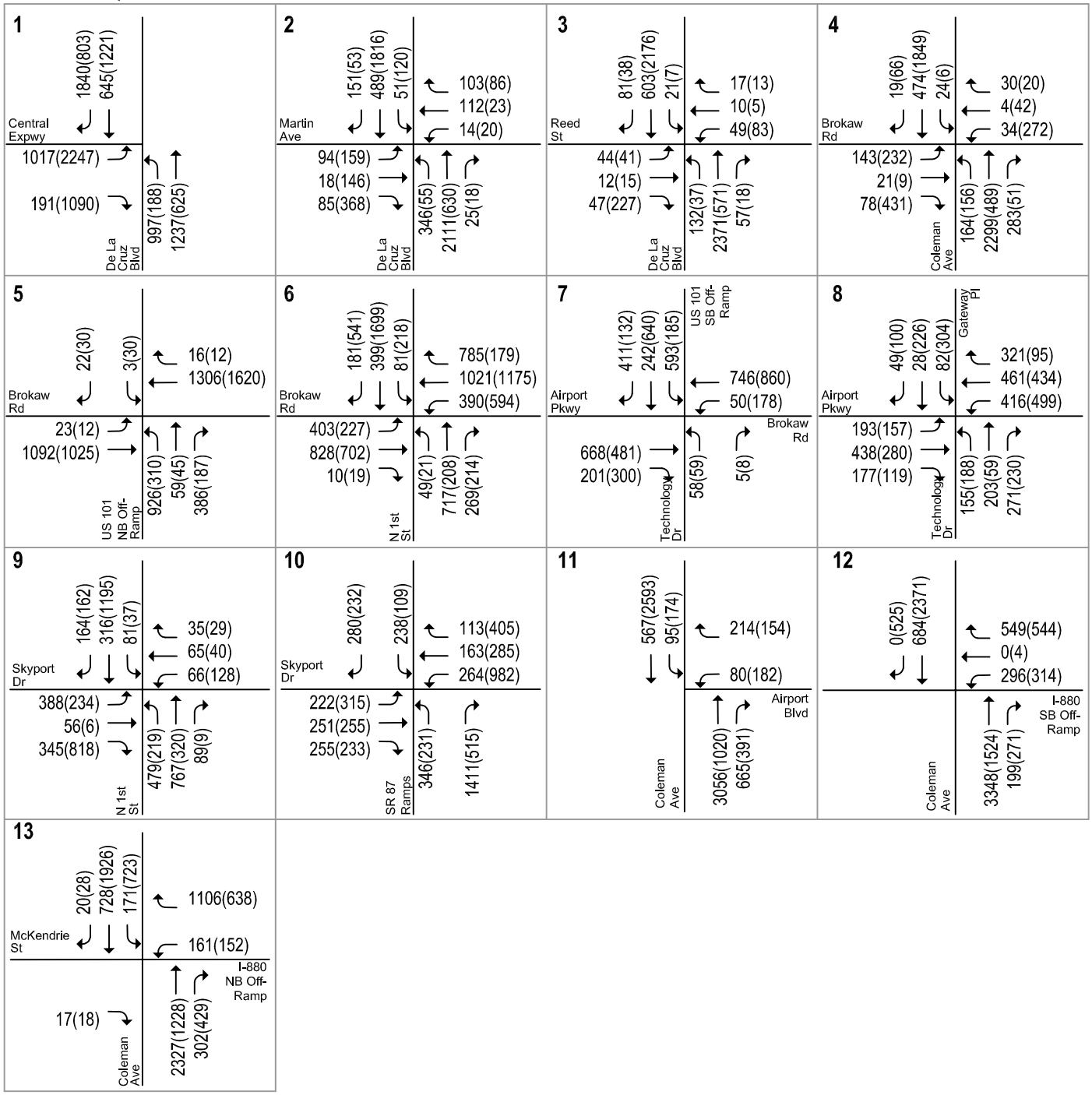
Figure 8
Project Trip Assignment

Future Traffic Volumes

Background peak-hour traffic volumes were estimated by adding to existing traffic volumes the trips generated by nearby approved but not yet completed or occupied projects (see Figure 9). Approved project trips and approved project information were obtained from the Cities of San Jose and Santa Clara (see Appendix D). The San Jose background trips include Phase 1 of the North San Jose Area Development Policy (NSJADP). The background road network includes planned improvements to the US101/Trimble Road interchange. Project trips were added to background traffic volumes to obtain background plus project traffic volumes (see Figure 10).

Traffic volumes under cumulative conditions were estimated by using projected traffic volumes on the planned roadway network with model forecasts for Year 2037 conditions. The planned roadway network includes the Zanker Road connection to Fourth Street and improvements to the US101/Trimble Road interchange. The 2037 land use data include buildout of the NSJADP. The cumulative traffic volumes and cumulative plus project volumes at study intersections are shown in Figure 11 and Figure 12, respectively.

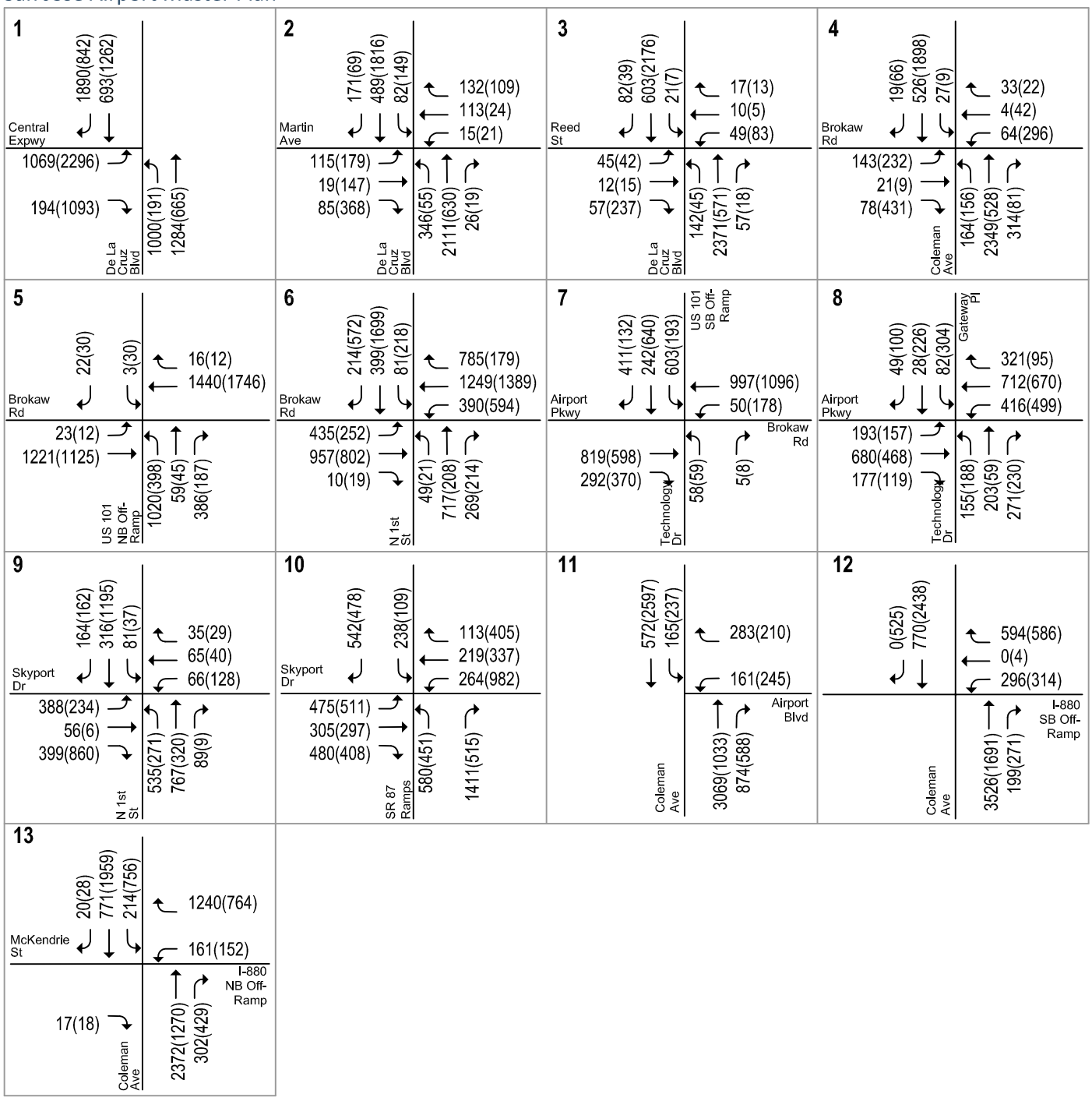
The approved trips, proposed project trips, and traffic volumes for all components of traffic are tabulated in Appendix B.



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

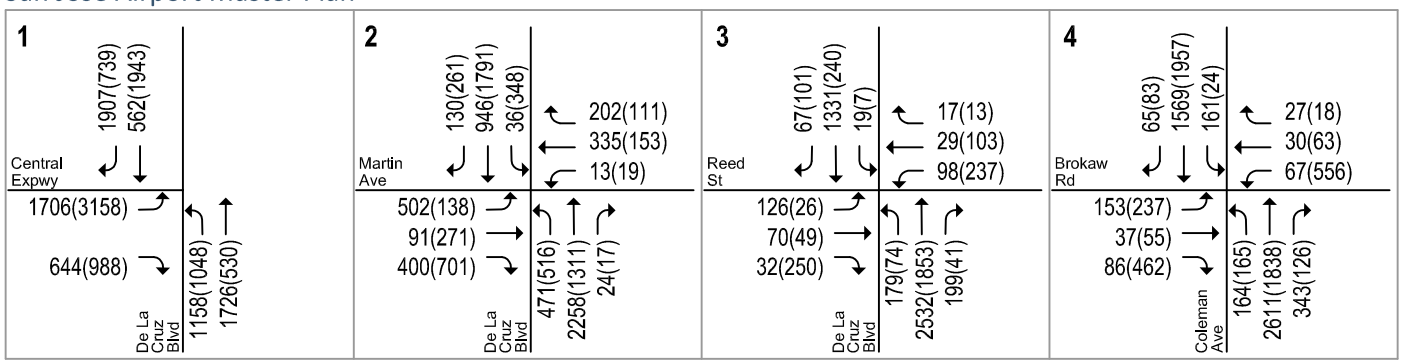
Figure 9
Background Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

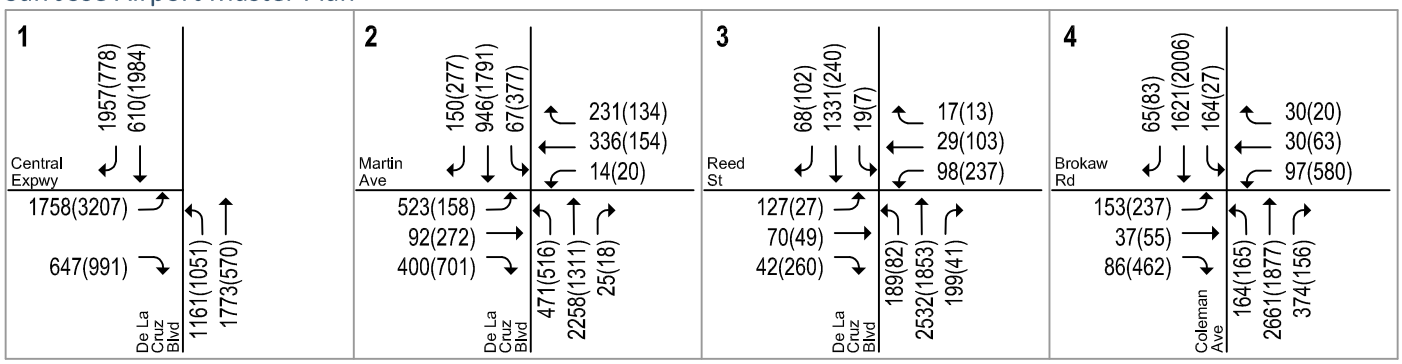
Figure 10
Background Plus Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 11
Cumulative Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 12
Cumulative Plus Project Traffic Volumes

Santa Clara Intersection Analysis

Four of the study intersections are located in the City of Santa Clara.

Table 9 summarizes the results of the intersection level of service under future conditions. The results show that three intersections located with the City of Santa Clara would be adversely affected by the Project. The intersections are described below.

Santa Clara

De La Cruz Boulevard and Central Expressway

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hour under all future scenarios including background, background plus project and cumulative conditions. The Project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the Project is considered to cause an adverse effect based on Santa Clara's level of service effect criteria.

Improvement Measure. This intersection is controlled by Santa Clara County. The Comprehensive County Expressway Planning Study identifies the conversion of HOV to mixed-flow lanes on Central Expressway as a Tier 1A project. The City Place development in Santa Clara also identifies adding a second southbound right-turn lane and a third northbound left-turn lane as an improvement. With implementation of these improvements, the intersection would operate at an unacceptable LOS F during the PM peak hour, but the average delay would be better than background conditions. It is assumed that City Place, in conjunction with Santa Clara County will implement this improvement.

De La Cruz Boulevard and Martin Avenue

Adverse Effect: This intersection is expected to operate at LOS F during the AM peak hour under cumulative plus project conditions. The Project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the Project is considered to cause an adverse effect based on Santa Clara's level of service effect criteria.

Improvement Measure. To address this deficiency a second eastbound to northbound left-turn lane could be added to Martin Avenue. This improvement can be achieved by restriping the eastbound lane configuration to add an additional left-turn lane. With the implementation of this improvement, the intersection would operate at LOS C during the AM peak hour under background plus project conditions. This measure does not require Martin Avenue to be widened.

Coleman Avenue and Brokaw Road

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hours under all future scenarios including background, background plus project and cumulative conditions. The Project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the Project is considered to cause an adverse effect based on the City of Santa Clara's level of service effect criteria.

Improvement Measure. The recommended improvement is to add a third southbound through on Coleman Avenue by removing the pork chop island, squaring off the corner, and restriping to provide exclusive southbound through and right turn lanes. In addition, it would be necessary to restripe the east and west legs of the intersection to provide exclusive right turn lanes. This would require modifications to the signal phasing. With implementation of these improvements, the intersection would

operate at an acceptable LOS C during the PM peak hour under background plus project conditions. These improvements do not require Brokaw Road to be widened. However, to accommodate future bike lanes, Brokaw Road would need to be widened by 10 feet. This improvement already has been conditioned on approved projects in Santa Clara.

San Jose Intersection Operations Analysis

The study intersections in this chapter are in the City of San Jose and are evaluated based on the City's methods and standards. The intersection operations analysis is intended to quantify the operations of San Jose intersections and to identify potential negative effects due to the addition of Project traffic.

Future Intersection Traffic Operations

The study includes nine intersections in the City of San Jose. The analysis shows that all but one of the signalized study intersections in San Jose would operate at an acceptable level of service (LOS D or better) under all future scenarios during the AM and PM peak hours (see Table 10). The intersection level of service calculation sheets are included in Appendix C.

The intersection of N. First Street and Brokaw Road is expected to operate at LOS E during the PM peak hour under background plus project conditions. The Project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the Project is considered to cause an adverse effect on the intersection operations at this location.

The City, VTA, and Caltrans are currently pursuing a project that would implement roadway improvements adjacent to the N. First Street/Brokaw Road intersection. These improvements include the reconfiguration and consolidation of the northbound US 101 ramps at First/Brokaw, a new overcrossing of US 101 at Zanker Road/Fourth Street, and the extension of Skyport Drive from First to Fourth Streets. These improvements are intended to improve traffic operations in this area, including at the N. First Street/Brokaw Road intersection.

Table 9
Santa Clara Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	Traffic Control	Background Conditions						Cumulative Conditions					
					No Project		with Project				No Project		with Project			
					Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C
1	De La Cruz Boulevard and Central Expressway	AM	11/27/18	Signal	52.4	D-	53.6	D-	1.8	0.032	**126.8**	**F**	**132.8**	**F**	**9.2**	**0.032**
	(Santa Clara) *	PM	10/4/16		**129.6**	**F**	**141.3**	**F**	**17.3**	**0.041**	**431.8**	**F**	**440.6**	**F**	**10.1**	**0.029**
2	De La Cruz Boulevard and Martin Avenue	AM	11/27/18	Signal	29.7	C	33.4	C-	4.9	0.051	**122.0**	**F**	**134.6**	**F**	**13.9**	**0.035**
	(Santa Clara)	PM	11/27/18		33.3	C-	34.0	C-	0.0	0.004	**115.3**	**F**	**116.4**	**F**	**1.3**	**0.004**
3	De La Cruz Boulevard and Reed Street	AM	11/27/18	Signal	11.3	B+	11.7	B+	0.2	0.006	15.3	B	15.7	B	0.1	0.001
	(Santa Clara)	PM	11/27/18		18.9	B-	19.5	B-	0.7	0.011	23.6	C	24.0	C	0.5	0.006
4	Coleman Avenue and Brokaw Road	AM	11/27/18	Signal	26.4	C	26.9	C	0.1	0.013	34.3	C-	35.2	D+	0.4	0.013
	(Santa Clara)	PM	11/27/18		**91.0**	**F**	**97.8**	**F**	**9.4**	**0.028**	**144.9**	**F**	**152.4**	**F**	**12.0**	**0.028**

Note:
* Denotes the CMP designated Intersection
Bold indicates a substandard level of service.
Bold indicates adverse effect caused by the project.

Table 10
San Jose Intersection Levels of Service

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions Avg. Delay (sec)	Existing Conditions LOS	Background Conditions No Project Avg. Delay (sec)	Background Conditions No Project LOS	Background Conditions with Project Avg. Delay (sec)	Background Conditions with Project LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C
5	US 101 NB Off-Ramp and Brokaw Road*	AM	11/27/18	Signal	31.1	C	35.4	D+	36.9	D+	1.9	0.058
		PM	11/30/16		20.7	C+	23.4	C	23.7	C	-0.4	0.024
6	N. 1st Street and Brokaw Road*	AM	11/27/18	Signal	37.8	D+	43.6	D	44.2	D	1.3	0.011
		PM	10/19/16		40.8	D	52.2	D-	**63.3**	**E**	**19.5**	**0.070**
7	US 101 SB Off-Ramp and Brokaw Road	AM	11/27/18	Signal	45.5	D	47.4	D	51.5	D-	4.4	0.119
		PM	11/27/18		34.0	C-	35.4	D+	34.6	C-	1.6	0.044
8	Technology Drive and Brokaw Road	AM	11/27/18	Signal	28.1	C	28.7	C	28.4	C	-0.7	0.072
		PM	11/27/18		35.7	D+	36.4	D+	36.3	D+	1.4	0.056
9	N. 1st Street and Skyport Drive	AM	11/27/18	Signal	26.3	C	27.2	C	27.0	C	0.2	0.035
		PM	11/27/18		29.9	C	46.2	D	50.7	D	5.8	0.026
10	SR 87 Ramps and Skyport Drive	AM	11/27/18	Signal	17.7	B	21.7	C+	25.7	C	8.6	0.104
		PM	11/27/18		15.6	B	15.9	B	19.5	B-	4.5	0.100
11	Coleman Avenue and Airport Boulevard	AM	11/27/18	Signal	12.5	B	12.7	B	18.4	B-	5.9	0.044
		PM	11/27/18		19.5	B-	18.9	B-	24.4	C	4.3	0.034
12	Coleman Avenue and I-880 SB Off-Ramp*	AM	11/27/18	Signal	22.5	C+	32.6	C-	41.9	D	11.9	0.059
		PM	11/10/16		19.1	B-	21.0	C+	22.4	C+	1.6	0.037
13	Coleman Avenue and I-880 NB Off-Ramp*	AM	11/27/18	Signal	33.3	C-	39.8	D	46.5	D	8.5	0.055
		PM	11/10/16		25.5	C	28.3	C	31.2	C	2.8	0.056

Note:
* Denotes the CMP designated Intersection
Bold indicates a substandard level of service.
Bold indicates an adverse effect on intersection operations caused by the project.

Freeway Segment Effect Analysis

Potential effects on freeway segments were analyzed in accordance with VTA CMP methods. The results show that the Project would cause increases in traffic volumes that are one percent or more of freeway capacity on the following study freeway segments currently operating at LOS F, and none of the study freeway segments currently operating at LOS E or better would worsen to LOS F as a result of the Project (see Table 11).

- US 101, from SR 87 to Trimble - Northbound and Southbound
- US 101, from I-880 to Old Bayshore Highway – Northbound
- I-880, from The Alameda to Coleman Avenue – Northbound and Southbound
- SR 87, from Skyport Drive to US 101

Table 11
Project Conditions Freeway Segment Level of Service Summary

				Existing Conditions - Mixed Flow Lanes[1]						Project Conditions	
Freeway	Dir.	Segment	Peak Hour	Avg. Speed (mph)	# of Lanes	Capacity	Density (pc/mi/ln)	Volume	LOS[2]	Project Trips	% Capacity
US 101	NB	SR 87 On-Ramp to Trimble Rd Off-Ramp	AM	8	3	6,900	**87.4**	**2,112**	**F**	**161**	**2.33%**
			PM	63	3	6,900	24.0	4,551	C	125	1.81%
US 101	NB	I-880 On-Ramp to Old Bayshore Hwy On-Ramp	AM	10	4	9,200	**84.2**	**3,256**	**F**	**100**	**1.09%**
			PM	61	4	9,200	28.9	7,000	D	94	1.02%
US 101	SB	4th St On-Ramp to I-880 Off-Ramp	AM	57	4	9,200	33.4	7,620	D	97	1.05%
			PM	9	4	9,200	**86.4**	**2,944**	**F**	75	0.82%
US 101	SB	Trimble Rd On-Ramp to SR 87 Off-Ramp	AM	51	3	6,900	38.8	5,964	D	168	2.43%
			PM	28	3	6,900	**58.6**	**4,932**	**F**	**157**	**2.28%**
I-880	NB	The Alameda On-Ramp to Coleman Ave Off-Ramp	AM	14	3	6,900	**75.9**	**3,291**	**F**	**134**	**1.94%**
			PM	8	3	6,900	**86.8**	**2,175**	**F**	**126**	**1.83%**
I-880	NB	Coleman Ave On-Ramp to 1st St Off-Ramp	AM	17	3	6,900	**72.7**	**3,603**	**F**	43	0.62%
			PM	15	3	6,900	**75.2**	**3,360**	**F**	33	0.48%
I-880	SB	1st St On-Ramp to Coleman Ave Off-Ramp	AM	39	3	6,900	48.3	5,706	E	45	0.65%
			PM	21	3	6,900	**66.9**	**4,173**	**F**	42	0.61%
I-880	SB	Coleman Ave On-Ramp to The Alameda Off-Ramp	AM	56	3	6,900	34.2	5,772	D	121	1.75%
			PM	26	3	6,900	**61.0**	**4,719**	**F**	**100**	**1.45%**
SR 87	NB	Skyport Dr On-Ramp to US 101 Off-Ramp	AM	12	2	4,400	**79.3**	**1,960**	**F**	**253**	**5.75%**
			PM	57	2	4,400	33.3	3,800	D	196	4.45%
SR 87	SB	US 101 On-Ramp to Skyport Dr Off-Ramp	AM	52	2	4,400	37.8	3,964	D	262	5.95%
			PM	38	2	4,400	49.2	3,770	E	246	5.59%

Notes
Dir. = direction, NB = northbound, SB = southbound, mph = miles per hour, pc/mi/ln = passenger cars per mile per lane
[1] Existing freeway conditions information is published in the Santa Clara Valley Transportation Authority (VTA) *2017 CMP Monitoring and Conformance Report*.
[2] The Santa Clara VTA report references the Freeway LOS criteria presented in the *Traffic Level of Service Analysis Guidelines (June 2003)* published by Santa Clara VTA.

BOLD indicates substandard level of service.
BOLD indicates a 1% or more impact increase to freeway by project traffic

Pedestrian, Bicycle, and Transit Analysis

It is the goal of the San Jose General Plan that all projects accommodate and encourage the use of non-automobile transportation modes to achieve San Jose's mobility goals and reduce vehicle trip generation and vehicle miles traveled. In addition, the adopted City Bike Master Plan establishes goals, policies and actions to make bicycling a daily part of life in San Jose. The Master Plan includes designated bike lanes along City streets, as well as on designated bike corridors.
For the city as a whole, the City's General Plan identifies both walk and bicycle commute mode split targets as 15 percent or more for the year 2040.

Pedestrian Facilities

As described in Chapter 2, pedestrian access to the Airport is limited, given that airports are regional-serving facilities. There is a designated crosswalk with pedestrian-activated signals on Airport Boulevard that links Airport Parkway and the Guadalupe River trail to the passenger terminals. In addition, there is free public bus service, partially funded by the Airport, that provides several boarding/deboarding stops at the Airport and along the local street network between the Airport, the VTA light rail station at N. First Street/Metro Drive, and the Santa Clara Caltrain/future BART station. Airport facilities fronting directly on a public roadway all have sidewalks. As Airport activity levels continue to increase in the future, the City of San Jose should continue to consider improvements, both on and off airport, that could enhance safe and efficient pedestrian access to Airport facilities.

The following pedestrian improvements should be considered:

- Create a direct pedestrian and bicycle connection from Skyport Drive to the terminals.
- Provide a continuous sidewalk on Airport Boulevard.
- Create a pedestrian connection from the long-term parking lot to Terminal A.
- Add sidewalks to Ewert Road.
- Provide continuous sidewalks on Coleman Avenue, Brokaw Road, and Martin Avenue. Some of the road segments without sidewalks are located in Santa Clara, so this will require coordination with Santa Clara.

Bicycle Facilities

The Project may increase the demand for bicycle access to the Airport. The Guadalupe River trail, a key element of the City of San Jose's bicycle network with numerous connections to other designated bicycle routes, runs along the eastern side of Airport property immediately adjacent to Airport Boulevard. Access to Airport facilities, most notably the passenger terminal area, is provided across Airport Boulevard at the pedestrian crosswalk mentioned above. The City should consider adding a bicycle connection to Terminal B from Skyport Drive.

To get to the facilities on the west side of the airport, there are bike lanes on a portion of Coleman Avenue. It would be desirable to have bike lanes on the full length of Coleman Avenue and on De La Cruz Boulevard. Most of the sections without bike lanes are in Santa Clara. San Jose should consider working with Santa Clara to see if bike lanes can be added.

The Airport is currently installing two sets of bicycle lockers in the terminal area for public use, one in the Terminal A baggage claim facility, and one in Hourly Parking Lot 3 directly opposite Terminal B. Bicycle parking for employees at the Airport is also provided within individual facilities. As Airport activity levels continue to increase in the future, the Airport and the City of San Jose should monitor use of the public bicycle lockers and provide additional bike parking if necessary.

Transit Services

The Airport is well-served by transit with Route 60 providing free service connecting to Caltrain and light rail transit. Route 60 operates along Coleman Avenue and Airport Boulevard in the project study area, with approximately 15-minute headways from 7:00 AM to 7:00 PM during the weekdays and approximately 30-minute headways on the weekends. The combination of the Caltrain, LRT, and Route 60 services provide good connections to most areas in the South Bay. However, there is currently no direct transit connection from Downtown San Jose to the San Jose Airport. The use of LRT plus Route 60 is a circuitous connection. In 2019, the City's Department of Transportation issued a Request for Proposals (RFP) for a study to determine the feasibility of constructing a direct transit connection between the Diridon Station in Downtown San Jose and the Airport.

5. Conclusions

This report presents the results of the transportation analysis (TA) conducted for a proposed Amendment to the San Jose Airport Master Plan. The airport currently serves 14.8 million annual passengers, and the forecast is for the airport to serve 22.5 million annual passengers in 2037. There also would be an increase in air cargo and general aviation operations.

This study was conducted for the purpose of identifying potential traffic effects related to the proposed development. The potential effects of the project were evaluated in accordance with the standards set forth by the City of San Jose, City of Santa Clara, and the Santa Clara Valley Transportation Authority (VTA) Congestion Management Program (CMP).

CEQA Transportation Analysis

Project-Level VMT Effect Analysis

The project-level effect analysis under CEQA uses the VMT metric to evaluate a project's transportation effects by comparing against the VMT thresholds of significance as established in the City of San Jose's Transportation Analysis Policy (Policy 5-1). While the policy includes thresholds of significance for many land use categories, it does not address airports. Therefore, City staff determined that the threshold would be an increase in per passenger VMT compared to existing conditions.

Using the San Jose travel demand model, the existing VMT for the airport calculates to 755,742 miles per day. This includes all types of trips: passengers, employees, air cargo, general aviation, etc. Dividing by the number of daily passengers yields a VMT per passenger number of 18.64 miles. While the number is expressed per passenger, it actually represents all trips. Performing the same calculation for the buildout of the Master Plan (year 2037) yields an estimate of 18.44 miles per passenger. Since this value is lower than the existing VMT per passenger, it can be concluded that the project's effect on VMT would be less than significant. The reason the VMT would decrease is that the growth in airport activity would be to serve growth in population and employment in San Jose and nearby cities. According to the San Jose General Plan, future growth is more concentrated in existing developed areas, which are nearer to the airport than outlying areas. This will result in slightly shorter trip lengths for airport trips.

Cumulative VMT Effect Analysis

The project is consistent with the General Plan goals and policies for the following reasons:

- The project site provides bicycle lanes along Coleman Avenue and connections to the Guadalupe River Trail.
- Route 60 provides transit service to and from the San Jose Airport.
- The project site provides bus stops with the site and bus stops along Coleman Avenue.
- The project would increase the employment density in the project area.

Local Transportation Analysis

Santa Clara Intersection Analysis

Four of the study intersections are located in the City of Santa Clara. Of the four study intersections within Santa Clara, three of the study intersections would be affected by project-related traffic.

De La Cruz Boulevard and Central Expressway

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hour under all future scenarios including background, background plus project and cumulative conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on the CMP's level of service effect criteria.

Improvement Measure. This intersection is controlled by Santa Clara County. The Comprehensive County Expressway Planning Study identifies the conversion of HOV to mixed-flow lanes on Central Expressway as a Tier 1A project. The City Place development in Santa Clara also identifies adding a second southbound right-turn lane and a third northbound left-turn lane as an improvement. With implementation of these improvements, the intersection would operate at an unacceptable LOS F during the PM peak hour, but the average delay would be better than background conditions. It is assumed that City Place, in conjunction with Santa Clara County will implement this improvement.

De La Cruz Boulevard and Martin Avenue

Adverse Effect: This intersection is expected to operate at LOS F during the AM peak hour under cumulative plus project conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on Santa Clara's level of service effect criteria.

Improvement Measure. To address this deficiency a second eastbound to northbound left-turn lane could be added to Martin Avenue. This improvement can be achieved by restriping the eastbound lane configuration to add an additional left-turn lane. With the implementation of this improvement, the intersection would operate at LOS C during the AM peak hour under background plus project conditions. This improvement does not require Martin Avenue to be widened.

Coleman Avenue and Brokaw Road

Adverse Effect: This intersection is expected to operate at LOS F during the PM peak hour under all future scenarios including background, background plus project and cumulative conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause an adverse effect based on the City of Santa Clara's level of service effect criteria.

Improvement Measure. The recommended improvement is to add a third southbound through on Coleman Avenue by removing the pork chop island, squaring off the corner, and restriping to provide

exclusive southbound through and right turn lanes. In addition, it would be necessary to restripe the east and west legs of the intersection to provide exclusive right turn lanes. This would require modifications to the signal phasing. With implementation of these improvements, the intersection would operate at an acceptable LOS C during the PM peak hour under background plus project conditions. This improvement does not require Brokaw Road to be widened. However, to accommodate future bike lanes, Brokaw Road would need to be widened by 10 feet. This improvement already has been conditioned on approved projects in Santa Clara.

San Jose Intersection Operation Analysis

The remaining nine study intersections are under the City of San Jose's jurisdiction. The analysis shows that all but one of the signalized study intersections in San Jose would operate at an acceptable level of service (LOS D or better) under all future scenarios during the AM and PM peak hours.

The intersection of N. First Street and Brokaw Road is expected to operate at LOS E during the PM peak hour under background plus project conditions. The project would cause the intersection's critical-movement delay to increase by four or more seconds and the V/C to increase by 0.01 or more compared to background conditions. Therefore, the project is considered to cause a non-CEQA adverse effect on the intersection operations at this location.

The City, VTA, and Caltrans are currently pursuing a project that would implement roadway improvements adjacent to the N. First Street/Brokaw Road intersection. These improvements include the reconfiguration and consolidation of the northbound US 101 ramps at First/Brokaw, a new overcrossing of US 101 at Zanker Road/Fourth Street, and the extension of Skyport Drive from First to Fourth Streets. These improvements are intended to improve traffic operations in this area, including at the N. First Street/Brokaw Road intersection.

Freeway Segment Analysis

The results show that the project would cause increases in traffic volumes that are one percent or more of freeway capacity on the following study freeway segments currently operating at LOS F, and none of the study freeway segments currently operating at LOS E or better would worsen to LOS F as a result of the project.

- US 101, from SR 87 to Trimble - Northbound and Southbound
- US 101, from I-880 to Old Bayshore Highway – Northbound
- I-880, from The Alameda to Coleman Avenue – Northbound and Southbound
- SR 87, from Skyport Drive to US 101

San Jose Airport Master Plan

Technical Appendices

November 21, 2019

Appendix A
Traffic Counts

Appendix B
Volume Summary

Appendix C
Level of Service Calculations

Appendix D
List of Approved Projects