

# **CALTRAIN EXTENSION TO MONTEREY COUNTY PASSENGER RAIL STATIONS**

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## **TRAFFIC IMPACT ANALYSIS**

October 2006

*Prepared For:*



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*Monterey County Commuter Rail Stations*  
**TRAFFIC IMPACT ANALYSIS**

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## **Executive Summary**

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This report presents the results of the traffic impact analysis conducted for the proposed commuter rail facilities located in Pajaro, Castroville, and Salinas, California.

The development of the proposed stations at Pajaro Valley and Castroville entails construction of rail passenger loading platforms, platform shelters, bus or shuttle berths and shelters, parking, bicycle facilities, sidewalks, and circulation roadways. Regional access to the Pajaro Valley station is proposed via two driveways on Salinas Road. Vehicular access to the Castroville station at Site 2 (the locally preferred alternative) is provided by State Route 156 while local residents can access the station via Benson Road. Pedestrian and bicycle access will also be available from the west via a grade-separated railroad crossing.

The proposed intermodal center and layover yard at Salinas entails reconstruction and expansion of the passenger loading platform, a parking structure or lot, a bus transit center with passenger waiting and operations support facilities, construction/relocation of track, modification or addition of site access and circulation roadways, and bicycle facilities. The station will continue to be accessed from West Market Street.

To assess traffic impacts, traffic volumes were counted at key intersections adjacent to or near each locally preferred station site. As these traffic counts were conducted in November 2002, April 2003, and July 2006, these volumes were increased by a growth factor of two percent per year to represent future conditions when the Caltrain service was projected to be operating. For the purpose of this assessment, two future scenarios were selected: a five-year scenario (approximately 2008) and a ten-year scenario (approximately 2013). Traffic operating conditions were analyzed without the project (termed Background conditions) and with the project (Project Conditions). Traffic operations were also assessed for the year of the traffic counts (2002/2003 and 2006).

AM and PM peak-hour operations of the study intersections were evaluated for the following scenarios:

- Scenario 1:** *Baseline Conditions.* Peak-hour volumes for 2002/2003 and 2006, for the projected peak hours of both the Caltrain station and the surrounding roadway network.
- Scenario 2:** *Background Conditions.* Baseline Conditions plus projected peak-hour volumes from future growth. Background Conditions were evaluated for the peak hours of both the Caltrain station operations and the surrounding roadway network, under both the near-term (five-year horizon) and long-term (ten-year horizon) scenarios. The Background conditions are those conditions caused by existing traffic and future growth. The Background analysis represents the “No Project” condition.
- Scenario 3:** *Project Conditions.* Background Conditions plus estimated project-generated traffic. Project Conditions were evaluated for the peak hours of both the Caltrain station operations and the surrounding roadway network, under both the near-term (five-year horizon with a daily service of two trains) and long-term (ten-year horizon with a daily service of four trains) scenarios.

A total of 15 intersections were evaluated for this project using the SYNCHRO software program. Existing intersection traffic volumes and lane geometry were obtained by performing manual turning-movement counts at eight of the intersections in November 2002 and April 2003, and three of the intersections in Castroville in July 2006. Existing cycle lengths used for the Salinas analysis are based on observations made during those counts; cycle lengths for Pajaro and Castroville are commonly-used default values. Short- and long-term project trip generation is based on methodology reported in *Ridership Estimates for Caltrain Extension*, located in Appendix B-1 of the Project Study Report.

Although traffic counts were not performed at the intersection of Castroville Boulevard and Collins Road in Castroville or the intersection of Station Place and West Market Street in Salinas, these intersections were analyzed because they could be used for station access in the project condition<sup>1</sup>. Existing volumes for the mainline through movements at these intersections were extrapolated from counts at adjacent intersections. Because Collins Road and Station Place are currently lightly used, nominal traffic volumes at the stop-controlled legs of the minor streets (Collins Road and Station Place) were assumed in order to approximate existing conditions at those locations.

In addition, two proposed driveways onto Salinas Road were analyzed for the project conditions in Pajaro.

The results of the level of service analysis for all intersections during all conditions are presented in the table at the end of this Executive Summary.

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<sup>1</sup> The locally preferred alternative for the Salinas Intermodal Transportation Center (option 17 or 18) abandons Station Place as an entrance or exit for vehicular access.

## Base Year Conditions

The results of the level of service analysis indicate that under base year conditions, one study intersection in Pajaro operates at an acceptable level of service and with excess capacity during both station and network peak hours (Salinas Road at Lewis Road). The stop-controlled approach of Railroad Avenue at Salinas Road operates at LOS F during both the existing PM network peak hour and the PM peak hour of projected Caltrain-generated traffic. The signalized intersection of Porter Drive at San Juan Road operates at LOS D during both PM peak hours.

In Castroville, both study area intersections at Alternative Site 2 operate at acceptable levels of service (LOS C or better) and with excess capacity during all peak periods. At Alternative Site 1, the intersection at Merritt Street and Blackie Road operates at an unacceptable LOS D.

In Salinas, the intersections of Lincoln Avenue at West Market Street, Salinas Street at West Market Street, Monterey Street at East Market Street and Rossi Street at North Main Street operate at an acceptable level of service (LOS D or better) and with excess capacity during all peak periods. However, the stop-controlled approach of Station Place at West Market Street operates at LOS F during both peak hours of network traffic.

Field observation of existing traffic operations during the network evening peak indicates that traffic queues spill back from the intersection of Rossi Street and North Main Street to adjacent intersections, including the Salinas Street/West Market Street and Monterey Street/East Market Street intersections as well as the Lincoln Avenue at West Market Street intersection. At times, this area of downtown Salinas appears to be gridlocked. Because such conditions reduce the traffic volumes entering and exiting the study intersections, level of service analysis (based on the hourly traffic volumes) can falsely indicate acceptable operations.

## Background Conditions

The results of the level of service analysis in Pajaro indicate that in the five-year background scenario, the intersection of Salinas Road at Lewis Road continues to operate at acceptable levels of service. The Salinas Road at Railroad Avenue intersection continues to operate at LOS F during both PM peaks. Level of service worsens from D to E during the PM network peak hour at Porter Drive and San Juan Road.

At Alternative Site 2 in Castroville, no change in level of service occurs between base year and five-year background conditions.

At Alternative Site 1 in Castroville, the westbound SR 156 off-ramp at Merritt Street declines from LOS A to LOS B during the network AM peak period, and the eastbound SR 156 on-ramp at Merritt Street drops from LOS B to LOS C during the network PM peak period. The intersection at Merritt Street and Blackie Road continues operate at an unacceptable LOS D.

In Salinas, the Station Place at West Market Street intersection is projected to experience increased delay during all peaks. During the AM peak hour of the station traffic, the level of service declines from LOS B to LOS C. The level of service remains at F during both the AM

and PM peak hours of network traffic and the delay increases. During the PM peak hour of station traffic, the level of service drops from D to E. At the Salinas Street at West Market Street intersection, level of service drops from D to E and from D to F during the AM and PM peak hours of network traffic, respectively. The Monterey Street at East Market Street intersection declines from LOS B to LOS C during the PM peak hour of station traffic, and from LOS C to LOS F during the PM peak of network traffic. Level of service at the Rossi Street and North Main Street intersection remains unchanged; however, delay increases during the PM peak hour of network traffic. The level of service drops from D to E during the PM peak hour of network traffic. Traffic operations at the intersection of Lincoln Avenue and West Market Street are not projected to decline significantly during any of the peak periods; however, level of service declines from B to C during the AM peak hour of network traffic.

In the ten-year background scenario, traffic operations in Pajaro will continue to occur with slightly increased delay but at the same levels of service as during the five-year background scenario, with two exceptions. The PM network peak hour level of service declines from E to F at the Porter Drive and San Juan Road intersection. Also, the stop-controlled approach of Railroad Avenue at Salinas Road during the morning peak hour of network traffic declines from LOS D to LOS E.

Ten-year background traffic operations in Castroville at Alternative Sites 1 and 2 are projected to remain at the same levels of service as experienced during the five-year background scenario during all peak periods with one exception. The intersection of SR 156 and Castroville Boulevard at Alternative Site 2 is projected to decline from LOS C to LOS D during the PM peak hour of network traffic. The intersection at Merritt Street and Blackie Road continues to operate at an unacceptable LOS D during all peak periods.

In Salinas, the intersection of Lincoln Avenue at West Market Street is projected to decline from LOS B to LOS C during the PM peak hour of network traffic. The Salinas Street at West Market Street intersection declines from LOS E under the five-year background scenario to LOS F under the ten-year background scenario during the AM peak hour of network traffic. Rossi Street at North Main Street is projected to decline from LOS C to LOS D during the AM network peak and from LOS D to LOS E during the PM network peak.

## **Project Conditions**

The results of the analysis indicate that the addition of short-term (five-year) project volumes to intersections in Pajaro Valley will not generally cause a decline in traffic level of service from the five-year background condition during any of the peak periods except for the AM peak hour of network traffic at the Salinas Road/Railroad Avenue intersection. Increased Monterey-Salinas Transit and Santa Cruz Metropolitan Transit District bus service to and from Pajaro will increase average vehicle delay, however. Independent from the development of a passenger rail station at this site, installation of signalized traffic control at the Salinas Road/Railroad Avenue intersection appears to be warranted.

In Castroville, the Alternative Site 2 intersections (SR 156 at Castroville Boulevard and Castroville Boulevard at Station Driveway (eastbound leg) will continue to operate at short-term



background-scenario levels of service during all peak periods after five-year project volumes have been added.

In Salinas, short-term project traffic is projected to cause a decline in operations at Lincoln Avenue and West Market Street from LOS C to LOS D during the AM peak hour of network traffic, from LOS B to LOS D during the PM peak hour of station-generated traffic and from LOS B to LOS C during the PM peak hour of network traffic. The Salinas Street at West Market Street intersection is projected to decline from LOS B to LOS C during the PM peak hour of station-generated traffic.

In the ten-year project scenario, almost all Pajaro Valley intersections will continue to operate at the pre-project levels projected by the ten-year background scenario during all peak periods. One exception is the westbound stop-controlled approach of Railroad Avenue at Salinas Road, which will decline to LOS D during the AM peak hour of station activity.

At Alternative Site 2 in Castroville, the AM peak hour of station traffic level of service is projected to decline from LOS A to LOS B at the Castroville Boulevard/Station Driveway intersection. At Alternative Site 1, the Merritt Street and SR 156 intersections will continue to operate at acceptable levels of service, while the Merritt Street and Blackie Road intersection will continue to operate at an unacceptable LOS D.

In Salinas, the intersection of Lincoln Avenue at West Market will decline beyond background levels of service during all time periods but will operate at LOS D or better at all times. In addition, the Salinas Street/West Market Street intersection is projected to decline from LOS A to LOS B during the morning peak hour of station traffic and from LOS B to LOS D during the PM peak hour of station traffic. The level of service during the PM peak hour of station traffic will actually improve from LOS D to LOS C during the PM peak hour of station activity at the Monterey Street at East Market Street intersection.

On August 1, 2005, Caltrain updated its service with faster trains and a new schedule. For purposes of this study, the new schedule was compared to the previous schedule upon which this analysis was based to ensure that the results were still comparable. Parsons' proposed schedule for the capacity study for northbound trains involved the utilization of trains with schedule ID# 2, 5, 3 and 7. The proposed utilization for the southbound direction included trains 1, 5, 2 and 3. The new Caltrain schedule was reviewed and during the AM and PM peak periods, the arrival and departure times at the proposed Salinas station are comparable to those used for this analysis. Therefore, the peak hour traffic volumes that were used for the level of service calculations are still applicable with the new Caltrain schedule.



**Intersection Level of Service Summary**

Intersection	Peak	Peak Hour	Condition									
			Baseline LOS	Delay, sec†	5-Year Background LOS	Delay, sec†	10-Year Background LOS	Delay, sec†	5-Year Project LOS	Delay, sec†	10-Year Project LOS	Delay, sec†
<b>Pajaro Valley</b>												
Porter Drive at San Juan Road	Caltrain AM	5:30-6:30	C	21.1	C	21.6	C	22.4	C	23.2	C	27.6
	Network AM	7:00-8:00	B	15.4	C	29.4	C	30.2	C	30.0	C	31.0
	Caltrain PM	5:45-6:45	D	39.4	D	42.0	D	43.5	D	43.3	D	51.7
	Network PM	4:30-5:30	D	44.5	E	59.3	F	123.9	E	60.3	F	126.2
Salinas Road at Railroad Avenue (westbound leg) (Stop)	Caltrain AM	5:30-6:30	B	14.6	C	15.7	C	17.2	C	19.0	D	25.9
	Network AM	6:30-7:30	D	28.3	D	34.2	E	43.5	E	35.6	E	45.6
	Caltrain PM	5:45-6:45	F	93.6	F	170.0	F	349.6	F	282.4	F	801.1
	Network PM	5:00-6:00	F	150.3	F	296.1	F	603.1	F	388.7	F	907.4
Salinas Road at Railroad Avenue (westbound leg) with mitigation (Signal)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		A	4.6	A	5.1
	Network AM	6:30-7:30							A	6.9	A	7.4
	Caltrain PM	5:45-6:45							A	9.8	B	14.5
	Network PM	5:00-6:00							B	10.4	B	14.6
Salinas Road at Station Driveway 1 (westbound leg)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		C	17.9	D	26.1
	Network AM	6:30-7:30							C	20.3	C	22.0
	Caltrain PM	5:45-6:45							D	31.3	E	46.3
	Network PM	5:00-6:00							D	30.6	E	38.8
Salinas Road at Station Driveway 2 (westbound leg)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		A	9.4	A	9.6
	Network AM	6:30-7:30							B	11.0	B	11.3
	Caltrain PM	5:45-6:45							B	12.9	C	15.5
	Network PM	5:00-6:00							B	12.6	B	14.1
Salinas Road at Lewis Road (westbound leg)	Caltrain AM	5:30-6:30	B	10.9	B	11.2	B	11.6	B	11.3	B	11.7
	Network AM	6:30-7:30	B	14.0	C	15.1	C	16.7	C	15.1	C	16.7
	Caltrain PM	5:45-6:45	B	14.6	C	16.1	C	18.3	C	16.2	C	18.5
	Network PM	5:00-6:00	C	15.3	C	17.3	C	20.3	C	17.4	C	20.5
<b>Castroville</b>												
SR 156 at Castroville Boulevard	Caltrain AM	5:30-6:30	B	11.6	B	11.8	B	12.0	B	12.6	B	12.7
	Network AM	6:00-7:00	B	13.3	B	13.3	B	13.8	B	14.1	B	14.8
	Caltrain PM	6:00-7:00	C	20.4	C	26.1	C	26.1	C	26.3	C	25.2
	Network PM	4:30-5:30	C	27.9	C	30.3	D	51.9	C	30.3	D	51.9
Castroville Boulevard at Station Driveway (eastbound leg)	Caltrain AM	5:30-6:30	A	9.5	A	9.7	A	9.8	A	9.8	B	10.4
	Network AM	6:00-7:00	B	10.7	B	11.1	B	11.5	B	11.1	B	11.5
	Caltrain PM	6:00-7:00	B	11.2	B	11.6	B	11.6	B	11.6	B	12.7
	Network PM	4:30-5:30	B	12.5	B	13.2	B	14.1	B	13.2	B	14.1



Intersection	Peak	Peak Hour	Condition									
			Baseline LOS	Delay, sec†	5-Year Background LOS	Delay, sec†	10-Year Background LOS	Delay, sec†	5-Year Project LOS	Delay, sec†	10-Year Project LOS	Delay, sec†
SR 156 off-ramp (westbound) at Merritt Street	Caltrain AM	5:30-6:30	A	5.8	A	5.9	A	6.3	A	6.1	A	6.5
	Network AM	7:00-8:00	A	7.8	B	11.6	B	13.6	B	12.7	B	14.3
	Caltrain PM	6:00-7:00	A	7.7	A	7.9	A	8.6	A	8.0	A	9.5
	Network PM	4:30-5:30	A	6.1	A	6.3	A	7.2	A	6.4	A	7.6
SR 156 on-ramp (eastbound) at Merritt Street	Caltrain AM	5:30-6:30	B	13.9	B	14.2	B	15.0	B	14.4	B	15.5
	Network AM	6:00-7:00	B	12.9	B	13.6	B	13.9	B	14.2	B	15.2
	Caltrain PM	4:45-5:45	B	12.6	B	13.1	B	15.3	B	14.8	B	16.9
	Network PM	5:00-6:00	B	19.4	C	22.1	C	29.1	C	23.9	C	34.8
Merritt Street at Blackie Road	Caltrain AM	5:30-6:30	D	38.7	D	39.3	D	41.0	D	40.6	D	42.3
	Network AM	6:00-7:00	D	38.8	D	39.6	D	41.8	D	40.9	D	43.3
	Caltrain PM	6:00-7:00	D	35.1	D	35.9	D	38.1	D	36.3	D	38.7
	Network PM	5:00-6:00	D	36.8	D	38.5	D	44.1	D	38.8	D	44.6

**Salinas**

Lincoln Avenue at West Market Street*	Caltrain AM	5:30-6:30	B*	11.8	B*	12.5	B*	13.1	B*	14.1	C*	21.8
	Network AM	7:30-8:30	B*	19.7	C*	22.6	C*	22.9	D*	49.6	D*	52.0
	Caltrain PM	6:00-7:00	B*	14.3	B*	15.0	B*	19.2	D*	38.3	D*	42.2
	Network PM	4:45-5:45	B*	17.6	B*	19.8	C*	32.0	C*	32.5	D*	44.1
Station Place at West Market Street (south-bound leg)	Caltrain AM	5:30-6:30	B	14.5	C	15.5	C	16.8	N/A		N/A	
	Network AM	7:30-8:30	F	61.7	F	88.3	F	137.9				
	Caltrain PM	6:00-7:00	D	30.3	E	37.0	E	47.0				
	Network PM	4:45-5:45	F	55.9	F	78.2	F	119.1				
Salinas Street at West Market Street*	Caltrain AM	5:30-6:30	A*	8.6	A*	8.7	A*	8.8	A*	8.7	B*	18.8
	Network AM	8:00-9:00	D*	49.4	E*	56.4	F*	117.1	E*	65.0	F*	118.2
	Caltrain PM	6:00-7:00	B*	12.7	B*	13.8	B*	18.6	C*	21.0	D*	50.6
	Network PM	4:45-5:45	D*	50.0	F*	90.1	F*	166.7	F*	93.4	F*	174.2
Monterey Street at East Market Street*	Caltrain AM	5:30-6:30	B*	14.3	B*	14.6	B*	15.1	B*	17.7	B*	16.0
	Network AM	8:30-9:30	D*	51.7	D*	52.6	D*	52.8	D*	52.6	D*	53.7
	Caltrain PM	6:00-7:00	B*	18.4	C*	20.1	D*	46.5	C*	28.7	C*	30.9
	Network PM	4:45-5:45	C*	33.3	F*	92.4	F*	113.0	F*	92.4	F*	114.6
Rossi Street at North Main Street*	Caltrain AM	5:30-6:30	B*	17.7	B*	18.0	B*	18.4	B*	18.3	B*	19.0
	Network AM	7:45-8:45	C*	32.0	C*	33.1	D*	42.8	C*	33.1	D*	42.9
	Caltrain PM	6:00-7:00	C*	27.9	C*	29.8	C*	30.6	C*	30.1	C*	33.1
	Network PM	4:45-5:45	D*	42.6	D*	52.6	E*	68.4	D*	52.6	E*	68.4

Source: Parsons

\*Observations at these intersections indicate that spillback conditions sometimes bring traffic flow to a standstill, reducing traffic flow and the resulting counts. This condition can result in analysis results that do not accurately reflect conditions.

†Delay in seconds. This number represents the average intersection delay at signalized intersections and the approach delay at unsignalized intersections.



# 1. Introduction

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This report presents the results of the traffic impact analysis conducted for the proposed commuter rail facilities located in three communities in Monterey County, California. The purpose of this study is to evaluate the impacts of the proposed development on the transportation system in the vicinity of each site. The traffic analysis is based on peak-hour levels of service for nine key signalized intersections.

## ***Pajaro Valley***

The proposed facility is located at the Union Pacific Railroad Watsonville Junction in the southeast corner of the intersection of Salinas Road and Railroad Avenue. The station will include a rail passenger loading platform, platform shelters, bus or shuttle berths and shelters, parking, bicycle facilities, sidewalks, and circulation roadways. The station will be accessed via two driveways on Salinas Road. Three key intersections were analyzed:

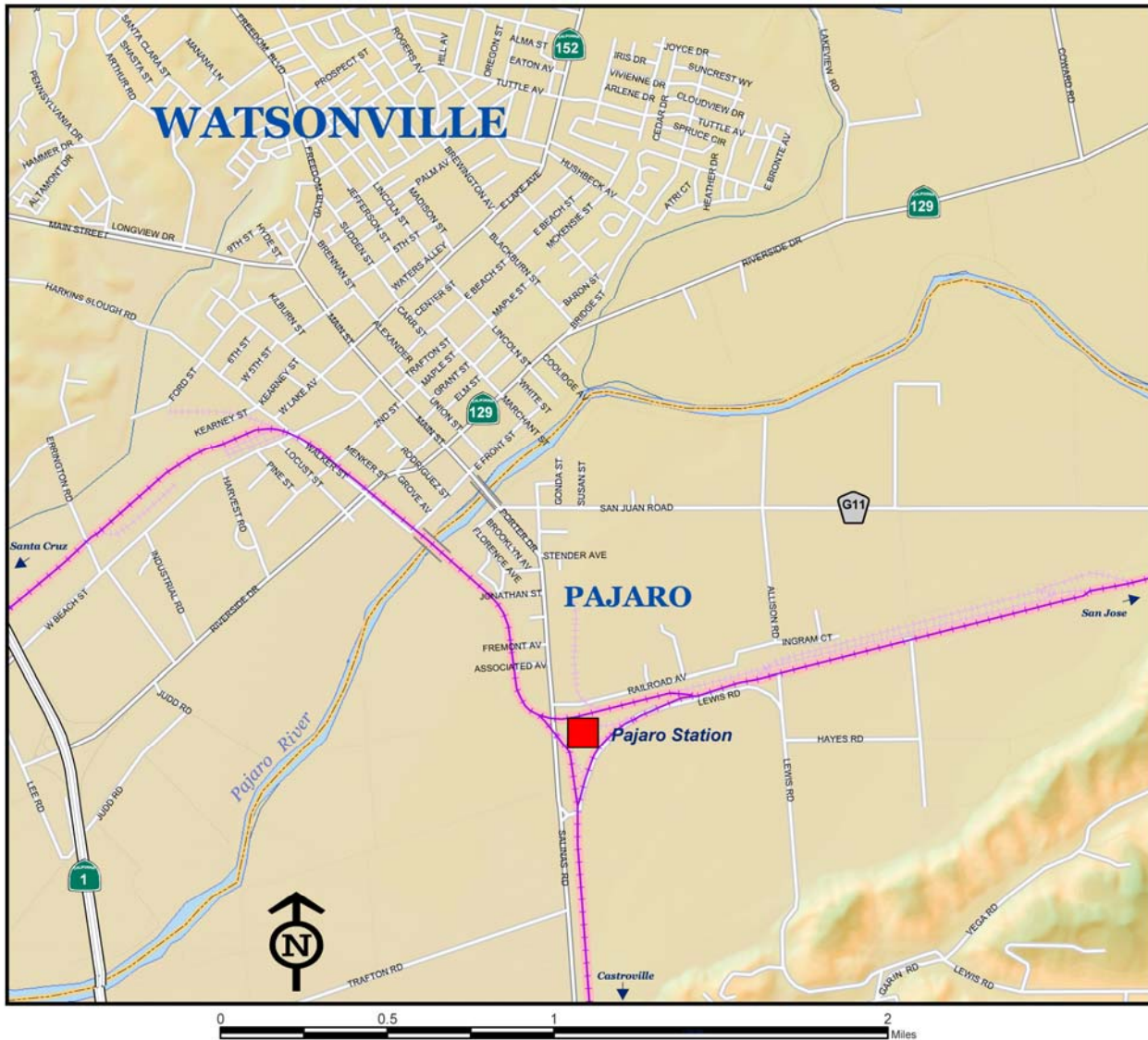
- Porter Drive at San Juan Road
- Salinas Road at Railroad Avenue (westbound leg)
- Salinas Road at Lewis Road (westbound leg)

Figure 1 shows the Pajaro Valley site location, surrounding roadway network, and study intersections.

## ***Castroville***

The proposed facility at Castroville Site 2 is located immediately north of SR 156 west of Castroville Boulevard. The station will include a rail passenger loading platform, platform shelters, bus or shuttle berths and shelters, parking, bicycle facilities, sidewalks, and circulation roadways. The station parking supply will be accessed by automobile from Castroville Boulevard and Collins Road. Pedestrian and bicycle access and auto passenger dropoff and parking (for Castroville residents) will also be available from the west via Benson Road and Salinas Street. A grade-separated railroad crossing for pedestrian, bicycle, and emergency

**Figure 1**  
**Pajaro Valley Station Location**



Source: Parsons

vehicle use will link the parking supply located east of the UPRR track with the rail passenger loading platform located west of the track. Two key intersections were analyzed:

- SR 156 at Castroville Boulevard
- Castroville Boulevard at Station Driveway (eastbound leg)

Figure 2 shows the Castroville Alternative Site 1 and 2 locations, surrounding roadway network, and study intersections.

**Figure 2**  
**Castroville Station Location**



Source: Parsons

**Salinas**

The proposed facility is located adjacent to the existing Amtrak passenger rail station at Salinas. The intermodal center and layover yard entail reconstruction and expansion of the passenger loading platform; a parking structure or lot; a bus transit center with passenger waiting and operations support facilities; construction/relocation of track; modification or addition of site access and circulation roadways; and bicycle facilities.

The station will continue to be accessed from West Market Street. The proposed site plan includes a northern extension of Lincoln Avenue on the station site, resulting in a four-legged signalized intersection that will serve as the primary entrance and exit for the station site. Station Place will be closed. Buses and autos exiting the station will also be able to utilize Palmetto

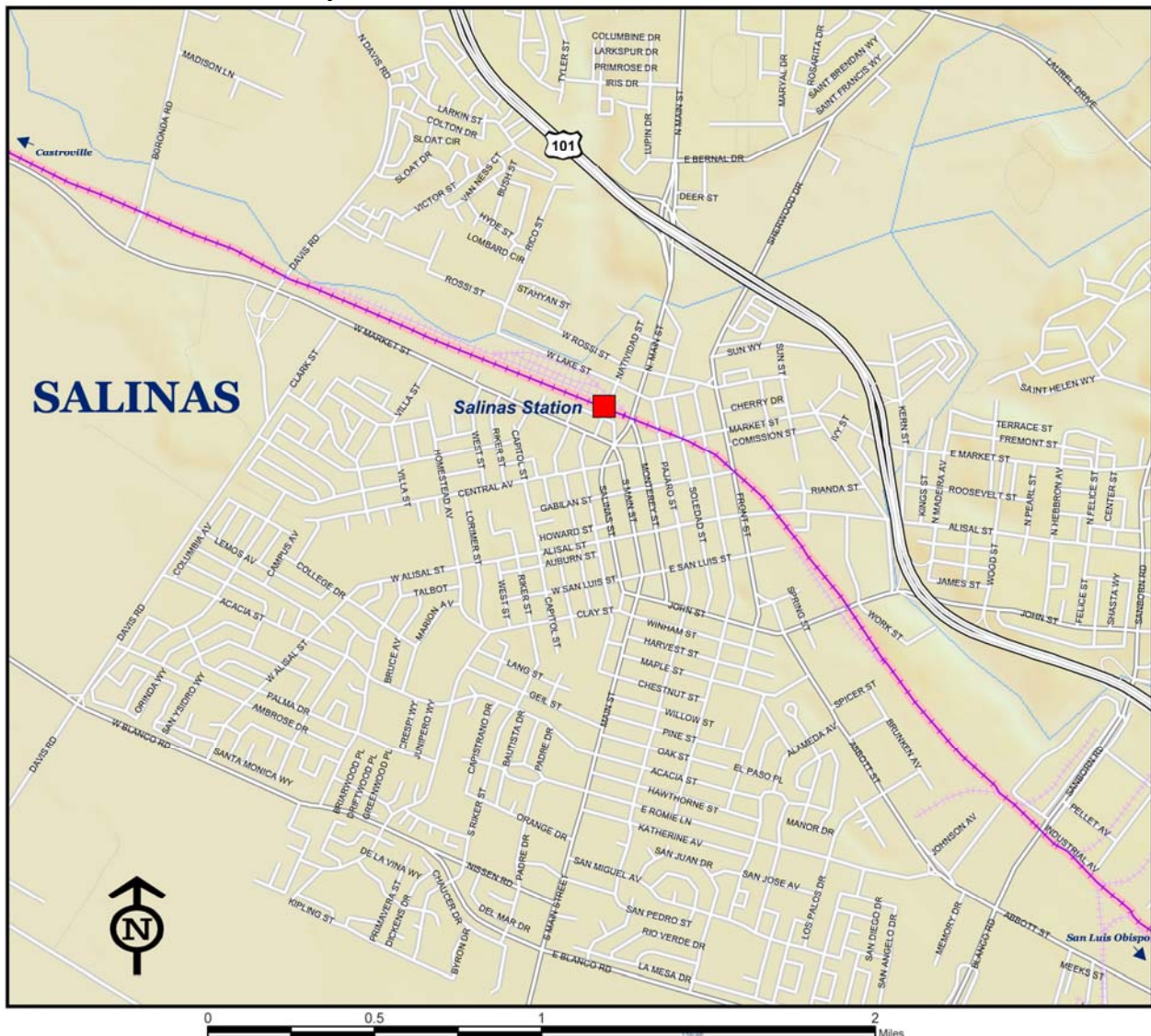
Street. With Design Option 18, two additional roadways, Happ Place and Vale Street, will be available for parking lot access.

Five key intersections were analyzed:

- Lincoln Avenue at West Market Street
- Station Place at West Market Street (Baseline and Background Conditions)
- Salinas Street at West Market Street
- Monterey Street at East Market Street
- Rossi Street at North Main Street

Figure 3 shows the Salinas site location, surrounding roadway network, and study intersections.

**Figure 3**  
**Salinas Intermodal Transportation Center Location**



Source: Parsons



Operating conditions at the intersections were analyzed for the weekday morning and evening peak hours of **network** traffic and for the projected peak hours of commuter rail **station** activity at each location. The peak hour is defined as the one-hour time period in the morning and the one-hour time period in the evening during which the highest volumes of traffic are experienced.

Traffic conditions during both peak periods were evaluated under the following scenarios for the study intersections:

- Scenario 1:** *Baseline Conditions.* Peak-hour volumes for 2002/2003 and 2006, for the projected peak hours of both the Caltrain station and the surrounding roadway network.
- Scenario 2:** *Background Conditions.* Baseline Conditions plus projected peak-hour volumes from future growth. Background Conditions were evaluated for the peak hours of both the Caltrain station operations and the surrounding roadway network, under both the near-term (five-year horizon) and long-term (ten-year horizon) scenarios. The Background conditions are those conditions caused by existing traffic and future growth. The Background analysis represents the “No Project” condition.
- Scenario 3:** *Project Conditions.* Background Conditions plus estimated project-generated traffic. Project Conditions were evaluated for the peak hours of both the Caltrain station operations and the surrounding roadway network, under both the near-term (five-year horizon with a daily service of two trains) and long-term (ten-year horizon with a daily service of four trains) scenarios.

## Intersection Analysis

Both the signalized and unsignalized study intersections were analyzed using SYNCHRO (version 6.0), a traffic engineering analysis software program that calculates intersection level of service based on *Highway Capacity Manual* methodology. Level of service is both a quantitative and qualitative description of an intersection’s operation, ranging from LOS A, or free-flow conditions, to LOS F, or highly congested conditions. The correlation between average stopped vehicular delay and level of service is shown in Table 1.

## Report Organization

This report is divided into five chapters. **Chapter 2** describes Base Year Conditions regarding the sites, including traffic volumes, traffic operations of nearby intersections, transit service provisions, and bicycle/pedestrian access. **Chapter 3** describes the intersection operations for Background Conditions. The methods used to estimate Project Conditions and impacts on the transportation system and parking are described in **Chapter 4**. **Chapter 5** presents the general conclusions resulting from the traffic analysis and an identification of project mitigations, if any.

**Table 1**  
**Intersection Level of Service Definitions**

<b>Signalized Intersections</b>		
<b>Level of Service</b>	<b>Description</b>	<b>Control Delay per Vehicle (Seconds)</b>
A	Free flow; minimal to no delay	≤10
B	Stable flow, but speeds are beginning to be restricted by traffic condition; slight delays.	>10 and ≤20
C	Stable flow, but most drivers can not select their own speeds and feel somewhat restricted, acceptable delays.	>20 and ≤35
D	Approaching unstable flow, and drivers have difficulty maneuvering; tolerable delays.	>35 and ≤55
E	Unstable flow with stop and go; delays.	>55 and ≤80
F	Total breakdown; congested conditions with excessive delay.	>80
<b>Unsignalized Intersections</b>		
<b>Level of Service</b>	<b>Description</b>	<b>Control Delay per Vehicle (Seconds)</b>
A	Free flow; minimal to no delay	≤10
B	Stable flow, but speeds are beginning to be restricted by traffic condition; slight delays.	>10 and ≤15
C	Stable flow, but most drivers can not select their own speeds and feel somewhat restricted, acceptable delays.	>15 and ≤25
D	Approaching unstable flow, and drivers have difficulty maneuvering; tolerable delays.	>25 and ≤35
E	Unstable flow with stop and go; delays.	>35 and ≤50
F	Total breakdown; congested conditions with excessive delay.	>50

Source: 2000 Highway Capacity Manual

## 2. Base Year Conditions

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This chapter provides a description of the base year conditions including roadway network facilities and operations, pedestrian/bicycle access, transit services, and intersection level of service.

### Existing Roadway Network

#### *Pajaro Valley*

Regional access to the proposed commuter rail station is provided via two driveways on Salinas Road. The local roadways included in the traffic analysis are San Juan Road, Railroad Avenue, and Lewis Road. The roadway network serving the site is shown on Figure 1.

**Salinas Road** is an arterial roadway oriented generally in a north/south direction. Salinas Road begins at State Highway 1 to the southwest of Pajaro and runs eastward approximately 1½ miles before turning north and becoming County Road G12. Less than one mile north of the project site, Salinas Road turns due north and becomes Porter Drive. At its signalized intersection with San Juan Road, Salinas Road northbound (named Porter Drive at this location) has one exclusive left-turn lane, one through lane, and one shared through/right-turn lane. At this intersection, southbound Salinas Road has two exclusive left-turn lanes, one through lane, and one shared through/right-turn lane. At its unsignalized intersection with Railroad Avenue, Salinas Road has one lane in each direction separated by a two-way-left-turn lane. (Railroad Avenue traffic turning onto Salinas Road is controlled by a stop sign.) At its unsignalized intersection with Lewis Road, Salinas Road has one through lane and one shared through/right-turn lane in the northbound direction and one exclusive left-turn lane and two through lanes in the southbound direction. The northbound and southbound lanes are separated by a median. Lewis Road traffic turning onto Salinas Road is controlled by a stop sign.

**San Juan Road** (County Road G11) is a two-lane roadway that runs predominantly in an east/west direction. It begins at Porter Drive just north of the project site and runs generally southeast for approximately 10 miles before ending at US Highway 101. At its signalized intersection with Porter Drive (Salinas Road), the westbound leg of San Juan Road has two exclusive right turn lanes and one shared through/left-turn lane. The eastbound leg has one exclusive left-turn lane, one through lane, and one exclusive right-turn lane.

**Railroad Avenue** is a two-lane roadway that runs in an east/west direction, beginning at Salinas Road and running eastward for approximately one mile before it ends. At its stop-controlled intersection with Salinas Road, the westbound leg of Railroad Avenue has one exclusive left-turn lane and one exclusive right-turn lane.

**Lewis Road** is a two-lane road that begins at Salinas Road and crosses the UPRR railroad tracks before turning immediately northward to follow the curve of the tracks to the easternmost edge of the Watsonville Junction yard. At that point, Lewis Road turns south and travels approximately three miles before ending at San Miguel Canyon Road. At its stop-controlled intersection with Salinas Road, Lewis Road has one shared left-turn/right-turn lane.

### **Castroville**

Regional access to the proposed commuter rail station at Site 2 (the locally preferred alternative) is provided by State Route 156. One local roadway, Castroville Boulevard, is addressed by the traffic impact analysis. The roadway network serving the locally preferred site is shown on Figure 2.

**State Route 156** in the vicinity of the Castroville station site is a two-lane conventional highway east of Castroville Boulevard and a four-lane freeway west of Castroville Boulevard. The west leg of the roadway begins at US Highway 101 and runs west to join with State Highway 1 just west of Castroville. At its signalized intersection with Castroville Boulevard, the eastbound and westbound lanes of SR 156 are divided by a center median. SR 156 westbound has two through lanes and one exclusive right-turn lane, while SR 156 eastbound has one exclusive left-turn lane and one through lane.

**Castroville Boulevard** is a two-lane arterial roadway that runs roughly east/west between State Route 156 and San Miguel Canyon Road (County Road G12) in Prunedale. In the vicinity of the proposed passenger rail station, a recent realignment of Castroville Boulevard turns sharply to the south to intersect SR 156. The original alignment of Castroville Boulevard becomes unpaved and changes names to Collins Road before dead-ending at the UPRR railroad track. At its signalized intersection with SR 156, Castroville Boulevard has one exclusive left-turn lane and one exclusive right-turn lane.

Local access to the proposed commuter rail station at Site 2 will also be afforded by Benson Road. Benson Road is a two-lane local street which connects with the north/south grid of local streets serving the northern portion of Castroville, north of SR 156. Benson Road is currently unpaved between Axtell and Haight Streets, a distance of one block. West of Haight Street, the roadway is named Salinas Street.

Site 1 lies adjacent to Del Monte Avenue and is located approximately one mile south of Site 2. Regional access to Site 2 is provided by State Route 156 and its interchange with Merritt Street (SR 183). Merritt Street is a two-lane arterial roadway that runs roughly north/south and provides all local (Castroville) access to State Route 156.

Local access to a commuter rail station at Site 1 would also be provided by Blackie Road and Wood Street. Wood Street is a two-lane collector street having an unsignalized intersection with Merritt Street, just south of the SR 156/Merritt Street interchange ramps. In the vicinity of Site 1,

Blackie Road is a four-lane arterial street serving the industrial park located both east and west of the Union Pacific Railroad Coast line. Blackie Road has a signalized intersection with Merritt Street.

Upon reaching Merritt Street, traffic is expected to access the site primarily via Blackie Road. Traffic can potentially access Site 1 via Wood Street; but southbound access to Wood Street is difficult and somewhat dangerous due to traffic queues extending south from the eastbound SR 156 ramp terminal intersection. Northbound egress from the site via Wood Street is also challenging due to traffic queues and weaving maneuvers to access the westbound on-ramp left turn lane to SR 156. As a result, station trips entering and leaving the station site have been assigned to the Blackie Road intersection as a conservative assumption.

### ***Salinas***

Regional access to the proposed development is provided by North Main Street and West Market Street. Local roadways included in the study area are Station Place, Lincoln Avenue, Palmetto Street, Stone Street, Happ Place, and Capitol Street. The roadway network serving the site is shown in Figure 3.

**North Main Street** is also designated as U.S. Business Highway 101 and State Highway 183. In the vicinity of the station site, North Main Street is a four-lane arterial that runs generally in a north/south direction. At Bataan Memorial Park just east of the station, Main Street connects with a one-way street couplet consisting of Salinas Street (running southbound) and Monterey Street (running northbound).

**West Market Street** is a four-lane arterial that runs generally in an east/west direction. West of North Main Street, it is also designated as State Highway 183.

**Station Place** is a two-lane local street that runs in a north/south direction. It extends north from West Market Street one block toward the existing Amtrak station.

**Lincoln Avenue** is a two-lane local street that runs generally in a north/south direction. It extends south from West Market Street for about one half mile, paralleling Main Street.

## **Transit System**

Bus service in the study areas is provided by Monterey-Salinas Transit (MST) the Santa Cruz Metropolitan Transit District (SCMTD), Greyhound Lines, and Amtrak Thruway Motor Coach.

### ***Pajaro Valley***

MST operates Routes 28 and 29, which pass by the proposed Pajaro Valley Rail Station on Salinas Road. Route 27 could also potentially be rerouted to serve the proposed station.

SCMTD, otherwise known as METRO, operates seven routes that serve the Watsonville Transit Center, located at 475 Rodriguez Street: Route 69/69A/69W/69N Capitola Road/Cabrillo/Watsonville, Route 71 Watsonville-Santa Cruz, Route 72 Corralitos, Route 74 Ohlone Parkway/Rolling Hills, Route 75 Green Valley, Route 76 Corralitos/Buena Vista, Route 79 East Lake, and Route 91 Commuter Express.

### **Castroville**

MST has recently discontinued Route 25 Gilroy/Monterey linking Monterey, Marina, Castroville, and Prunedale with Gilroy. This route passed by the proposed Castroville Rail Station (Site 2) on SR 156. MST currently services Castroville via routes 27 and 28. These routes are aligned along SR 183/Merritt Street, passing through downtown Castroville. The analysis assumes that these routes would access the station locations (Site 1 and 2) via local streets.

### **Salinas**

The Salinas Amtrak Station is currently served by five MST routes: Route 28 Watsonville (passes the station on Market Street), Route 29 Watsonville (two daily trips to the Amtrak Station; all others pass the station on Market Street), Route 44 Westridge (passes the station on Market Street, Route 45 East Market-Creekbridge (passes the station on Market Street) and 46 Natividad (also passes the station on Market Street.)

These routes also serve the Salinas Transit Center, which is located two blocks south of the passenger rail station near Central Avenue, between Lincoln Avenue and Salinas Street. Six additional MST routes serve the Salinas Transit Center: Route 21 Salinas—Monterey via Highway 68, Route 23 Salinas-King City, Route 39 Laguna Seca-Salinas (special service), Route 41/42 East Alisal—Northridge/Westridge, Route 20 Salinas-Monterey via Marina and Route 43 Memorial Hospital.

The Greyhound Bus Station serves passengers traveling on the U.S. 101 corridor between Los Angeles and San Jose. Northbound buses arrive from origins such as Los Angeles and San Luis Obispo and dwell at the station for 5 to 30 minutes before continuing their journey to San Jose via Gilroy or Santa Cruz. Some buses originate or terminate at the Salinas Station. One bus, Schedule Number 6703, lays over at the station for 3½ hours before originating a new schedule, Number 6712.

Amtrak Thruway bus service is located at the Salinas Intermodal Transportation Center (ITC). This service provides connections each day to the Capitol Corridor trains (Salinas to San Jose) and the Pacific Surfliner trains (Salinas to Santa Barbara), or two trip connections to the San Joaquin trains (Salinas to Merced).

## **Bicycle and Pedestrian System**

The following describes the bicycle and pedestrian network in the vicinity of the three stations.

### **Pajaro Valley**

Sidewalks are generally provided along Salinas Road between Porter Drive and Railroad Avenue. Utility poles located within these sidewalks reduce their effective width. Sidewalks are not provided along Railroad Avenue or Lewis Road. No sidewalks front the proposed station site along Salinas Road.

No bicycle lanes, paths, or routes are provided within the immediate vicinity of the proposed station site.

### **Castroville**

Sidewalks are generally not provided adjacent to local streets serving the Castroville community. A sidewalk is provided adjacent to Benson Road, Salinas Street and Castroville Boulevard. A pedestrian overcrossing of State Route 156 is also available. No grade separated pedestrian crossing of the Union Pacific Railroad Coast line track is available; however, a gate/lights/bells-protected at-grade crossing is provided at Blackie Road.

No bicycle lanes, paths, or routes are provided in the vicinity of the locally preferred Site 2, or Site 1.

### **Salinas**

An extensive system of sidewalks serves the Salinas residential neighborhoods and central business district which surround the Salinas Amtrak Station site.

Sidewalks are present on most local, collector and arterial streets which lead to/from the existing station site.

## **Existing Intersection Volumes**

Traffic data were obtained for key study area intersections by conducting manual turning-movement counts during AM and PM peak periods of peak traffic flows and during the hours when passenger trains are expected to arrive at and depart from the stations. Traffic counts for Pajaro and Castroville Site 2 were conducted in November 2002, two weeks before the Thanksgiving holiday period and for Castroville Site 1 from July 11-13, 2006. Traffic counts for Salinas were conducted on April 30, 2003. Existing traffic signal cycle lengths used for the Salinas analysis were based on observations made during those counts; cycle lengths for Pajaro and Castroville are commonly-used default values. (See Appendix A for turning movement counts and Appendix B for traffic volume worksheets.) Figure 4 shows the existing volumes at the study intersections during the peak hours of **network** traffic. Figure 5 shows existing volumes during the projected peak hour of **station** traffic.

The results of the level of service analysis indicate that under base year conditions, one study intersection in Pajaro operates at an acceptable level of service and with excess capacity during both station and network peak hours (Salinas Road at Lewis Road). The stop-controlled approach of Railroad Avenue at Salinas Road operates at LOS F during both the existing PM network peak hour and the PM peak hour of projected Caltrain-generated traffic. The signalized intersection of Porter Drive at San Juan Road operates at LOS D during both PM peak hours.

In Castroville, both study area intersections at Alternative Site 2 operate at acceptable levels of service (LOS C or better) and with excess capacity during all peak periods. At Alternative Site 1, the intersection at Merritt Street and Blackie Road operates at an unacceptable LOS D.

In Salinas, the intersections of Lincoln Avenue at West Market, Salinas Street at West Market, Monterey Street at East Market and Rossi Street at North Main operate at an acceptable level of service (LOS D or better) and with excess capacity during all peak periods. However, the stop-controlled approach of Station Place at West Market Street operates at LOS F during both peak hours of network traffic.

Figure 4  
Base Year Traffic Volumes during Network Peak Hours in Pajaro Valley, Castroville, and Salinas

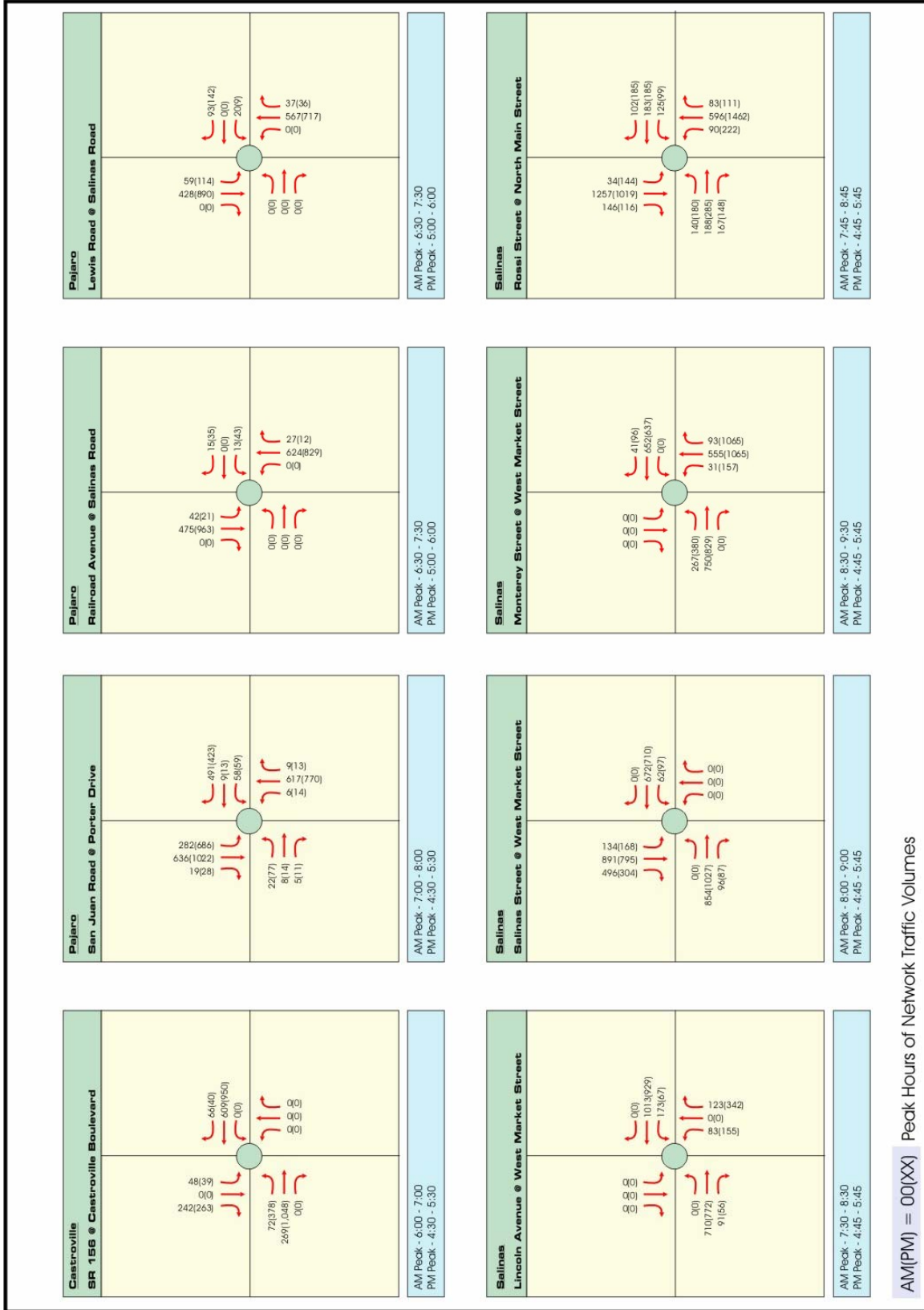
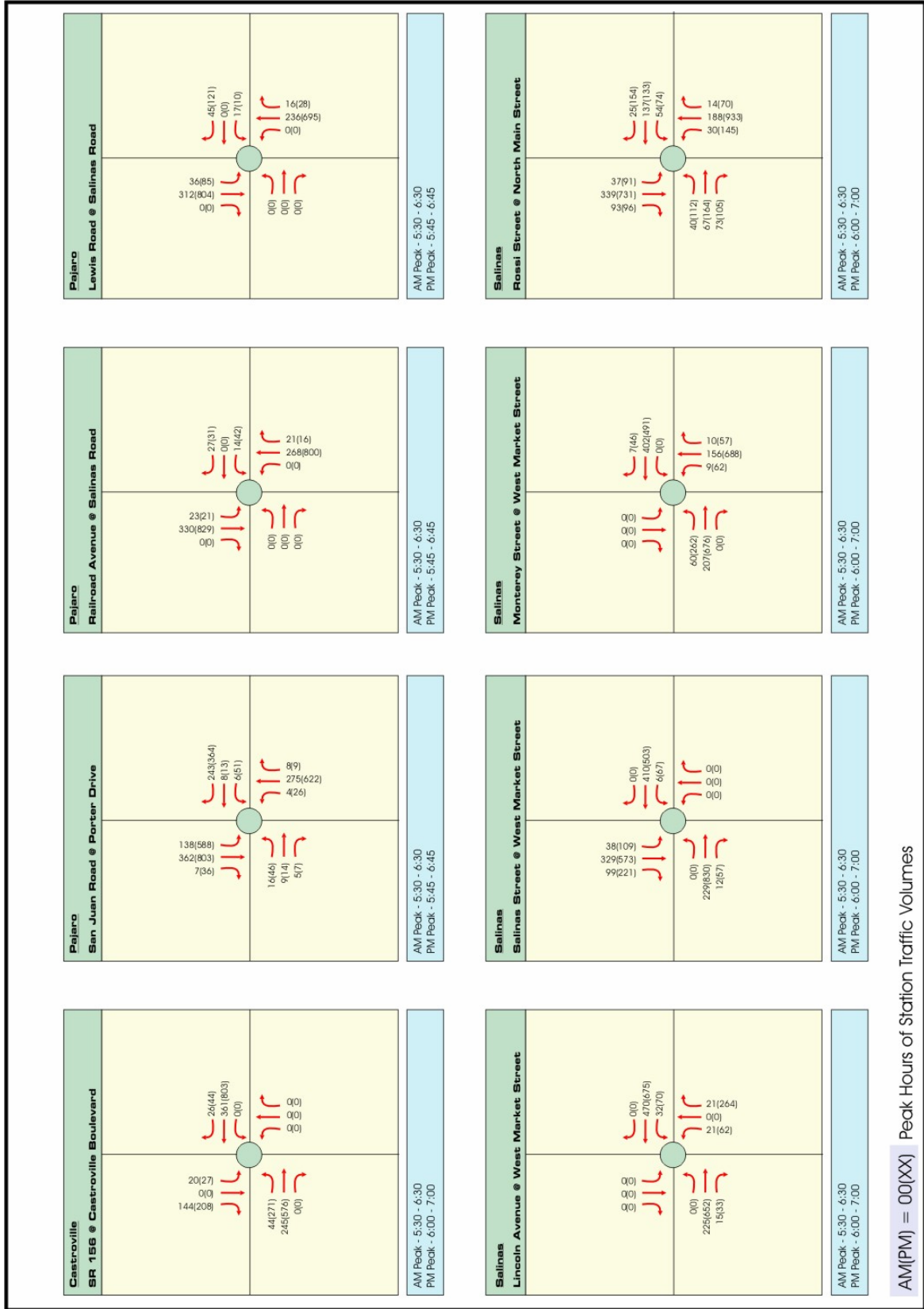




Figure 5  
Base Year Volumes during Station Peaks Hour in Pajaro Valley, Castroville, and Salinas



AM(PM) = 00(XX) Peak Hours of Station Traffic Volumes

Field observation of existing traffic operations during the network evening peak indicates that traffic queues spill back from the intersection of Rossi Street and North Main Street to adjacent intersections, including the Salinas Street/West Market Street and Monterey Street/East Market Street intersections as well as the Lincoln Avenue at West Market Street intersection. At times, this area of downtown Salinas appears to be gridlocked. Because such conditions reduce the traffic volumes entering and exiting the study intersections, level of service analysis (based on the hourly traffic volumes) can falsely indicate acceptable operations.

**Table 2**  
**Base Year Intersection Levels of Service**

	Intersection	Peak	Peak Hour	Baseline LOS**	Delay, sec†
<b>Pajaro Valley</b>	Porter Drive at San Juan Road	Caltrain AM	5:30-6:30	C	21.1
		Network AM	7:00-8:00	B	15.4
		Caltrain PM	5:45-6:45	D	39.4
		Network PM	4:30-5:30	D	44.5
	Salinas Road at Railroad Avenue (westbound leg)	Caltrain AM	5:30-6:30	B	14.6
		Network AM	6:30-7:30	D	28.3
		Caltrain PM	5:45-6:45	F	93.6
		Network PM	5:00-6:00	F	150.3
	Salinas Road at Lewis Road (westbound leg)	Caltrain AM	5:30-6:30	B	10.9
Network AM		6:30-7:30	B	14.0	
Caltrain PM		5:45-6:45	B	14.6	
Network PM		5:00-6:00	C	15.3	
<b>Castroville</b>	SR 156 at Castroville Boulevard	Caltrain AM	5:30-6:30	B	11.6
		Network AM	6:00-7:00	B	13.3
		Caltrain PM	6:00-7:00	C	20.4
		Network PM	4:30-5:30	C	27.9
	Castroville Boulevard at Station Driveway (eastbound leg)	Caltrain AM	5:30-6:30	A	9.5
		Network AM	6:00-7:00	B	10.7
		Caltrain PM	6:00-7:00	B	11.2
		Network PM	4:30-5:30	B	12.5
	SR 156 off-ramp (westbound) at Merritt Street	Caltrain AM	5:30-6:30	A	5.8
		Network AM	7:00-8:00	A	7.8
		Caltrain PM	6:00-7:00	A	7.7
		Network PM	4:30-5:30	A	6.1
	SR 156 on-ramp (eastbound) at Merritt Street	Caltrain AM	5:30-6:30	B	13.9
		Network AM	6:00-7:00	B	12.9
		Caltrain PM	4:45-5:45	B	12.6
Network PM		5:00-6:00	B	19.4	
Merritt Street at Blackie Road	Caltrain AM	5:30-6:30	D	38.7	
	Network AM	6:00-7:00	D	38.8	
	Caltrain PM	6:00-7:00	D	35.1	
	Network PM	5:00-6:00	D	36.8	
<b>Salinas</b>	Lincoln Avenue at West Market Street*	Caltrain AM	5:30-6:30	B*	11.8
		Network AM	7:30-8:30	B*	19.7
		Caltrain PM	6:00-7:00	B*	14.3
		Network PM	4:45-5:45	B*	17.6
	Station Place at West Market Street (southbound leg)	Caltrain AM	5:30-6:30	B	14.5
		Network AM	7:30-8:30	F	61.7
		Caltrain PM	6:00-7:00	D	30.3
		Network PM	4:45-5:45	F	55.9
	Salinas Street at West Market Street*	Caltrain AM	5:30-6:30	A*	8.6
Network AM		8:00-9:00	D*	49.4	
Caltrain PM		6:00-7:00	B*	12.7	

	<b>Intersection</b>	<b>Peak</b>	<b>Peak Hour</b>	<b>Baseline LOS**</b>	<b>Delay, sec†</b>
		Network PM	4:45-5:45	D*	50.0
	Monterey Street at East Market Street*	Caltrain AM	5:30-6:30	B*	14.3
		Network AM	8:30-9:30	D*	51.7
		Caltrain PM	6:00-7:00	B*	18.4
		Network PM	4:45-5:45	C*	33.3
	Rossi Street at North Main Street*	Caltrain AM	5:30-6:30	B*	17.7
		Network AM	7:45-8:45	C*	32.0
		Caltrain PM	6:00-7:00	C*	27.9
		Network PM	4:45-5:45	D*	42.6

\* Observations at these intersections indicate that spillback conditions sometimes bring traffic flow to a standstill, reducing traffic flow and the resulting counts. This condition can result in analysis results that do not accurately reflect conditions.

\*\* See Table 1 for LOS definitions.

† Delay in seconds. This number represents the average intersection delay at signalized intersections and the approach delay at unsignalized intersections.

### **3.**

## **Background (No Project) Conditions**

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Background Conditions are those conditions caused by existing traffic and future growth. The background analysis represents the "No Project" condition.

In the Pajaro station vicinity, no additional planned developments were included in this analysis. In the vicinity of the Castroville station, a transit-oriented development is proposed in the Community Plan. Although this development is proposed, the development is not approved and has therefore not been included in this analysis. According to the Salinas Redevelopment Agency, a previously proposed 14-story hotel and mixed use development nearby the station location is not currently approved and thus has not been included in this analysis. A movie theater and a parking structure in the project vicinity have recently been developed. Traffic to/from the movie theater peaks at a different time than both the proposed station in Salinas as well as the adjacent street traffic.

To account for likely but unspecified growth, a 2% annual increase in traffic (growth rate) was applied to base year volumes to project five-year (2008) and ten-year (2013) Background Conditions. This is the annual rate of growth used by Caltrans in its Traffic Operational Analysis for Route 156 from Route 183 to Meridian Road and is based on Department of Finance population projections for the region and the AMBAG traffic model. Geometry and signal timing for the background conditions were not changed from that of the existing conditions. The results of the background intersection level of service analysis are presented in Table 3. See Appendix B for traffic volume worksheets and Appendix C for level of service calculation sheets.

The results of the level of service analysis in Pajaro indicate that in the five-year background scenario, the intersection of Salinas Road at Lewis Road continues to operate at acceptable levels of service. The Salinas Road at Railroad Avenue intersection continues to operate at LOS F during both PM peaks. Level of service worsens from D to E during the PM network peak hour at Porter Drive and San Juan Road.

At Alternative Site 2 in Castroville, no change in level of service occurs between base year and five-year background conditions.

**Table 3**  
**Background Five-year (2008) and Ten-year (2013) Intersection Levels of Service**

Intersection	Peak	Peak Hour	Condition					
			Baseline LOS**	Delay, sec†	5-Year Background LOS**	Delay, sec†	10-Year Background LOS**	Delay, sec†
<b>Pajaro Valley</b>								
Porter Drive at San Juan Road	Caltrain AM	5:30-6:30	C	21.1	C	21.6	C	22.4
	Network AM	7:00-8:00	B	15.4	C	29.4	C	30.2
	Caltrain PM	5:45-6:45	D	39.4	D	42.0	D	43.5
	Network PM	4:30-5:30	D	44.5	E	59.3	F	123.9
Salinas Road at Railroad Avenue (westbound leg)	Caltrain AM	5:30-6:30	B	14.6	C	15.7	C	17.2
	Network AM	6:30-7:30	D	28.3	D	34.2	E	43.5
	Caltrain PM	5:45-6:45	F	93.6	F	170.0	F	349.6
	Network PM	5:00-6:00	F	150.3	F	296.1	F	603.1
Salinas Road at Lewis Road (westbound leg)	Caltrain AM	5:30-6:30	B	10.9	B	11.2	B	11.6
	Network AM	6:30-7:30	B	14.0	C	15.1	C	16.7
	Caltrain PM	5:45-6:45	B	14.6	C	16.1	C	18.3
	Network PM	5:00-6:00	C	15.3	C	17.3	C	20.3
<b>Castroville</b>								
SR 156 at Castroville Boulevard	Caltrain AM	5:30-6:30	B	11.6	B	11.8	B	12.0
	Network AM	6:00-7:00	B	13.3	B	13.3	B	13.8
	Caltrain PM	6:00-7:00	C	20.4	C	26.1	C	26.1
	Network PM	4:30-5:30	C	27.9	C	30.3	D	51.9
Castroville Boulevard at Station Driveway (eastbound leg)	Caltrain AM	5:30-6:30	A	9.5	A	9.7	A	9.8
	Network AM	6:00-7:00	B	10.7	B	11.1	B	11.5
	Caltrain PM	6:00-7:00	B	11.2	B	11.6	B	11.6
	Network PM	4:30-5:30	B	12.5	B	13.2	B	14.1
SR 156 off-ramp (westbound) at Merritt Street	Caltrain AM	5:30-6:30	A	5.8	A	5.9	A	6.3
	Network AM	7:00-8:00	A	7.8	B	11.6	B	13.6
	Caltrain PM	6:00-7:00	A	7.7	A	7.9	A	8.6
	Network PM	4:30-5:30	A	6.1	A	6.3	A	7.2
SR 156 on-ramp (eastbound) at Merritt Street	Caltrain AM	5:30-6:30	B	13.9	B	14.2	B	15.0
	Network AM	6:00-7:00	B	12.9	B	13.6	B	13.9
	Caltrain PM	4:45-5:45	B	12.6	B	13.1	B	15.3
	Network PM	5:00-6:00	B	19.4	C	22.1	C	29.1
Merritt Street at Blackie Road	Caltrain AM	5:30-6:30	D	38.7	D	39.3	D	40.6
	Network AM	6:00-7:00	D	38.8	D	39.6	D	40.9
	Caltrain PM	6:00-7:00	D	35.1	D	35.9	D	36.3
	Network PM	5:00-6:00	D	36.8	D	38.5	D	38.8



Intersection	Peak	Peak Hour	Condition					
			Baseline LOS**	Delay, sec†	5-Year Background LOS**	Delay, sec†	10-Year Background LOS**	Delay, sec†
<b>Salinas</b>								
Lincoln Avenue at West Market Street*	Caltrain AM	5:30-6:30	B*	11.8	B*	12.5	B*	13.1
	Network AM	7:30-8:30	B*	19.7	C*	22.6	C*	22.9
	Caltrain PM	6:00-7:00	B*	14.3	B*	15.0	B*	19.2
	Network PM	4:45-5:45	B*	17.6	B*	19.8	C*	32.0
Station Place at West Market Street (south-bound leg)	Caltrain AM	5:30-6:30	B	14.5	C	15.5	C	16.8
	Network AM	7:30-8:30	F	61.7	F	88.3	F	137.9
	Caltrain PM	6:00-7:00	D	30.3	E	37.0	E	47.0
	Network PM	4:45-5:45	F	55.9	F	78.2	F	119.1
Salinas Street at West Market Street*	Caltrain AM	5:30-6:30	A*	8.6	A*	8.7	A*	8.8
	Network AM	8:00-9:00	D*	49.4	E*	56.4	F*	117.1
	Caltrain PM	6:00-7:00	B*	12.7	B*	13.8	B*	18.6
	Network PM	4:45-5:45	D*	50.0	F*	90.1	F*	166.7
Monterey Street at East Market Street*	Caltrain AM	5:30-6:30	B*	14.3	B*	14.6	B*	15.1
	Network AM	8:30-9:30	D*	51.7	D*	52.6	D*	52.8
	Caltrain PM	6:00-7:00	B*	18.4	C*	20.1	D*	46.5
	Network PM	4:45-5:45	C*	33.3	F*	92.4	F*	113.0
Rossi Street at North Main Street*	Caltrain AM	5:30-6:30	B*	17.7	B*	18.0	B*	18.4
	Network AM	7:45-8:45	C*	32.0	C*	33.1	D*	42.8
	Caltrain PM	6:00-7:00	C*	27.9	C*	29.8	C*	30.6
	Network PM	4:45-5:45	D*	42.6	D*	52.6	E*	68.4

\* Observations at these intersections indicate that spillback conditions sometimes bring traffic flow to a standstill, reducing traffic flow and the resulting counts. This condition can result in analysis results that do not accurately reflect conditions.

\*\* See Table 1 for LOS definitions.

† Delay in seconds. This number represents the average intersection delay at signalized intersections and the approach delay at unsignalized intersections.

At Alternative Site 1 in Castroville, the westbound SR 156 off-ramp at Merritt Street declines from LOS A to LOS B during the network AM peak period, and the eastbound SR 156 on-ramp at Merritt Street drops from LOS B to LOS C during the network PM peak period. The intersection at Merritt Street and Blackie Road continues to operate at an unacceptable LOS D.

In Salinas, the Station Place at West Market Street intersection is projected to experience increased delay during all peaks. During the AM peak hour of station traffic, the level of service declines from LOS B to LOS C. The level of service remains at F during both the AM and PM peak hours of network traffic and the delay increases. During the PM peak hour of station traffic, the level of service drops from D to E. At the Salinas Street at West Market Street intersection, level of service drops from D to E and from D to F during the AM and PM peak hours of network traffic, respectively. The Monterey Street at East Market Street intersection declines from LOS B to LOS C during the PM peak hour of station traffic, and from LOS C to LOS F during the PM peak of network traffic. Level of service at the Rossi Street and North Main Street intersection remains unchanged, however delay increases during the PM peak hour of network traffic. The level of service drops from D to E during the PM peak hour of network traffic. Traffic operations at the intersection of Lincoln Avenue and West Market Street are not projected to decline significantly during any of the peak periods, however level of service declines from B to C during the AM peak hour of network traffic.

In the ten-year background scenario, traffic operations in Pajaro will continue to occur with slightly increased delay but at the same levels of service as during the five-year background scenario, with two exceptions. The PM network peak hour level of service declines from E to F at the Porter Drive and San Juan Road intersection. Also, the stop-controlled approach of Railroad Avenue at Salinas Road declines from LOS D to LOS E during the morning peak hour of network traffic.

Ten-year background traffic operations in Castroville at Alternative Sites 1 and 2 are projected to remain at the same levels of service as experienced during the five-year background scenario during all peak periods with one exception. The intersection of SR 156 and Castroville Boulevard at Alternative Site 2 is projected to decline from LOS C to LOS D during the PM peak hour of network traffic. The intersection at Merritt Street and Blackie Road continues to operate at an unacceptable LOS D during all peak periods.

In Salinas, the intersection of Lincoln Avenue at West Market Street is projected to decline from LOS B to LOS C during the PM peak hour of network traffic. The Salinas Street at West Market Street intersection declines from LOS E under the five-year background scenario to LOS F under the ten-year background scenario during the AM peak hour of network traffic. Rossi Street at North Main Street is projected to decline from LOS C to LOS D during the AM network peak and from LOS D to LOS E during the PM network peak.

## 4. Project Conditions

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The methodology for assessing project traffic impacts involves examining trips generated or attracted to the stations, the distribution of where these trips come from or are destined to, and the routes motorists use to access the station.

### Trip Generation

Daily ridership estimates were forecast for each of the proposed commuter rail stations based on the methodology reported in *Ridership Estimates for Caltrain Extension*, located in Appendix B-1 of the *Project Study Report*. Estimates were performed for both the five-year and ten-year scenarios. The five-year scenario considered operation of two round trip trains per day and considered Background traffic conditions as the basis for analysis. The ten-year scenario considered operation of four round trip trains per day and 2013 Background conditions as the basis of analysis. Year 2009 is the currently projected year of opening, and the five-year scenario is thus most relevant to this analysis of impacts.

The percentage of total ridership arriving and departing via automobile was estimated based on the 2001 Caltrain passenger origin and destination survey and knowledge of each station's market area. It is projected that 86 percent of riders will arrive by automobile in Pajaro, 73 percent in Castroville, and 60 percent in Salinas.

The ridership totals resulting from these percentages were multiplied by two for park-and-ride boardings (one entering trip in the morning and one exiting trip in the evening) or by four for kiss-and-ride boardings (one entering and one exiting trip in the morning plus one entering and one exiting trip in the evening).

These totals were divided by two to separate the morning's departing riders and the evening's arriving riders.

The resulting totals for morning and evening were multiplied by 60 percent to represent the number of riders that would arrive during the single peak hour of the morning or evening station-generated traffic (based on boarding patterns at the Gilroy Caltrain station).



The single peak 60 minutes for Caltrain ridership, in most cases, will not coincide with the peak hour observed on the adjacent street network. In those cases, the 60 minute time slice during the morning and evening periods that would represent the ridership peak—and therefore the trip generation peak—was assumed to be the 60 minutes in the morning when the last scheduled train would depart and the 60 minutes in the evening when the first scheduled train would arrive<sup>1</sup>. In cases where this peak 60 minute time slice did not fall within the observed peak hour on the adjacent network, the 60 minute time slice that was closest to the network peak (while still containing a scheduled Caltrain arrival or departure) was selected. This resulted in a “worst-case” analysis scenario in which as much of the Caltrain peak traffic as possible overlaps with the network peak traffic.

In cases in which there was partial overlap between the Caltrain peak 60 minute time slice of traffic generation and the network peak hour, a judgment was made regarding the percentage of peak 60 minute time slice project trips that would take place within the network peak hour.

- At Pajaro, traffic volumes on the roadway network peak from 6:30 to 8:00 a.m. in the morning and from 4:30 to 6:00 p.m. in the evening.
- At the Pajaro station, the peak 60 minutes of morning station activity is projected to take place from 5:30 to 6:30 a.m., assuming that most riders will take the last train at 6:34 a.m. The next-latest train leaves at 5:35 a.m. in the five-year scenario, so no riders on that train are projected to arrive at the station during the 5:30-to-6:30 a.m. period. In the Ten Year scenario, the next-latest train leaves at 6:00 a.m. With four trains arriving over a two-hour period in the morning, 60 percent of riders are projected to use the station during the 5:30 to 6:30 a.m. hour just as in the five-year, two-train scenario.

In both the five-year and ten-year scenarios, none of the peak 60 minute time slice Caltrain trips are projected to take place within the adjacent roadway network peak hour of 7:00 to 8:00 a.m. at the intersection of San Juan Road and Porter Drive; or the network peak hour of 6:30 to 7:30 a.m. at the intersections of Salinas Road at Railroad Avenue and Salinas Road at Lewis Road. This assumes that the riders on the 6:34 train will stop arriving at the station by 6:30 a.m.

- At the Pajaro station, the peak 60 minutes of evening station activity is projected to take place from 5:45 to 6:45 p.m., assuming that most riders will take the first train and arrive at 6:10 p.m. Kiss-and-ride drivers are assumed to begin to arrive 15 minutes prior to the arrival of the train. The second train arrives at 7:03 p.m. in both the five-year and the ten-year scenarios.

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<sup>1</sup> On August 1, 2005, Caltrain updated its service with faster trains and a new schedule which included three trains instead of four serving the south end of the San Francisco to San Jose/Gilroy line. For the purposes of this study, the new schedule was compared to the previous schedule upon which this analysis was based to ensure that the results were still comparable. Parsons’ proposed schedule for the capacity study for northbound trains involved the utilization of four trains from Salinas to San Francisco. The proposed utilization for the southbound direction also included four trains. The revised Caltrain schedule was reviewed and during the AM and PM peak periods, the arrival and departure times at the proposed Salinas station will be within the same window of time as those analyzed for this study. Therefore, the peak hour traffic volumes that were used for the level of service calculations are still applicable with the new Caltrain schedule.

In both the five- and ten-year scenarios, none of the peak Caltrain trips are projected to take place within the network peak hour of 4:30 to 5:30 p.m. at the intersection of San Juan Road and Porter Drive. Ten northbound and ten southbound bus trips have been added to the traffic projections however, to reflect increased MST and SCMTD service to Pajaro. At the intersections of Salinas Road at Railroad Avenue and Salinas Road at Lewis Road, in both scenarios, 50 percent of the peak Caltrain trips are projected to take place from 5:45 to 6:15 p.m., coinciding with the network peak hour of 5:00 to 6:00 p.m.

- At Castroville, traffic volumes on the roadway network peak from 6:00 to 7:00 a.m. in the morning and from 4:30 to 5:30 p.m. in the afternoon. These peak hours may differ on weekends; however, commuter rail service is not projected to operate on Saturdays and Sundays. Hence, only weekday traffic operations are considered.

At the Castroville station, the peak 60 minutes of morning station activity is projected to take place from 5:30 to 6:30 a.m., assuming that most riders will take the last train at 6:16 a.m. The next-latest train leaves at 5:17 a.m. in the five-year scenario, so no riders on that train are projected to arrive at the station during the 5:30-6:30 a.m. period. In the ten-year scenario, the next-latest train leaves at 5:42 a.m. With four trains arriving over a two-hour period in the morning, 60 percent of riders are projected to use the station during the peak 60 minutes of passenger arrivals, just as in the five-year, two-train scenario.

In the ten-year scenario, 100 percent of the peak Caltrain trips are projected to take place from 6:00 to 6:30 a.m., coinciding completely with the network peak hour. In the ten-year scenario, it is assumed that half of the new trips generated by the 5:42 and 6:16 trains will take place in the 6:00 to 6:30 a.m. timeframe; therefore, 50 percent of the total peak-station-hour trips were applied to the network peak hour scenario.

- At the Castroville station, the peak 60 minutes of evening station activity is projected to take place from 6:00 to 7:00 p.m., assuming that most riders will take the first train and arrive at 6:30 p.m. Kiss-and-ride drivers will begin to arrive 15 minutes prior to the arrival of the train. The second train arrives at 7:23 p.m. in both the five- and ten-year scenarios; there should be little or no overlap of traffic generated by these two trains within this study hour.

None of the peak Caltrain trips will take place within the adjacent street network peak periods of 4:30 to 5:30 p.m. or 5:00 to 6:00 p.m. under either the five-year or the ten-year scenario.

- At Salinas, traffic volumes on the adjacent roadway network peak from 7:30 to 9:30 a.m. in the morning and from 4:45 to 5:45 p.m. in the afternoon.
- At the Salinas station, the peak 60 minutes of morning station activity is projected to take place from 5:30 to 6:30 a.m., assuming that most riders will take the last departing train at 5:59 a.m. In the five-year scenario, the first train is scheduled to leave at 5:00 a.m., so no riders are projected to arrive within the adjacent street network peak hour. During the ten-year scenario, the next-latest train leaves at 5:25 a.m. With four trains departing Salinas over a two-hour period in the morning, 60 percent of riders are projected to use

the station during the 60 minutes of heaviest boarding activity just as in the five-year, two-train scenario.

In both the five- and ten-year scenarios, none of the peak Caltrain trips are projected to take place within the network peak hour at any of the study-area intersections.

- At the Salinas station, the peak 60 minutes of evening station activity is projected to take place from 6:00 to 7:00 p.m., assuming that most riders will take the first train which arrives in Salinas at approximately 6:45 p.m. Kiss-and-ride drivers will begin to arrive 15 minutes prior to the arrival of the train. The second train is projected to arrive at approximately 7:38 p.m. in both the five-year and the ten-year scenarios, so there should be little or no overlap of traffic generated by the two trains.

None of the Caltrain trips will take place during the peak hour of adjacent street traffic (4:45 to 5:45 p.m.) under either the five-year or the ten-year scenario.

**Table 6**  
**Trip Generation Estimates**

<b>Near-Term (5-Year, 2-Train)</b>	<b>Pajaro Valley</b>	<b>Castroville</b>	<b>Salinas</b>
<b>Projected Daily Riders</b>	<b>285</b>	<b>125</b>	<b>600</b>
Estimated Park-and-Ride Share	73%	64%	47%
Number Park-and-Ride Riders	208	80	282
Park-and-Ride Trips Generated (Riders x 2)	416	160	564
Estimated Kiss-and-Ride Share	13%	9%	13%
Number Kiss-and-Ride	37	11	78
Kiss-and-Ride Trips Generated (Riders x 4)	148	44	312
Daily Total of Trips	564	204	876
AM and PM Total Trips (Total x ½)	282	102	438
<b>Peak AM and PM Hour Trips (AM and PM Totals x 60%)</b>	<b>169</b>	<b>61</b>	<b>263</b>

<b>Long-Term (10-Year, 4-Train)</b>	<b>Pajaro Valley</b>	<b>Castroville</b>	<b>Salinas</b>
<b>Projected Daily Riders</b>	<b>570</b>	<b>250</b>	<b>1200</b>
Estimated Park-and-Ride Share	73%	64%	47%
Number Park-and-Ride Riders	416	160	564
Park-and-Ride Trips Generated (Riders x 2)	832	320	1128
Estimated Kiss-and-Ride Share	13%	9%	13%
Number Kiss-and-Ride	74	22	156
Kiss-and-Ride Trips Generated (Riders x 4)	296	88	624
Daily Total of Trips	1128	408	1752
AM and PM Total Trips (Total x ½)	564	205	876
<b>Peak AM and PM Hour Trips (AM and PM Totals x 60%)</b>	<b>338</b>	<b>123</b>	<b>526</b>

Source: Parsons

## **Trip Distribution**

The project trip distribution pattern was estimated based on the roadway network and the surrounding land uses. Geographic Information System software was used to determine population patterns in the station catchment areas and to calculate the percentage of riders within each market area that would approach the station from each major approach.

In Pajaro, the major directions of approach and departure to and from the project site are:

- 85 percent on Main Street/Porter Road/Salinas Road to and from the northwest
- 2 percent on San Juan Road to and from the northeast
- 2 percent on Railroad Avenue to and from the east and northeast
- 2 percent on Lewis Road to and from the southeast
- 9 percent on Salinas Road to and from the southwest

At Castroville Site 2, the major directions of approach and departure to and from the project site are:

- 50 percent on SR 156 to and from the west
- 25 percent on Castroville Boulevard to and from the northeast
- 25 percent on SR 156 to and from the east and southeast

Castroville residents who live to the west of the Union Pacific Railroad line and drive to the station, are anticipated to use the local north/south and east/west grid of streets leading to Benson Road. No directional distribution of local traffic is assumed, as parking accessed by Benson Road is provided for the convenience of local residents.

At Castroville Alternative Site 1, the major directions of approach and departure to and from the project site are:

- 50 percent on SR 156 to and from the west
- 50 percent on SR 156 to and from the east

Upon reaching Merritt Street, traffic is expected to access Alternative Site 1 primarily via Blackie Road. Traffic can potentially access Site 1 via Wood Street; but southbound access to Wood Street is difficult and somewhat dangerous due to traffic queues extending south from the eastbound SR 156 ramp terminal intersection. Northbound egress from the site via Wood Street is also challenging due to traffic queues and weaving maneuvers to access the westbound on-ramp left-turn lane to SR 156. As a result, station trips entering and leaving the station site have been assigned to the Blackie Road intersection as a conservative assumption.

In Salinas, the major directions of approach and departure to and from the project site are:

- 15 percent on West Market Street to and from the west
- 25 percent on North Main Street to and from the north
- 10 percent on Sherwood Drive to and from the northeast

- 35 percent on East Market Street to and from the east
- 5 percent on Front Street to and from the southeast
- 10 percent on Monterey Street and Salinas Street (one-way pair) to and from the south

## **Trip Assignment**

The trips generated by the proposed stations were assigned to specific roadways and turning movements were estimated based on the trip distribution patterns discussed above.

In Pajaro, the proposed project has two entrances on Salinas Road. The primary entrance will have a left-turn pocket provided on southbound Salinas Road. The other entrance, several hundred feet south of the first, will be right-in/right-out only, with a median barring access to or from southbound Salinas Road.

In Castroville at Site 2, the proposed project has one entrance at Castroville Boulevard aligned with the currently unpaved Collins Road. Local residents will also be able to approach the station platform via Benson Road where a small parking area for local residents will be provided. As a worst-case scenario, all project vehicle trips have been assigned to the Castroville Boulevard entrance.<sup>2</sup>

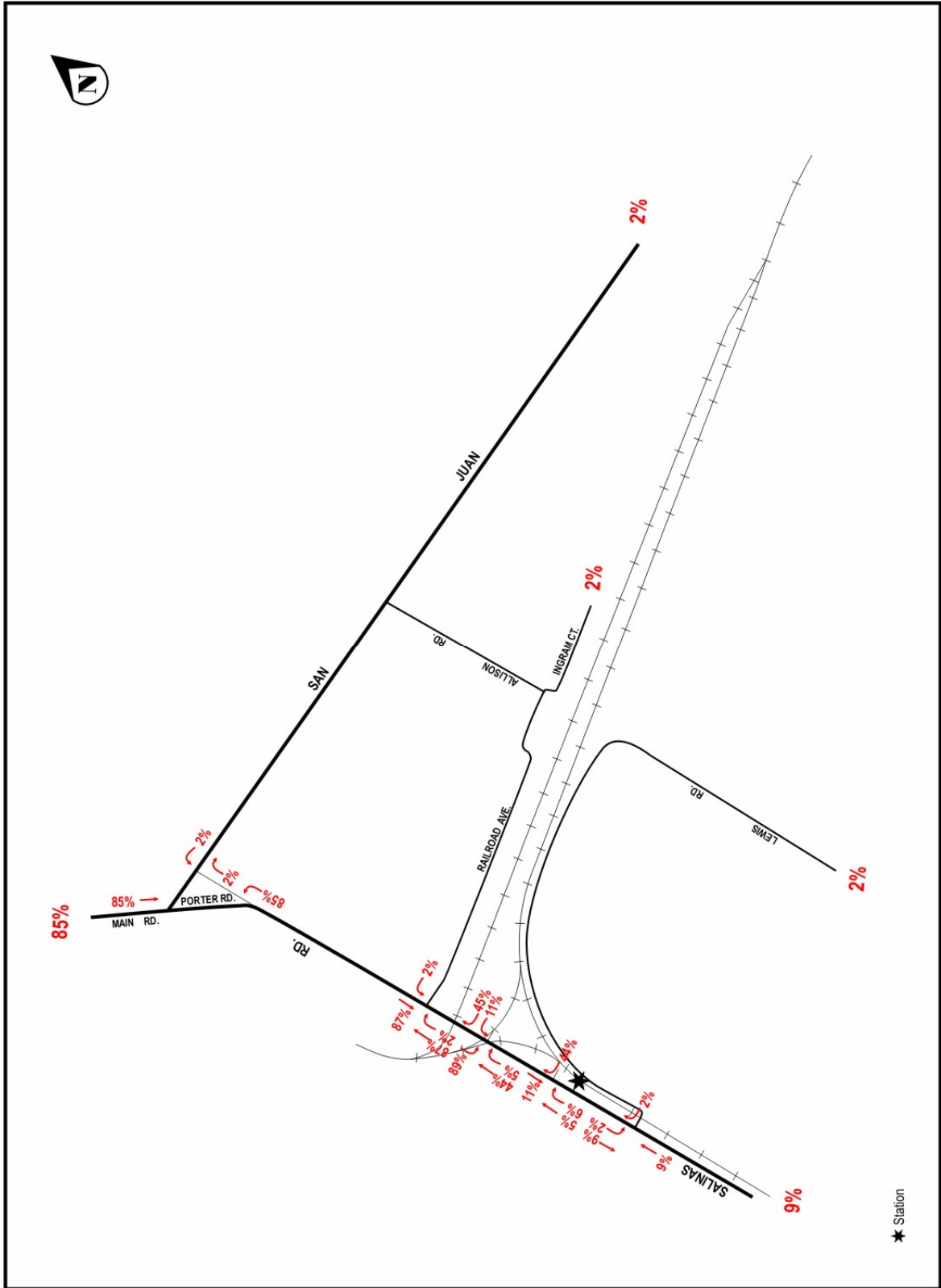
In Salinas, the proposed project has either two (Option 17) or four (Option 18) access/egress points, all on West Market Street. The site plan will include a northern extension of Lincoln Avenue into the station site, resulting in a four-legged signalized intersection that will serve as the primary entrance and exit for the station site. Station Place will be closed. With design Option 17, Palmetto Street is also available to accommodate a small portion of station traffic. With design Option 18, Palmetto Street, Happ Place and Vale Street are all available to accommodate Caltrain parking access, in addition to Lincoln Avenue. The analysis of traffic impact assumes that all MST in-service buses will enter and exit the station via Lincoln Avenue. As a worst case scenario (Option 17), all automobile traffic entering from the west or exiting to the east and most of the automobile traffic entering from the east or exiting to the west is also assumed to approach the station via Lincoln Avenue. A small portion of the automobile traffic arriving from the east or departing to the west is assumed to approach via Palmetto Street.

The estimated direction of approach and departure for each station site is presented on Figures 6, 7 and 8. Figures 9 and 10 depict the assignment of project trips to the Pajaro Valley Station. Figures 11 and 12 present the same information for the Castroville Station Site 2, while Figures 13 and 14 present the assignment of project trips to Site 1. Figures 15 and 16 illustrate the Salinas Station trip assignments.

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<sup>2</sup>For the purpose of the traffic impact assessment, project trips to/from the Castroville Station at Site 2 were treated as newly generated trips rather than existing trips diverted from State Route 156. While this assumption likely double counts these trips through the SR 156/Castroville Boulevard intersection, the analysis provides a worst case assessment of the traffic impacts at this location.

**Figure 6**  
Trip Distribution to and from Pajaro Valley Station



**Figure 7**  
**Trip Distribution to and from Castroville Station (Site 2)**

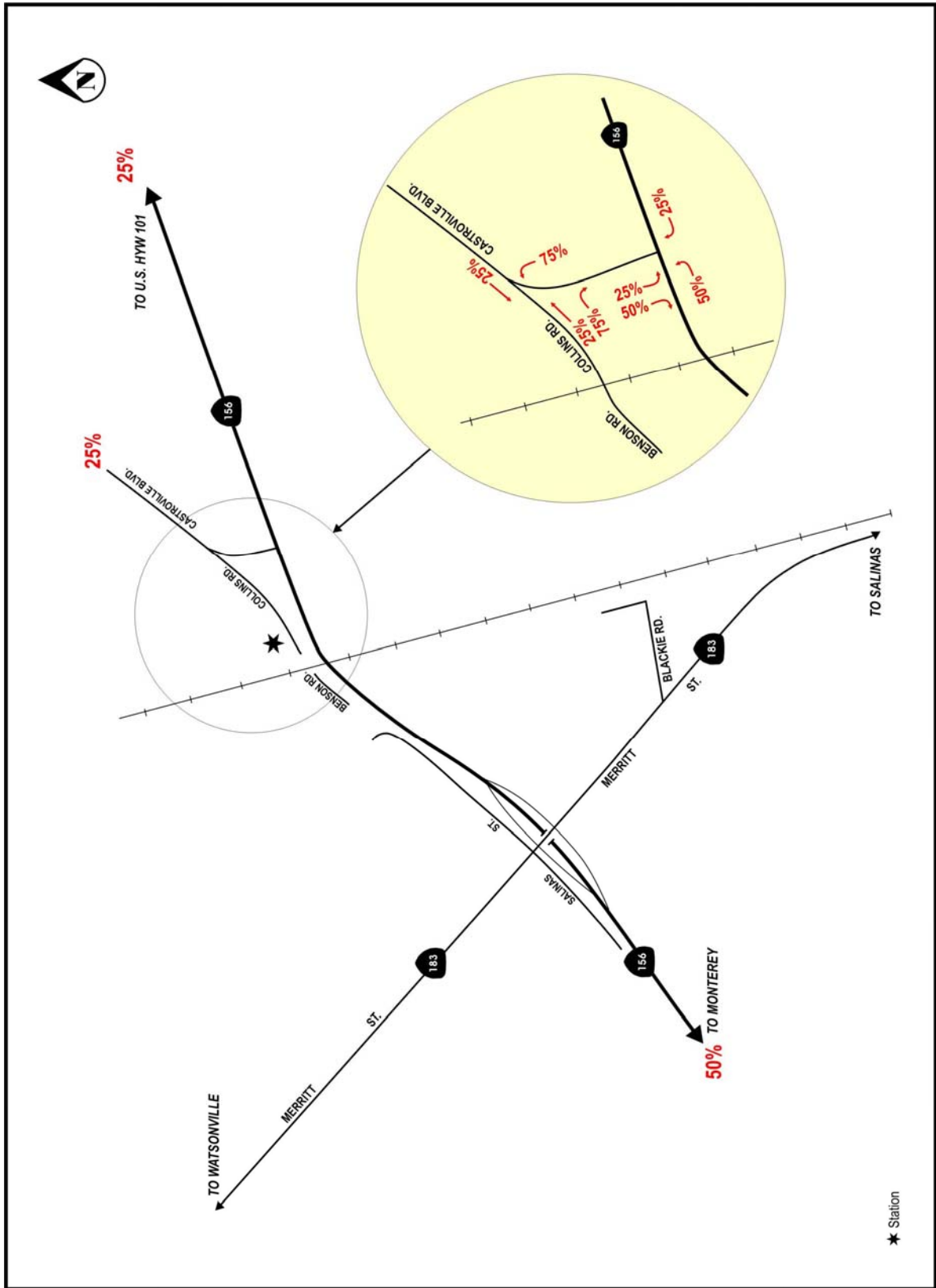
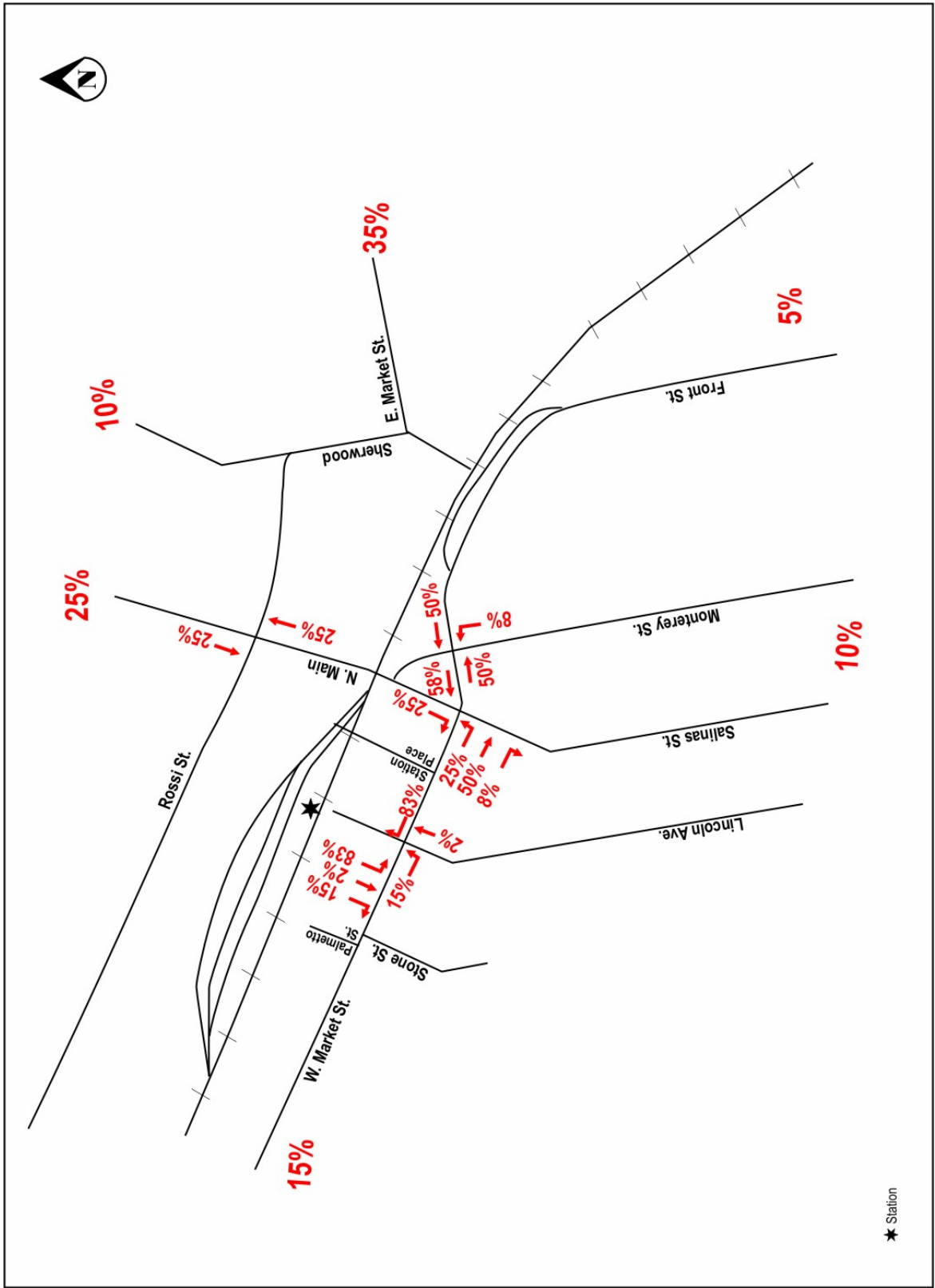
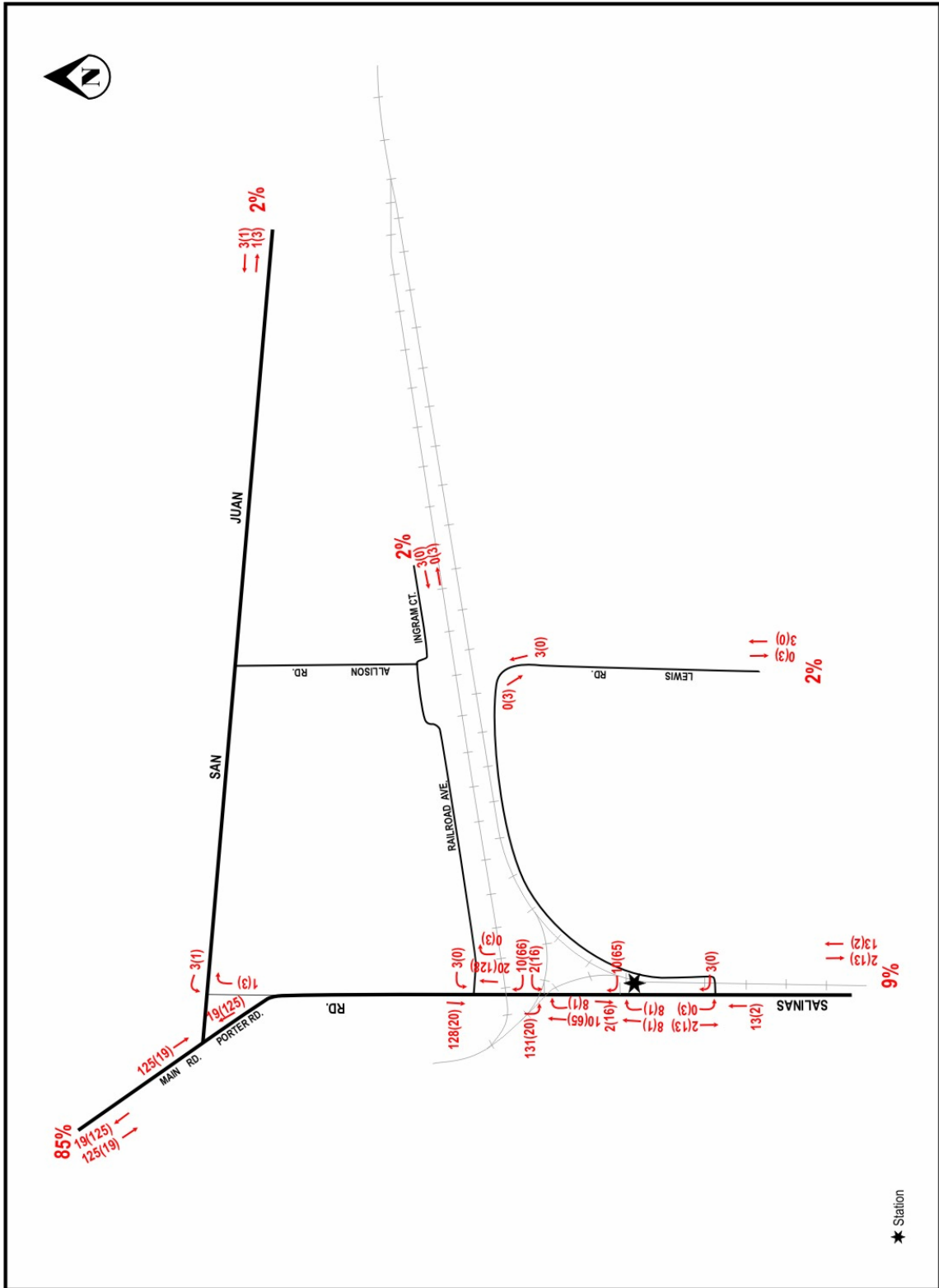


Figure 8  
Trip Distribution to and from Salinas Intermodal Transportation Center

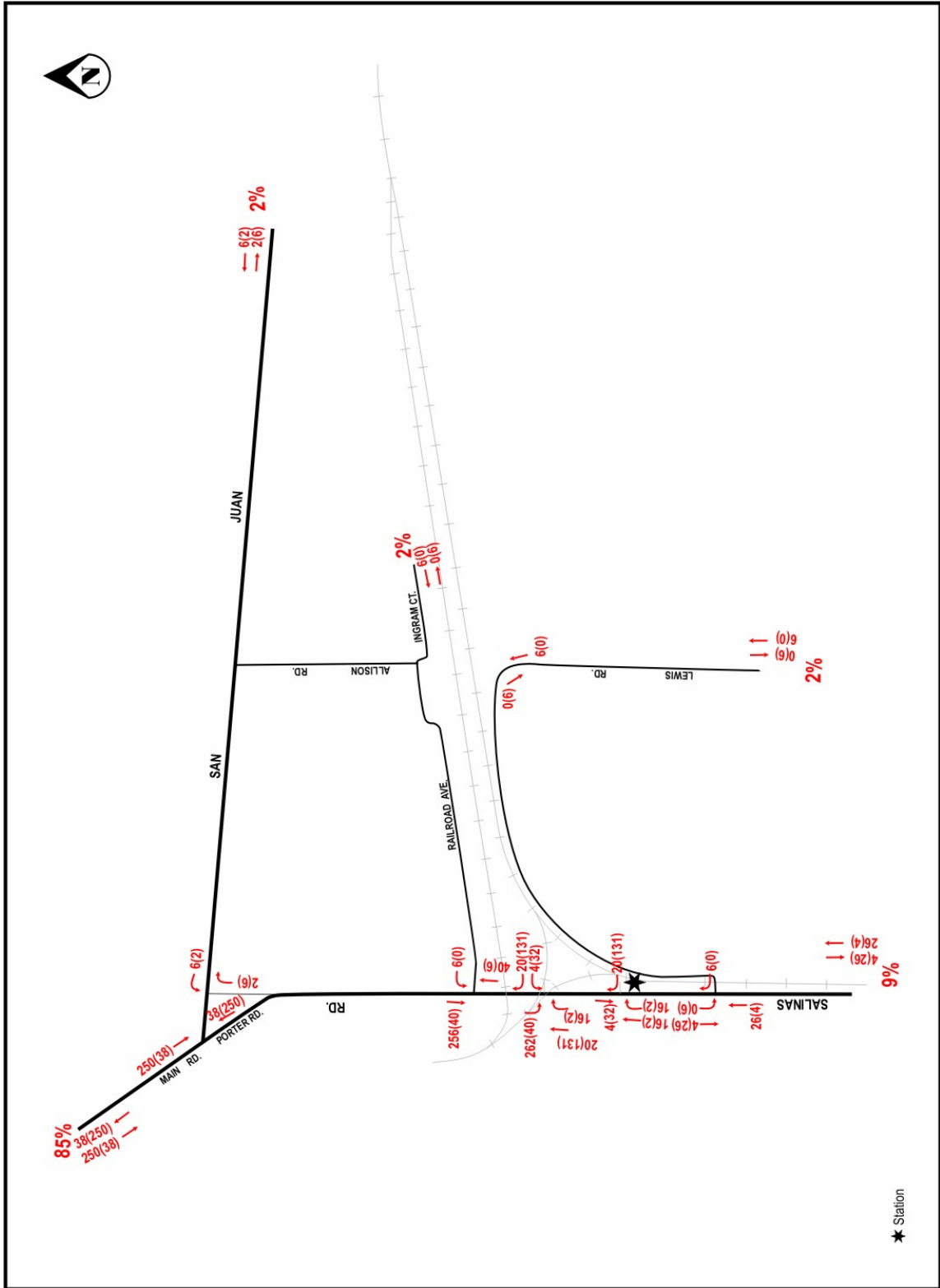




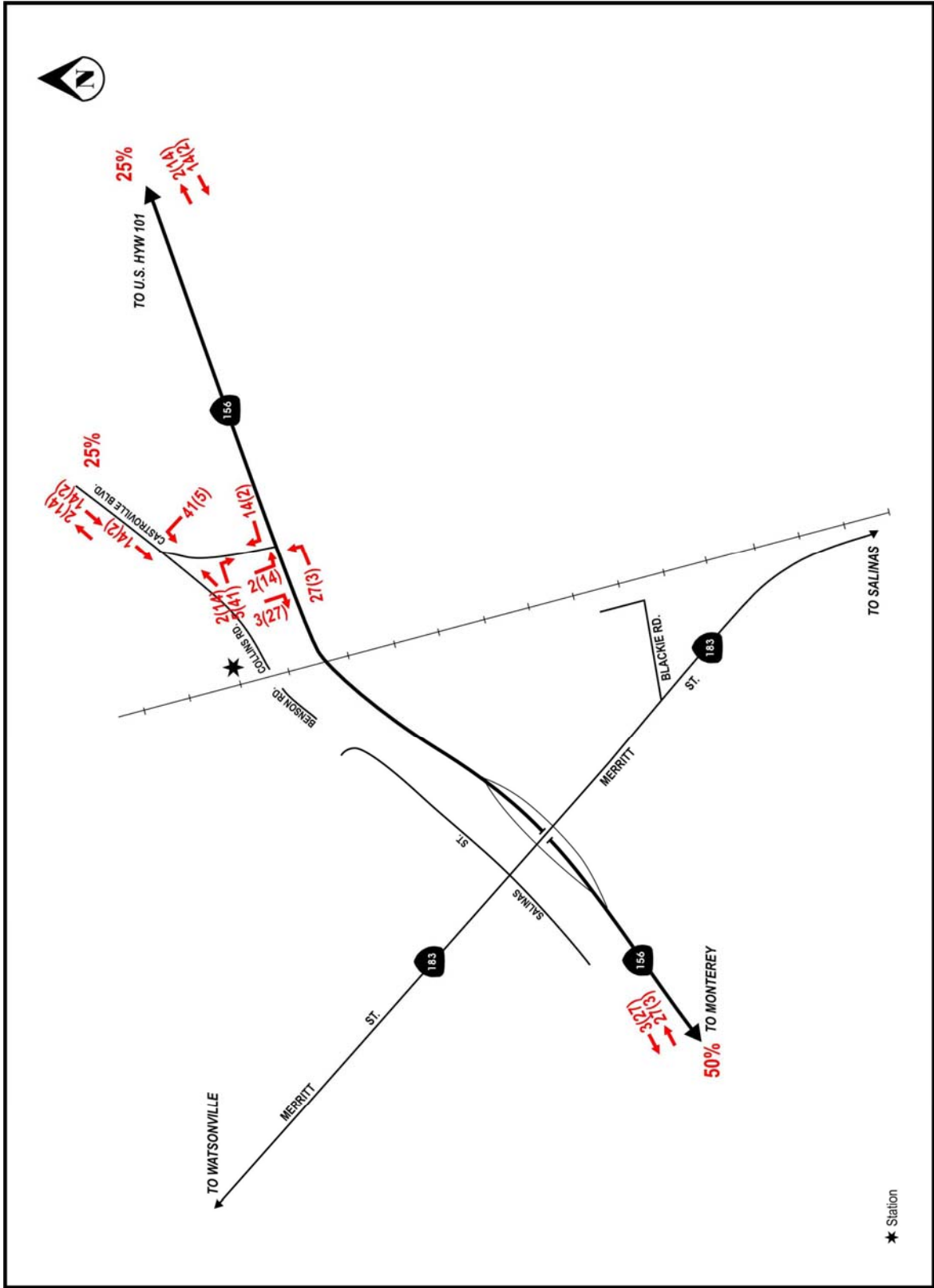
**Figure 9**  
**Project Trip Assignment: Pajaro Valley Short-Term Scenario**



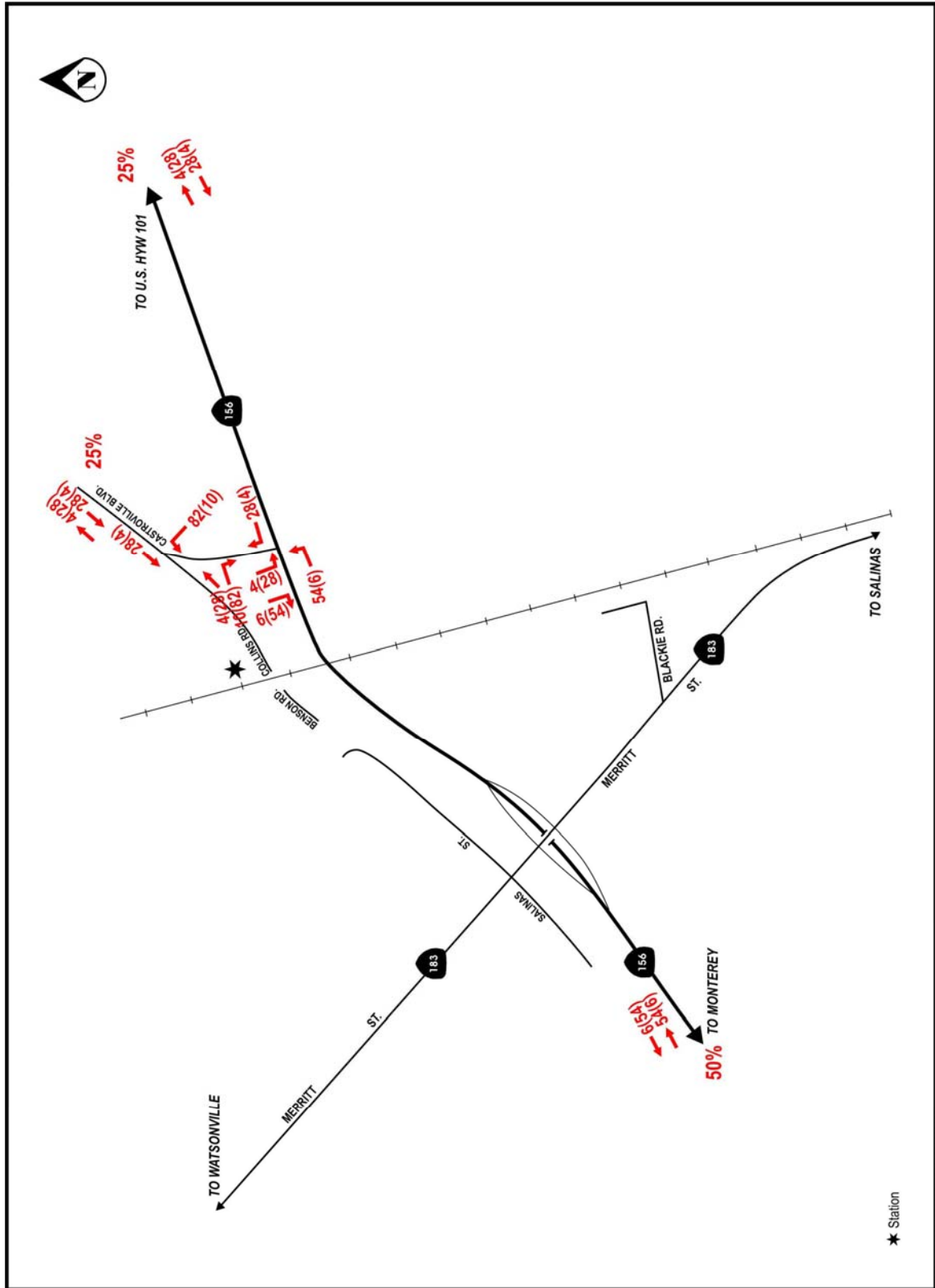
**Figure 10**  
**Project Trip Assignment: Pajaro Valley Long-Term Scenario**



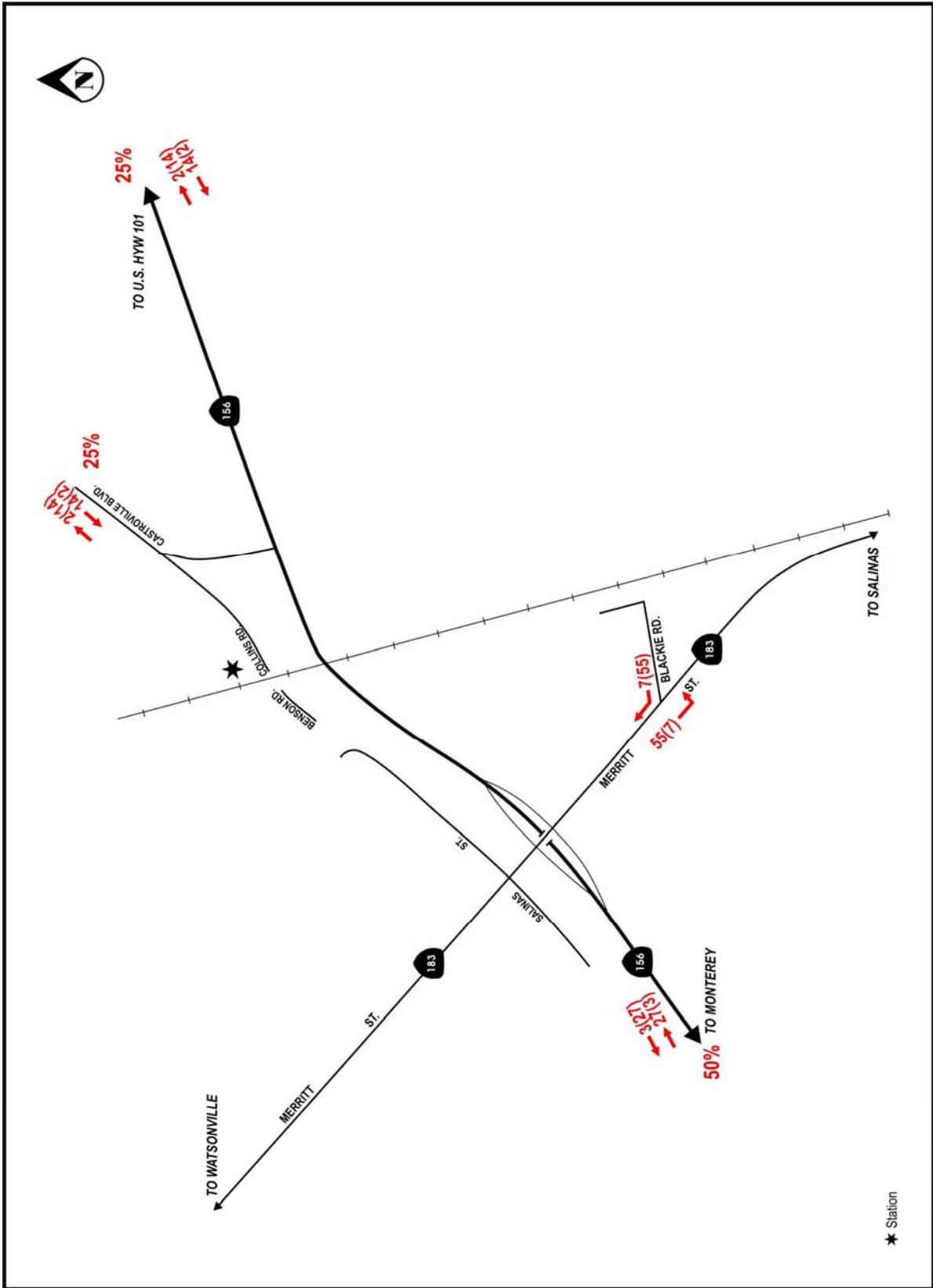
**Figure 11**  
**Project Trip Assignment: Castroville Site 2 Short-Term Scenario**



**Figure 12**  
**Project Trip Assignment: Castroville Site 2 Long-Term Scenario**



**Figure 13**  
**Project Trip Assignment: Castroville Site 1 Short-Term Scenario**



**Figure 14**  
**Project Trip Assignment: Castroville Site 1 Short-Term Scenario**

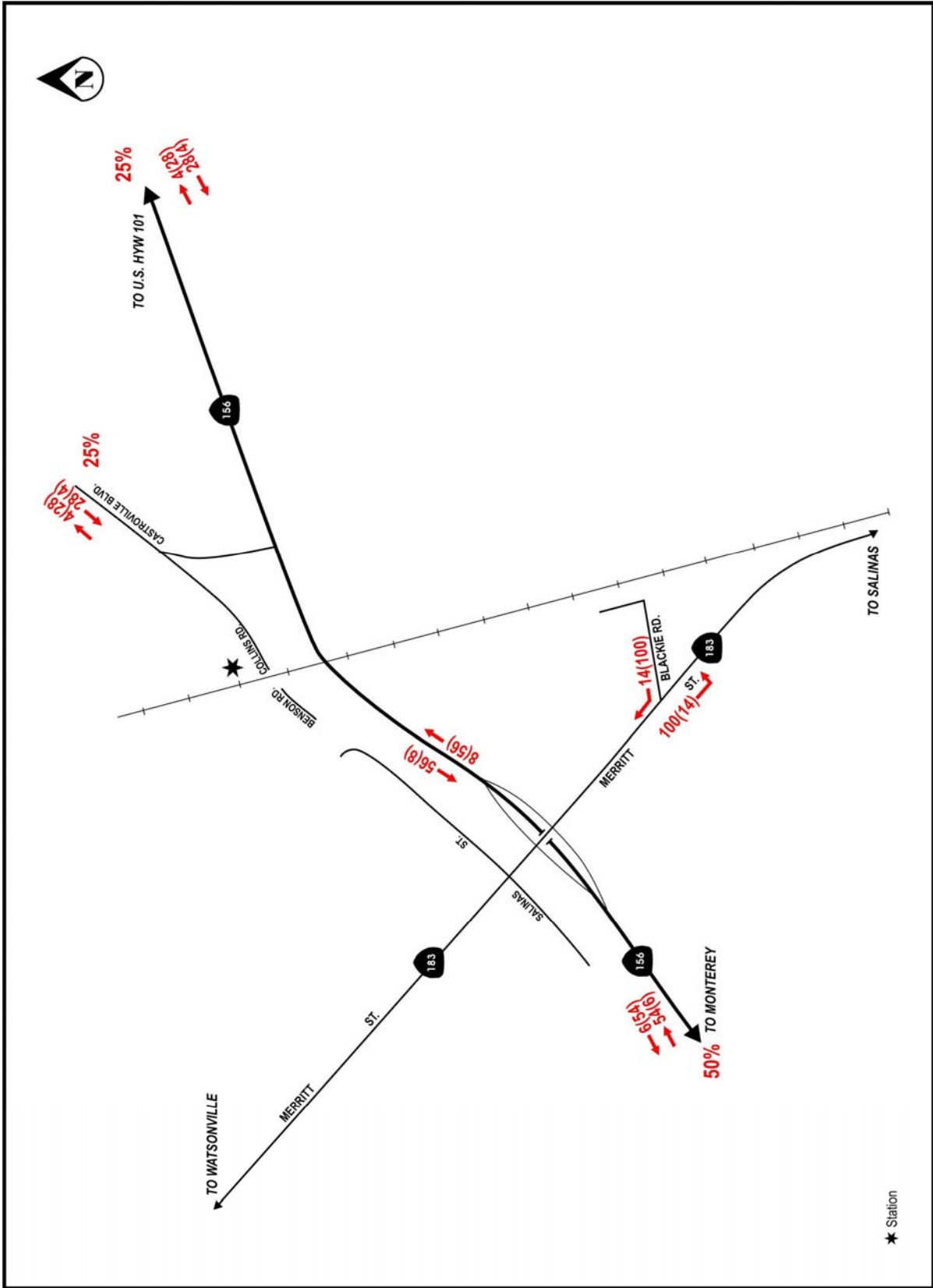


Figure 15  
Project Trip Assignment: Salinas Short-Term Scenario

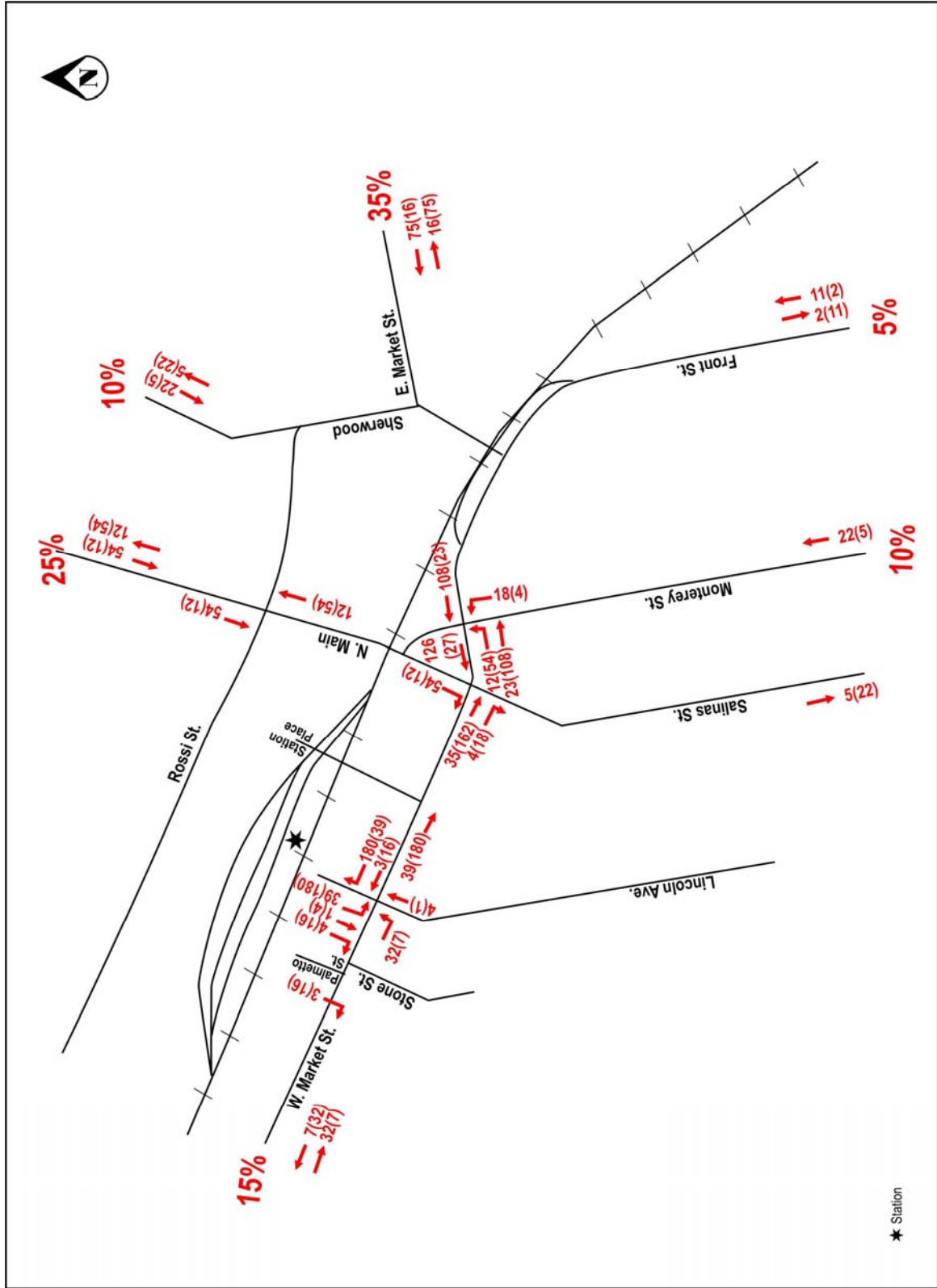
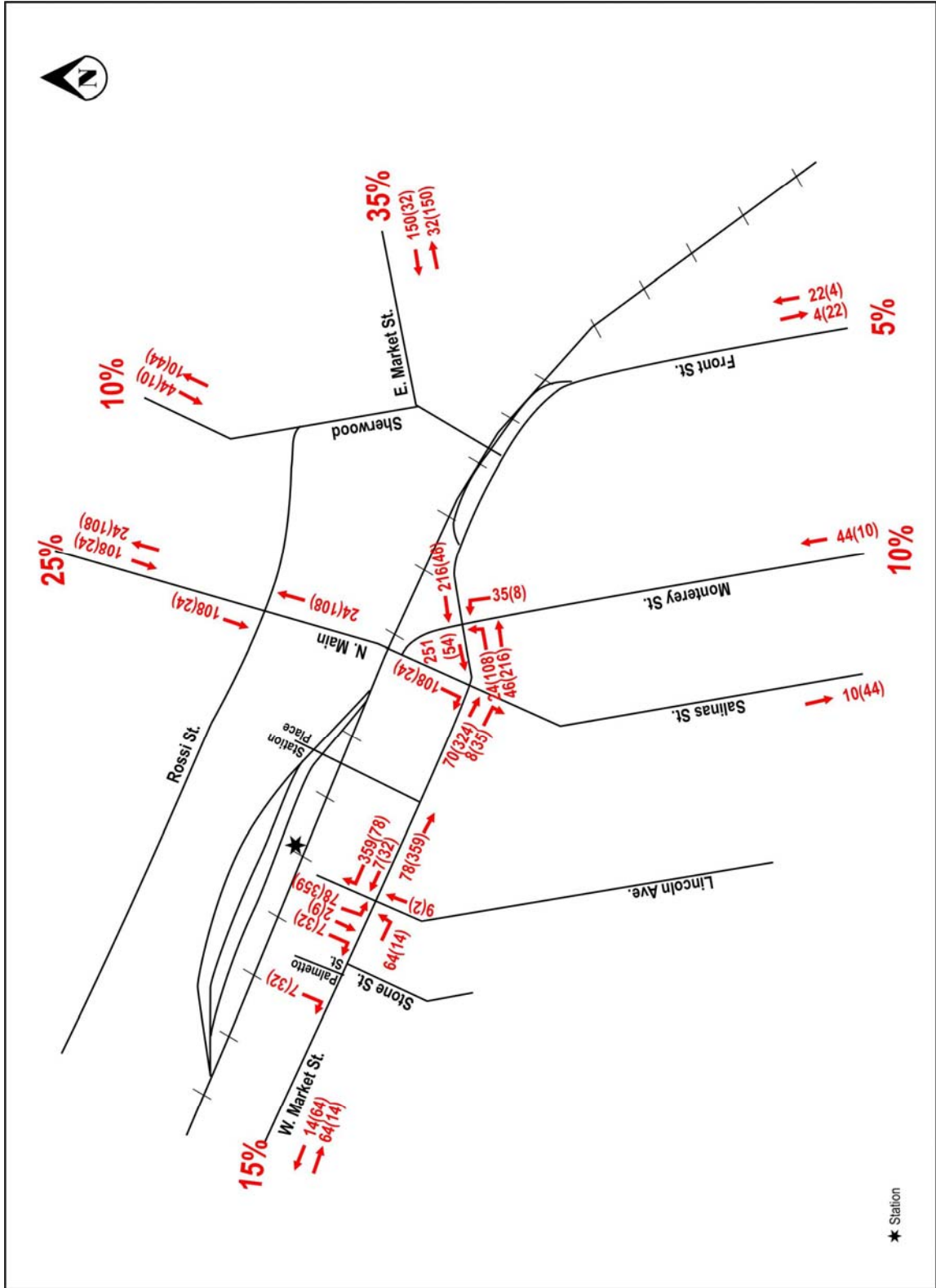


Figure 16  
Project Trip Assignment: Salinas Long-Term Scenario





## **Project Intersection Level of Service Analysis**

The results of the analysis indicate that the addition of short-term (five-year) project volumes to intersections in Pajaro Valley will not generally cause a decline in traffic level of service from the five-year background condition during any of the peak periods except for the AM peak hour of network traffic at the Salinas Road/Railroad Avenue intersection. Increased MST and SCMTD bus service to and from Pajaro will increase average vehicle delay, however. Independent from the development of a passenger rail station at this site, installation of signalized traffic control at the Salinas Road/Railroad Avenue intersection appears to be warranted.

In Castroville, the Alternative Site 2 intersections (SR 156 at Castroville Boulevard and Castroville Boulevard at Station Driveway (eastbound leg) will continue to operate at short-term background-scenario levels of service during all peak periods after five-year project volumes have been added.

In Salinas, short-term project traffic is projected to cause a decline in operations at Lincoln Avenue and West Market Street from LOS C to LOS D during the AM peak hour of network traffic, from LOS B to LOS D during the PM peak hour of station-generated traffic and from LOS B to LOS C during the PM peak hour of network traffic. The Salinas Street at West Market Street intersection is projected to decline from LOS B to LOS C during the PM peak hour of station-generated traffic.

In the ten-year project scenario, almost all Pajaro Valley intersections will continue to operate at the pre-project levels projected by the ten-year background scenario during all peak periods. One exception is the westbound stop-controlled approach of Railroad Avenue at Salinas Road, which will decline to LOS D during the AM peak hour of station activity.

At Alternative Site 2 in Castroville, the AM peak hour of station traffic level of service is projected to decline from LOS A to LOS B at the Castroville Boulevard/Station Driveway intersection. At Alternative Site 1, the Merritt Street and SR 156 intersections will continue to operate at acceptable levels of service, while the Merritt Street and Blackie Road intersection will continue to operate at an unacceptable LOS D.

In Salinas, the intersection of Lincoln Avenue at West Market will decline beyond background levels of service during all time periods but will operate at LOS D or better at all times. In addition, the Salinas Street/West Market Street intersection is projected to decline from LOS A to LOS B during the morning peak hour of station traffic and from LOS B to LOS D during the PM peak hour of station traffic. The level of service during the PM peak hour of station traffic will actually improve from LOS D to LOS C during the PM peak hour of station activity at the Monterey Street at East Market Street intersection.

On August 1, 2005, Caltrain updated its service with faster trains and a new schedule. For purposes of this study, the new schedule was compared to the previous schedule upon which this analysis was based to ensure that the results were still comparable. Parsons' proposed schedule for the capacity study for northbound trains involved the utilization of trains with schedule ID# 2, 5, 3 and 7. The proposed utilization for the southbound direction included trains 1, 5, 2 and 3.

The new Caltrain schedule was reviewed and during the AM and PM peak periods, the arrival and departure times at the proposed Salinas station are comparable to those used for this analysis. Therefore, the peak hour traffic volumes that were used for the level of service calculations are still applicable with the new Caltrain schedule.

The results of the project intersection level of service analysis are presented in Table 7. See Appendix B for traffic volume worksheets and Appendix C for level of service calculation sheets.

## **Site Access, Circulation, and Parking**

For the proposed Pajaro Valley station, patronage forecasts coupled with mode of arrival assumptions indicate that approximately 250 parking spaces will be required in the short-term and approximately 450 in the long-term. For the proposed Castroville station, approximately 100 parking spaces are required in the short-term and approximately 180 for the long-term. For the proposed Salinas station, it is estimated that approximately 350 parking spaces are required for the short-term and approximately 625 for the long-term. Conceptual plans for the three stations included with the Project Study Report provide 409 spaces at Pajaro Valley, 184 spaces at Castroville, and 662-700 spaces at Salinas.

**Table 7**  
**Project Five-year (2008) and Ten-year (2013) Intersection Levels of Service**

Intersection	Peak	Peak Hour	Condition									
			Baseline LOS**	Delay, sec†	5-Year Background LOS**	Delay, sec†	10-Year Background LOS**	Delay, sec†	5-Year Project LOS**	Delay, sec†	10-Year Project LOS**	Delay, sec†
<b>Pajaro Valley</b>												
Porter Drive at San Juan Road	Caltrain AM	5:30-6:30	C	21.1	C	21.6	C	22.4	C	23.2	C	27.6
	Network AM	7:00-8:00	B	15.4	C	29.4	C	30.2	C	30.0	C	31.0
	Caltrain PM	5:45-6:45	D	39.4	D	42.0	D	43.5	D	43.3	D	51.7
	Network PM	4:30-5:30	D	44.5	E	59.3	F	123.9	E	60.3	F	126.2
Salinas Road at Railroad Avenue (westbound leg) (Stop)	Caltrain AM	5:30-6:30	B	14.6	C	15.7	C	17.2	C	19.0	D	25.9
	Network AM	6:30-7:30	D	28.3	D	34.2	E	43.5	E	35.6	E	45.6
	Caltrain PM	5:45-6:45	F	93.6	F	170.0	F	349.6	F	282.4	F	801.1
	Network PM	5:00-6:00	F	150.3	F	296.1	F	603.1	F	388.7	F	907.4
Salinas Road at Railroad Avenue (westbound leg) with mitigation (Signal)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		A	4.6	A	5.1
	Network AM	6:30-7:30							A	6.9	A	7.4
	Caltrain PM	5:45-6:45							A	9.8	B	14.5
	Network PM	5:00-6:00							B	10.4	B	14.6
Salinas Road at Station Driveway 1 (westbound leg)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		C	17.9	D	26.1
	Network AM	6:30-7:30							C	20.3	C	22.0
	Caltrain PM	5:45-6:45							D	31.3	E	46.3
	Network PM	5:00-6:00							D	30.6	E	38.8
Salinas Road at Station Driveway 2 (westbound leg)	Caltrain AM	5:30-6:30	N/A		N/A		N/A		A	9.4	A	9.6
	Network AM	6:30-7:30							B	11.0	B	11.3
	Caltrain PM	5:45-6:45							B	12.9	C	15.5
	Network PM	5:00-6:00							B	12.6	B	14.1
Salinas Road at Lewis Road (westbound leg)	Caltrain AM	5:30-6:30	B	10.9	B	11.2	B	11.6	B	11.3	B	11.7
	Network AM	6:30-7:30	B	14.0	C	15.1	C	16.7	C	15.1	C	16.7
	Caltrain PM	5:45-6:45	B	14.6	C	16.1	C	18.3	C	16.2	C	18.5
	Network PM	5:00-6:00	C	15.3	C	17.3	C	20.3	C	17.4	C	20.5
<b>Castroville</b>												
SR 156 at Castroville Boulevard	Caltrain AM	5:30-6:30	B	11.6	B	11.8	B	12.0	B	12.6	B	12.7
	Network AM	6:00-7:00	B	13.3	B	13.3	B	13.8	B	14.1	B	14.8
	Caltrain PM	6:00-7:00	C	20.4	C	26.1	C	26.1	C	26.3	C	25.2
	Network PM	4:30-5:30	C	27.9	C	30.3	D	51.9	C	30.3	D	51.9
Castroville Boulevard at Station Driveway (eastbound leg)	Caltrain AM	5:30-6:30	A	9.5	A	9.7	A	9.8	A	9.8	B	10.4
	Network AM	6:00-7:00	B	10.7	B	11.1	B	11.5	B	11.1	B	11.5
	Caltrain PM	6:00-7:00	B	11.2	B	11.6	B	11.6	B	11.6	B	12.7
	Network PM	4:30-5:30	B	12.5	B	13.2	B	14.1	B	13.2	B	14.1

Intersection	Peak	Peak Hour	Condition									
			Baseline LOS**	Delay, sec†	5-Year Background LOS**	Delay, sec†	10-Year Background LOS**	Delay, sec†	5-Year Project LOS**	Delay, sec†	10-Year Project LOS**	Delay, sec†
SR 156 off-ramp (westbound) at Merritt Street	Caltrain AM	5:30-6:30	A	5.8	A	5.9	A	6.3	A	6.1	A	6.5
	Network AM	7:00-8:00	A	7.8	B	11.6	B	13.6	B	12.7	B	14.3
	Caltrain PM	6:00-7:00	A	7.7	A	7.9	A	8.6	A	8.0	A	9.5
	Network PM	4:30-5:30	A	6.1	A	6.3	A	7.2	A	6.4	A	7.6
SR 156 on-ramp (eastbound) at Merritt Street	Caltrain AM	5:30-6:30	B	13.9	B	14.2	B	15.0	B	14.4	B	15.5
	Network AM	6:00-7:00	B	12.9	B	13.6	B	13.9	B	14.2	B	15.2
	Caltrain PM	4:45-5:45	B	12.6	B	13.1	B	15.3	B	14.8	B	16.9
	Network PM	5:00-6:00	B	19.4	C	22.1	C	29.1	C	23.9	C	34.8
Merritt Street at Blackie Road	Caltrain AM	5:30-6:30	D	38.7	D	39.3	D	41.0	D	40.6	D	42.3
	Network AM	6:00-7:00	D	38.8	D	39.6	D	41.8	D	40.9	D	43.3
	Caltrain PM	6:00-7:00	D	35.1	D	35.9	D	38.1	D	36.3	D	38.7
	Network PM	5:00-6:00	D	36.8	D	38.5	D	44.1	D	38.8	D	44.6
<b>Salinas</b>												
Lincoln Avenue at West Market Street*	Caltrain AM	5:30-6:30	B*	11.8	B*	12.5	B*	13.1	B*	14.1	C*	21.8
	Network AM	7:30-8:30	B*	19.7	C*	22.6	C*	22.9	D*	49.6	D*	52.0
	Caltrain PM	6:00-7:00	B*	14.3	B*	15.0	B*	19.2	D*	38.3	D*	42.2
	Network PM	4:45-5:45	B*	17.6	B*	19.8	C*	32.0	C*	32.5	D*	44.1
Station Place at West Market Street (south-bound leg)	Caltrain AM	5:30-6:30	B	14.5	C	15.5	C	16.8	N/A		N/A	
	Network AM	7:30-8:30	F	61.7	F	88.3	F	137.9				
	Caltrain PM	6:00-7:00	D	30.3	E	37.0	E	47.0				
	Network PM	4:45-5:45	F	55.9	F	78.2	F	119.1				
Salinas Street at West Market Street*	Caltrain AM	5:30-6:30	A*	8.6	A*	8.7	A*	8.8	A*	8.7	B*	18.8
	Network AM	8:00-9:00	D*	49.4	E*	56.4	F*	117.1	E*	65.0	F*	118.2
	Caltrain PM	6:00-7:00	B*	12.7	B*	13.8	B*	18.6	C*	21.0	D*	50.6
	Network PM	4:45-5:45	D*	50.0	F*	90.1	F*	166.7	F*	93.4	F*	174.2
Monterey Street at East Market Street*	Caltrain AM	5:30-6:30	B*	14.3	B*	14.6	B*	15.1	B*	17.7	B*	16.0
	Network AM	8:30-9:30	D*	51.7	D*	52.6	D*	52.8	D*	52.6	D*	53.7
	Caltrain PM	6:00-7:00	B*	18.4	C*	20.1	D*	46.5	C*	28.7	C*	30.9
	Network PM	4:45-5:45	C*	33.3	F*	92.4	F*	113.0	F*	92.4	F*	114.6
Rossi Street at North Main Street*	Caltrain AM	5:30-6:30	B*	17.7	B*	18.0	B*	18.4	B*	18.3	B*	19.0
	Network AM	7:45-8:45	C*	32.0	C*	33.1	D*	42.8	C*	33.1	D*	42.9
	Caltrain PM	6:00-7:00	C*	27.9	C*	29.8	C*	30.6	C*	30.1	C*	33.1
	Network PM	4:45-5:45	D*	42.6	D*	52.6	E*	68.4	D*	52.6	E*	68.4

\* Observations at these intersections indicate that spillback conditions sometimes bring traffic flow to a standstill, reducing traffic flow and the resulting counts. This condition can result in analysis results that do not accurately reflect conditions.

\*\* See Table 1 for LOS definitions.

† Delay in seconds. This number represents the average intersection delay at signalized intersections and the approach delay at unsignalized intersections.

## 5. Conclusion

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In Pajaro Valley, the proposed commuter rail station is projected to generate 564 additional daily vehicular trips in the five-year, two train scenario and 1,128 additional daily trips in the ten-year, four train scenario. One hundred sixty-nine (169) of those trips will occur during each of the AM and PM **station** peak hours in the five-year scenario and 338 will occur during each of the **station** peak hours in the ten-year scenario. Total parking supply designed for the Pajaro Valley station will meet all of the short-range demand and 91 percent of the long-range demand.

The signalized intersection of Porter Drive at San Juan Road is not significantly impacted by the project. Increased MST and SCMTD bus service to and from Pajaro will increase traffic signal delay, however.

The stop-controlled approach of Railroad Avenue to Salinas Road operates at LOS F during the evening peaks under Baseline, Background and Project Conditions. While the project will add some volume to this intersection and slightly impact their operations, it is not projected to have a significant adverse impact on traffic operations. Nevertheless, the project proposes to install a traffic signal at this location to ease traffic operations at Station Driveway 1.

At the stop-controlled approach of Lewis Road to Salinas Road, traffic operations take place at acceptable levels of service in all periods.

At Driveway 1, the station's northernmost access point, traffic exiting the station is projected to encounter significant evening-peak delay during the ten-year scenario. This approach will be stop-controlled and will accommodate left turns out of the driveway, resulting in delays for southbound exiting traffic. Northbound exiting traffic should not be significantly delayed. This situation will be mitigated through the installation of traffic signal control at Railroad Avenue which will create gaps in southbound traffic flows. Driveway 2, which will be right-in/right-out only for the section of Salinas Road adjacent to the driveway, is not projected to experience delays during any of the peak periods.

In Castroville, the proposed commuter rail station is projected to generate 204 additional daily vehicular trips in the five-year scenario and 408 additional daily trips in the ten-year scenario. Sixty-one (61) of those trips will occur during each of the AM and PM **station** peak hours in the five-year scenario and 123 will occur during each of the **station** peak hours in the ten-year scenario. All study area intersections for Site 2 are projected to operate at acceptable levels of service under all scenarios. Therefore, the project will not have a significant adverse impact on traffic operations at any of the study intersections during any of the peak periods. The total parking supply planned for the Castroville station will be phased to meet demand, both in the short- and long-term.

The signalized intersection of SR 156 and Castroville Boulevard operates at LOS B and C under Baseline Conditions, with excess capacity during both morning and evening peaks. It is projected to continue to operate at these levels under both five-year and ten-year Background scenarios during all peak periods except for the ten-year Background scenario during the PM peak hour of network traffic. Under both five-year and ten-year Project scenarios, operations are projected to continue at Background levels during all periods.

The stop-controlled approach of the station driveway to Castroville Boulevard operates at LOS A and B during the Baseline and both background conditions during all peak periods. Under the five-year and ten-year project conditions, this movement is projected to continue to operate acceptably and with excess capacity during all peak periods.

At Castroville Site 2, SR 156 ramp terminal intersections with Merritt Street operate at acceptable levels of service under all Baseline, Background, and Project conditions. The signalized intersection of Merritt Street at Blackie Road operates at unacceptable LOS D conditions under all Baseline, Background and Project conditions.

In Salinas, the proposed commuter rail station is projected to generate 876 additional daily vehicular trips in the five-year scenario and 1,752 additional daily trips in the ten-year scenario. Two hundred sixty-three (263) of those trips will occur during each of the AM and PM **station** peak hours in the five-year scenario and 526 will occur during each of the **station** peak hours in the ten-year scenario. The total parking supply planned for the Salinas station will be sufficient to accommodate projected demand.

The signalized intersection of Lincoln Avenue at West Market Street operates at LOS B under Baseline Conditions. Under the five-year Background conditions, the AM peak hour of network traffic declines to LOS C. In the ten-year Background scenario, both the AM and PM peak hour of the roadway network are projected to operate at LOS C. During the five-year Project conditions, the intersection LOS during both the AM peak hour of the roadway network and the PM peak hour of the station are projected to be LOS D. The intersection is expected to operate at LOS C during the PM peak hour of the adjacent roadway network. Selection of Design Option 18, with parking supplies dispersed and serviced by four egress points, will mitigate this traffic condition.

The Salinas Street at West Market Street intersection operates at LOS A and B during Baseline, five-year and ten-year Background Conditions of both the AM and PM peaks of **station** operations. The intersection operates at LOS D during the AM and PM peak hours of network

traffic under Baseline Conditions. Under five-year Background Conditions, the AM peak of the network declines to LOS E and the PM peak of the network declines to LOS F. Under five-year Project Conditions, the intersection operates at LOS A during the AM peak hour of **station** operations, LOS E during the AM peak hour of the adjacent roadway network, LOS C during the PM peak hour of **station** operations, and LOS F during the PM peak hour of the roadway network. The roadway network AM and PM peak hours' operations under the ten-year Project Scenario are at a LOS F, while the intersection operates at LOS B and LOS D during the AM and PM station peaks, respectively.

The intersection of Rossi Street with North Main Street operates at LOS B or C during all Baseline peak periods except the network evening peak, when it operates at LOS D. This intersection is projected to continue this level of operations during the five-year background and project conditions during all peak periods. During the ten-year background and project conditions, the network evening peak level of service is projected to decline to LOS D and E, respectively. Because the level of service and average delay remain the same across background and project conditions, the decline is not attributable to the addition of project-generated traffic volumes.

Field observation of existing traffic operations during the network evening peak indicates that traffic queues spill back from the intersection of Rossi Street and North Main Street to adjacent intersections, including the Salinas Street/West Market Street and Monterey Street/East Market Street intersections as well as the Lincoln Avenue at West Market Street intersection. At times, this area of downtown Salinas appears to be gridlocked. Because such conditions reduce the traffic volumes entering and exiting the study intersections, level of service analysis (based on the hourly traffic volumes) can falsely indicate acceptable operations.

Analysis undertaken for the City of Salinas by Higgins Associates indicates that improvements to the intersection of Rossi Street with North Main Street coupled with traffic signal system interconnect will alleviate these spillback conditions. However, this analysis assumes 2005 era geometry for all conditions.

The overall results of this traffic impact analysis indicate that traffic generated by the proposed Caltrain stations will not cause a significant decline in operating conditions on the adjacent street networks. Operations in most cases are not projected to diminish at all. In the locations and hours where project-related declines are projected, the resulting levels of service will remain within the range of acceptable operations and delays.