Appendix K
Transportation

ESA

Appendix K.1

Transportation Impact Analysis

Hexagon Transportation Consultants, Inc.

Sargent Quarry Project

Transportation Impact Analysis

Prepared for:

County of Santa Clara

February 24, 2017

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Executive Summary

This report presents the results of the traffic impact analysis conducted for the proposed Sargent Quarry mining and reclamation plan, in Santa Clara County. The proposed project would consist of pit mining operations for the production of sand and gravel, which can be used for concrete, asphalt production, and rock. The mining operations would occur on approximately 317 acres of the 6,400-acre Sargent Ranch property located along the west side of US 101, approximately five miles south of Gilroy. The proposed project is requesting a 30-year term on the Conditional Use Permit for the site. The proposed project also would include reclamation activities, pursuant to the proposed project's Mining and Reclamation Plan, that would include reclaiming mined areas to grazing land, stabilizing and re-vegetating slopes, and reclaiming the processing site, roads, and the cessation of mining. The proposed project is in conformance with the Santa Clara County *General Plan* and the County's zoning code land use designations (AR agricultural Ranchland) for the site.

This traffic impact analysis documents the impacts to the surrounding transportation system associated with implementation of the proposed Sargent Quarry Mining and Reclamation Plan. The potential impacts of the project were evaluated in accordance with the standards set forth by Santa Clara County and Caltrans. The study included an analysis of two intersections, five freeway/highway segments, and five freeway ramps.

Traffic conditions were analyzed for the weekday AM and PM peak hours. The weekday AM peak-hour of traffic generally falls within the 7:00 to 9:00 AM period and the weekday PM peak-hour is typically in the 4:00 to 6:00 PM period. It is during these times that the most congested traffic conditions occur on an average day.

The study facilities are listed below, and their jurisdiction is denoted with the following superscripts:

[CT] = Caltrans
[SCC] = Santa Clara County

Study Intersections

1. US 101 Southbound Ramps and State Route (SR) 25 [CT]
2. US 101 Northbound Ramps and SR 25 [CT]

Study Freeway/Highway Segments

1. US 101, between SR 156 and SR 129 [CT]
2. US 101, between SR 129 and Betabel Road [CT]
3. US 101, between Betabel Road and Bloomfield Avenue (SR 25) [CT]
4. US 101, between Bloomfield Avenue (SR 25) and Monterey Road [CT]
5. SR 25, east of US 101 [CT]

Study Freeway Ramps

1. US 101 Southbound On-Ramp at SR 25 [CT]
2. US 101 Northbound Off-Ramp at SR 25 [CT]
3. US 101 Southbound Off-Ramp at Old Monterey Road [CT]
4. US 101 Southbound On-Ramp at Old Monterey Road [CT]
5. US 101 Northbound On-Ramp at North/South Roadway (Old Monterey Road) [CT]

Study Scenarios

Scenario 1: *Existing Conditions.* Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from new turn-movement counts.

Scenario 2: *Existing plus Project Conditions.* Existing plus project conditions were represented by traffic volumes, with the project, on the existing roadway network. Traffic volumes with the project were estimated by adding to existing traffic volumes the traffic generated by the proposed project. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential project impacts.

Scenario 3: *Near-Term (Background) Conditions.* Near-term (background) traffic conditions represent future traffic volumes on the existing transportation network. Background traffic volumes were represented by adding trips from approved but not yet constructed development projects to existing peak-hour traffic volumes. Information on approved projects was obtained from both the City of Gilroy and City of Hollister. Background conditions represent the baseline conditions to which project conditions are compared for the purpose of determining project impacts.

Scenario 4: *Background plus Project Conditions.* Background plus project conditions (also referred to as *Project Conditions*) were represented by background traffic volumes, with the addition of project trips, on the existing roadway network. Background plus project conditions were evaluated relative to background conditions in order to determine potential project impacts.

Scenario 3: *Long-Term Conditions.* Long-term traffic conditions represent future traffic volumes on the future transportation network that would result from traffic growth projected to occur both locally and regionally over approximately the next 25 years. Long-term traffic volumes, without the proposed project, were obtained from the Gilroy General Plan Update traffic study. Long-term traffic conditions were evaluated for two scenarios: (1) without the proposed project and (2) with project-generated traffic. The change between these two scenarios illustrates the relative impact the proposed project could have on long-term traffic conditions.

Evaluation of Project Conditions

The impacts and proposed improvements to mitigate project impacts under existing plus project and background plus project conditions are described below.

Project Trips

The number of trips estimated to be generated by the proposed Sargent Quarry project was estimated based on the anticipated site activity information provided by the project applicant. Based on these assumptions, it was estimated that the proposed project would generate a total of 346 daily trips, with 40 of those trips (20 inbound and 20 outbound) occurring during the AM peak hour and 15 trips (all outbound trips) occurring during the PM peak hour.

Passenger Car Equivalent Trips

Applying a PCE factor of 2.0 (each truck trip is equivalent to 2 passenger car trips) to the estimated project truck trips, it was calculated that the proposed project would generates a total of 80 PCE trips (40 inbound and 40 outbound) during the AM peak hour. The PM peak hour trip generation would remain the same since PM peak hour trips are all employee (passenger vehicle) trips. These are the project site traffic projections that were utilized for the evaluation of traffic operations at the study intersections.

Existing Plus Project Conditions

Intersection Analysis

The results of the intersection level of service and signal warrant analyses under existing plus project conditions are summarized in Table ES 1. The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met at the following intersection during the noted peak hour:

2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, the above study intersection is projected to be significantly impacted by the proposed project.

Freeway Segment Level of Service Analysis

The results of the CMP freeway level of service analysis under existing plus project conditions are summarized in Table ES 2. The results show that all of the study freeway segments currently operate at acceptable LOS E or better during both peak hours, and the addition of project trips to the freeway segments would not cause any of them to degrade to an unacceptable LOS F. Therefore, the proposed project is not projected to significantly impact any of the study freeway segments, based on CMP level of service impact criteria.

Highway Segment Level of Service Analysis

The results of the highway segments level of service analysis under existing plus project conditions are summarized in Table ES 3. Based on the HCM methodology, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Results of the freeway ramp analysis under existing plus project conditions are summarized in Table ES 4. Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under existing plus project conditions, based on Caltrans level of service standards. The addition of project traffic to the study freeway ramps is not projected to significantly affect the vehicle queue lengths estimated under existing conditions. Projected queue lengths at the ramps would continue to be able to store within the existing ramp storage space. Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under existing plus project conditions.

Background Plus Project Conditions

Intersection Analysis

The results of the intersection level of service and signal warrant analyses under background plus project conditions are summarized in Table ES 1. The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met (described below) at the study intersections during the noted peak hours:

1. US 101 SB Ramps and SR 25 (**Impact**: AM peak hour)
2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, both of the study intersections are projected to be significantly impacted by the proposed project.

Freeway Segment Level of Service Analysis

The Santa Clara County CMP guidelines do not require evaluation of freeway segments under future traffic conditions, such as background conditions, since approved development trips on freeways are not on record or otherwise available.

Highway Segment Level of Service Analysis

The results of the highway segments level of service analysis under background plus project conditions are summarized in Table ES 3. Based on the HCM methodology, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Results of the freeway ramp analysis under existing plus project conditions are summarized in Table ES 4. Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under background plus project conditions, based on Caltrans level of service standards. Additionally, the addition of project traffic to the study freeway ramps is not projected to affect the vehicle queue lengths estimated under background conditions. Projected queue lengths at the ramps would continue to be able to store within the existing ramps. Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under background plus project conditions.

Project Impacts and Recommended Mitigation Measures

Described below are the intersection and highway impacts and recommended mitigation measures necessary to maintain the level of service standards.

1. US 101 SB Ramps and SR 25 (Caltrans)

Mitigation Measures. The Valley Transportation Authority (VTA), Santa Clara County's Congestion Management Agency, in its Valley Transportation Plan (VTP) 2040 document has identified the widening of US 101 from Monterey Street (in Gilroy) to SR 129 (in San Benito County). The proposed improvements (identified as VTP ID #H25 and also known as the *US 101 Widening Project – Monterey Road to SR 129*) include widening of US 101 from four lanes to six lanes, the construction of a new interchange at SR 25, extending Santa Teresa Boulevard to connect to SR 25 at the new US 101/SR 25 interchange, and improvements along SR 25 required to support efficient traffic operations at the new US 101/SR 25 interchange. The Final Environmental Impact Report (FEIR) for the project was approved in June 2013 and the project report was approved by Caltrans in November 2013. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

2. US 101 NB Ramps and SR 25 (Caltrans)

Mitigation Measures. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, described above, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

SR 25, East of US 101

Mitigation Measures. The improvements necessary to mitigate the project impacts at the study highway segment consist of widening the highway to provide additional capacity. Regional projects that would provide additional capacity along SR 25 have been identified and include the following:

- *SR 25 Widening and Realignment Project* – This project consists of the widening of SR 25 from the existing 2-lane highway to a 4-lane expressway from San Felipe Road (Hollister) to US 101 (Santa Clara County). In June 2016, Caltrans approved the Hollister to Gilroy State Route 25 Route Adoption project. In the Route Adoption study, Caltrans identifies two alternatives to eventually replace 11.2 miles of the existing SR 25 two-lane highway with a four-lane expressway in San Benito and Santa Clara Counties. The Route Adoption study establishes and documents an exact alignment and location of the future expressway in the San Benito and Santa Clara Counties' General Plans, allowing for future land use planning, such as establishing right-of-way boundaries and acquiring most of the parcels within the defined corridor area.

  Additionally, the widening of SR 25 is included as part of the improvement projects of the San Benito County Transportation Impact Mitigation Fee (TIMF). The San Benito County TIMF identifies the improvement project as the widening of SR 25 from two-to-four lanes between San Felipe Road in Hollister to the Santa Clara County line. According to the *Highway 25 Widening Design Alternatives Analysis* report, dated August 2016 by WMH, the adopted San Benito County Traffic Impact Mitigation Fee Nexus Study (January 2016, Appendix A – TIMF Improvement Costs and Cost Allocations) identifies $88 million in funding from new development to be contributed to the SR 25 Widening project.

- *VTA's US 101 widening project – Monterey Road to SR 129* – This project is described above.

With implementation of the planned improvements along SR 25, the impacts to the study highway segment would be less-than-significant. However, the magnitude of the above roadway widening improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned improvements to widen SR 25. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

Evaluation of Cumulative Conditions

Intersection Level of Service Analysis

The results of the intersection level of service analysis indicates that both of the study intersections are projected to operate at acceptable LOS C or better during both peak hours under cumulative plus project conditions.

Highway Segment Level of Service Analysis

Under cumulative conditions, and assuming the implementation of the SR 25 Widening and Realignment project, the study highway segment analysis was updated to evaluate a four-lane expressway (multi-lane facility) based on the *2010HCM* methodology and using the Highway Capacity Software.

Based on the HCM methodology, both directions of the highway segment studied are projected to operate at acceptable LOS C or better during both peak hours under cumulative and cumulative plus project conditions. Therefore, the proposed project would not have a significant impact on the highway segment studied under cumulative plus project conditions, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels during both peak hours under cumulative and cumulative plus project conditions, based on Caltrans level of service standards. Additionally, the addition of project traffic to the study freeway ramps is not projected to change the vehicle queue lengths estimated under cumulative conditions. Therefore, the proposed project is not projected to have a significant impact at any of the study freeway ramps under cumulative plus project conditions.

The projected vehicle queue lengths at the study freeway ramps indicate that the US 101 southbound off-ramp at SR 25 would require a minimum of 675 feet per lane to store the projected southbound left-turn queue lengths while the US 101 northbound off-ramp at SR 25 would require a minimum of 325 feet per lane to store the projected queue lengths. The southbound on-ramp at SR 25 shows a maximum vehicle queue length of 100 feet.

Other Transportation Issues

Vehicle Miles Traveled Analysis

For the purpose of evaluating the effects of the proposed project on travel patterns within the County, the projected change in VMT associated with the proposed project was estimated by comparing VMT for the Year 2018 (proposed project opening year) along roadway facilities projected to be utilized by project traffic to the estimated project VMT.

VMT is calculated as the number of vehicle trips multiplied by the length of the trips in miles. It is estimated that the proposed project would generate at total of 316 daily truck trips and 30 daily employee trips. Additionally, it is anticipated that 80% of the truck traffic would travel to/from Santa Clara County (north of the project site, with an average trip length of 40 miles), 10% to/from San Benito County (Hollister, with an average trip length of 17 miles), and 10% to/from Monterey County (Salinas, with an average trip length of 27 miles). Employee trips were assumed to originate from the Gilroy and Hollister areas, with an average trip length of 18 miles. Project trips would mainly utilize US 101 and SR 25 between the project site and their origin/destination. Based on this information, the proposed project is estimated to add approximately 12,028 VMT to the roadway facilities anticipated to serve the project traffic.

For comparison, year 2018 ADT volumes along the roadway facilities anticipated to serve the project traffic were obtained from Santa Clara County Model (utilized for the recently completed Santa Clara County Roadways Study). Based on the ADT volumes and the length of the roadways, it was calculated that the roadway facilities anticipated to serve the project traffic would include approximately 6,000,300 daily VMTs.

Based on the estimated VMT projections associated with the proposed project and roadway facilities anticipated to serve the project traffic, the proposed project represents an increase of approximately 0.2% in the daily VMT on the roadway facilities serving the project.

Site Access Analysis

An evaluation of the project site access was performed to identify potential deficiencies along the facilities providing direct access to the project site. Direct access to the project site is provided via Old Monterey Road and the US 101 ramps at Monterey Road and the Monterey Road extension. The analysis also identifies necessary roadway and ramp improvements to provide adequate traffic operations for project traffic and all other traffic on the roadway.

US 101 Ramps at Old Monterey Road

The US 101 southbound ramps at Old Monterey Road include acceleration/deceleration lanes along US 101 that facilitate access between the freeway and Old Monterey Road, in particular for truck traffic, which require additional space to accelerate/decelerate to the approaching speed. The existing deceleration lane is approximately 500 feet long from the end of the taper to the ramp exit curve. The acceleration lane is approximately 1,000 feet long from the ramp entrance curve to the beginning of the taper.

The US 101 northbound ramp at Old Monterey Road extension does not currently include an acceleration lane on US 101 and Old Monterey Road extension is only approximately 12 feet wide with no shoulders. The project is proposing to widen the Old Monterey Road extension to provide adequate truck circulation to/from the project site and install an acceleration lane at the US 101 northbound on-ramp to provide direct access from the project site to US 101 to the north.

Freeway Ramps Design Standards

The geometric design of the freeway ramps at Old Monterey Road/Monterey Road extension was evaluated based on Caltrans standards and on the American Association of State Highway and Transportation Officials (AASHTO) publication titled *A Policy on Geometric Design of Highways and Streets*, 6th Edition, also known as the "Green Book".

The Caltrans *Highway Design Manual* (HDM) Topic 504 (interchange design standards) and the AASHTO Green Book, section 10.9.6 (Ramps), describe the following design standards for freeway off- and on-ramps.

Sight Distance – A clear line of sight should be provided between the driver on the minor street (in this case freeway on-ramp) and the approaching traffic (freeway mainline). Sight distance along a ramp should be at least as great as the design stopping sight distance.

Based on the design speed along US 101 (posted speed limit of 65 mph, 55 mph for truck with three axles or more), the required stopping sight distance for the on-ramps at Old Monterey Road/Old Monterey Road extension must be no less than 660 ft. (Table 201.1 of the HDM).

The existing acceleration lane for the southbound on-ramp (1,000 feet long) provides the required stopping sight distance. At the northbound on-ramp, the existing sight distance (without acceleration lane) is less than 600 feet. The proposed project-sponsored acceleration lane would correct the existing sight-distance deficiency at the northbound on-ramp.

Ramp Width – Ramp lanes shall be a minimum of 12 feet in width. Where ramps have curve radii of 300 feet or less, the ramp width shall be widened to accommodate large truck wheel paths. Ramps with radius of 150 feet or less must be a minimum of 18 feet wide.

The US 101 southbound ramps at Old Monterey Road are 12 feet wide, and widen to a minimum of 22 feet at the point where the ramps curve.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required ramp width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Shoulder Width – typical ramp shoulder widths are 4 feet on the left and 8 feet on the right.

The shoulder width at the US 101 southbound ramps at Old Monterey Road is at least 8 feet wide.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required shoulder width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Deceleration Lane Length – Deceleration lane length is governed by the freeway's design speed and the design speed at the ramp's exit curve. Table 10-5 in the AASHTO Green Book lists minimum deceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum deceleration length ranges from 540 feet for ramps with exit curve design speeds of 15 mph, 520 feet for exit curve design speeds of 20 mph, 500 feet for exit curve design speeds of 25 mph, to 280 feet for exit curve design speeds of 50 mph. In addition, a taper length of a minimum of 250 feet also must be provided.

The existing deceleration lane at the US 101 southbound off-ramp at Old Monterey Road is designed to accommodate design speed at the exit curve of 25 mph. However, the existing deceleration lane taper is only approximately 130 feet long.

The US 101 northbound off-ramp at Old Monterey Road extension does not include a deceleration lane.

Recommendation: It is recommended that the minimum recommended taper length be provided at the existing US 101 southbound off-ramp at Old Monterey Road deceleration lane, based on the above standards and to the satisfaction of Caltrans.

Acceleration Lane Length – Acceleration lane length is governed by the speed differential between the ramp's entrance curve design speed and the design speed of the freeway. Table 10-3 in the AASHTO Green Book lists minimum acceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum acceleration length ranges from 1,350 feet for entrance curve design speed of 15 mph, 1,220 feet for entrance curve design speed of 25 mph, 1,000 feet for entrance curve design speed of 35 mph, to 370 feet for entrance curve design speed of 50 mph. In addition, a taper length of a minimum of 300 feet (suitable for design speeds up to 70 mph) also must be provided starting at the end of the acceleration lane.

The existing acceleration lane at the US 101 southbound on-ramp at Old Monterey Road is designed to accommodate entrance curve design speeds of 35 mph and includes the minimum required 300-foot taper.

Recommendation: The proposed acceleration lanes at the northbound on-ramp must be designed following the above standards and to the satisfaction of Caltrans.

Old Monterey Road Roadway Segment Analysis

Three roadway segments along Old Monterey Road, all under the jurisdiction of Santa Clara County, were included in the analysis. The analysis consists of an evaluation of the average daily traffic (ADT) volumes, the projected traffic volume increases associated with the proposed project, and the adequacy of the roadway segments to serve the projected traffic demand. The analysis provides an indication of operational and/or safety issues that may arise as traffic volumes on the study roadway segments increase.

The existing roadway segment volumes were obtained from new 24-hour machine counts collected in September 2016. The daily traffic volumes along Old Monterey Road are shown not to exceed 45 daily trips.

The proposed project is projected to add a maximum of 194 daily trips to the study roadway segments. With the proposed project, the study roadway segments are project to carry from approximately 200 to 240 daily trips.

Although the proposed project is shown to increase existing traffic volumes along the study roadway segments by a relatively large percentage (compared to existing conditions), the existing traffic volumes are very low and the study roadway segments would continue to carry traffic volumes that are well below the capacity of a two-lane roadway segment. Additionally, with the proposed project improvements that include widening portions of and repaving Old Monterey Road to accommodate two-way truck traffic circulation, Old Monterey Road would adequately serve the projected traffic volumes with the project.

Roadway Design Standards

Typical roadway cross sections for minor streets in rural areas include two 12-foot lanes with 8-foot shoulders. However, as described in the AASHTO Green Book (section 5.5, Very Low-Volume Local Roads), the geometric design of very low-volume local roadways (ADT less than or equal to 400 daily vehicles) is a unique challenge because the very low traffic volumes, which result in reduced frequency of vehicle conflicts, make design standards normally applied on higher volume roads less cost-effective.

The project is proposing to improve Old Monterey Road/Old Monterey Road extension to accommodate two-way truck traffic circulation to and from the project site.

Recommendation: The project should work with Santa Clara County Roads and Airports staff to identify the required roadway cross section for Old Monterey Road/Old Monterey Road extension and implement the proposed improvements along this roadway in accordance to Santa Clara County roadway design standards.

Table ES 1
Intersection Level of Service and Signal Warrant Analyses Summary

				Existing			Existing Plus Project				Background			Background Plus Project				Cumulative		Cumulative Plus Project		
#	Intersection	Peak Hour	Count Date	Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Delay Change[3] (sec)	Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Delay Change[4] (sec)	Avg. Delay[2] (sec/veh)	LOS	Avg. Delay[2] (sec/veh)	LOS	Delay Change[5] (sec)
1	US 101 SB Ramps and SR 25	AM	09/13/16	No	**110.8**	**F**	No	**123.0**	**F**	**+12.2**	**Yes**	**380.5**	**F**	**Yes**	**407.9**	**F**	**+27.4**	20.0	B	20.0	B	+0.0
		PM	09/13/16	**Yes**	**2439.3**	**F**	**Yes**	**2439.3**	**F**	+0.0	**Yes**	**8886.8**	**F**	**Yes**	**8886.8**	**F**	**+0.0**	22.9	C	23.2	C	+0.3
2	US 101 NB Ramps and SR 25	AM	09/13/16	**Yes**	19.3	C	**Yes**	19.3	C	+0.0	**Yes**	**25.2**	**D**	**Yes**	**25.4**	**D**	+0.2	24.0	C	23.9	C	-0.1
		PM	09/13/16	**Yes**	**169.4**	**F**	**Yes**	**176.1**	**F**	**+6.7**	**Yes**	**719.6**	**F**	**Yes**	**734.8**	**F**	**+15.2**	21.3	C	21.5	C	+0.2

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for one- and two-way stop-controlled intersections are based on the stop-controlled approach with the highest delay.
[2] The reported delay and corresponding level of service for signalized intersections represents the average delay for all approaches at the intersection.
[3] Change in delay measured relative to existing conditions.
[4] Change in delay measured relative to background conditions.
[5] Change in delay measured relative to cumulative no project conditions.
Bold indicates unacceptable LOS/signal warrant met.
Box indicates significant project impact.

Table ES 2
Freeway Segments Level of Service Analysis Summary

					Existing Plus Project						Project Trips	
#	Freeway	Segment	Direction	Peak Hour	Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume	Density	LOS	Volume	% of Capacity
1	US 101	SR 129 to Betabel Rd	NB	AM	67	2	4,400	1,872	14	B	2	0.0
			NB	PM	67	2	4,400	1,870	14	B	0	0.0
2	US 101	Betabel Rd to SR 25	NB	AM	67	2	4,400	2,020	15	B	20	0.5
			NB	PM	67	2	4,400	1,881	14	B	11	0.3
3	US 101	SR 25 to Monterey Rd	NB	AM	65	2	4,400	3,916	30	D	16	0.4
			NB	PM	66	2	4,400	2,918	22	C	8	0.2
4	US 101	Monterey Rd to Pacheco Pass Hwy	NB	AM	67	3	6,900	3,015	15	B	15	0.2
			NB	PM	67	3	6,900	2,407	12	B	7	0.1
5	US 101	Pacheco Pass Hwy to Monterey Rd	SB	AM	67	3	6,900	2,235	11	A	15	0.2
			SB	PM	67	3	6,900	2,600	13	B	0	0.0
6	US 101	Monterey Rd to SR 25	SB	AM	67	2	4,400	2,016	15	B	16	0.4
			SB	PM	35	2	4,400	4,060	58	E	0	0.0
7	US 101	SR 25 to Betabel Rd	SB	AM	67	2	4,400	1,750	13	B	20	0.5
			SB	PM	67	2	4,400	2,270	17	B	0	0.0
8	US 101	Betabel Rd to SR 129	SB	AM	67	2	4,400	1,482	11	A	2	0.0
			SB	PM	67	2	4,400	2,275	17	B	5	0.1

[1] Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2014.

Table ES 3
Highway Segments Level of Service Analysis Summary

Highway Segment		Peak-Hour	Direction	Existing Vol	Existing ATS	Existing PTSF	Existing LOS	Existing Plus Project Vol	Existing Plus Project ATS	Existing Plus Project PTSF	Existing Plus Project LOS	Background Vol	Background ATS	Background PTSF	Background LOS	Background Plus Project Vol	Background Plus Project ATS	Background Plus Project PTSF	Background Plus Project LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	559	37.3	73.3%	E	561	37.3	73.5%	E	692	33.8	79.6%	F	694	33.8	79.7%	F
		AM	WB	1364	36.3	96.1%	E	1366	36.3	95.9%	E	1694	33.1	100.0%	F	1696	33.0	100.0%	F
		PM	EB	1332	35.0	94.4%	E	1335	35.0	94.4%	E	1708	30.4	99.2%	F	1711	30.3	99.2%	F
		PM	WB	837	35.3	85.4%	E	837	35.3	85.4%	E	1078	30.7	90.8%	F	1078	30.7	90.8%	F

Notes: Vol = Volume
ATS = Average Travel Speed (miles per hour)
PTSF = Percent Time-Spent-Following
LOS = Level of Service

Table ES 4
Freeway Ramp Analysis Summary

Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Peak Hour	Background				Background Plus Project			
							Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]
US 101 at SR 25														
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	900	AM	153	0.085	A	0	157	0.087	A	0
				1,800		PM	164	0.091	A	0	164	0.091	A	0
Northbound Off-Ramp	Loop	Stop	1	1,600	825	AM	94	0.059	A	50	98	0.061	A	50
				1,600		PM	170	0.106	A	475	173	0.108	A	475
US 101 at Old Monterey Road														
Southbound Off-Ramp	Diagonal	Uncontrolled	1	1,800	475	AM	2	0.001	A	0	22	0.012	A	0
				1,800		PM	0	0.000	A	0	0	0.000	A	0
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	800	AM	1	0.001	A	0	3	0.002	A	0
				1,800		PM	0	0.000	A	0	5	0.003	A	0
Northbound On-Ramp	Diagonal	Uncontrolled	1	900/1,800	1,800	AM	2	0.002	A	0	20	0.011	A	0
				900/1,800		PM	3	0.003	A	0	14	0.008	A	0

Notes:
[1] A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 1,600 vphpl for loop ramps, with the exception of the northbound on-ramp at Old Monterey Road, which does not include acceleration lanes and, therefore, its capacity was assumed to be half the capacity of a diagonal ramp. With implementation of the project and proposed project improvements, the ramp capacity would increase to 1,800 vph.
[2] Ramp volumes were obtained from peak-hour turn-movement counts at the ramp intersections and 24-hour machine counts at the ramps.
[3] Ramp level of service based on the calculated ramp volume-to-capacity ratio.
[4] 95th percentile vehicle queue length projections (in feet) were obtained from Synchro/SimTraffic.
Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.

1. Introduction

This report presents the results of the traffic impact analysis conducted for the proposed Sargent Quarry mining and reclamation plan, in Santa Clara County. The proposed project would consist of pit mining operations for the production of sand and gravel, which can be used for concrete, asphalt production, and rock. The mining operations would occur on approximately 317 acres of the 6,400-acre Sargent Ranch property located along the west side of US 101, approximately five miles south of Gilroy. The proposed project is requesting a 30-year term on the Conditional Use Permit for the site. The proposed project also would include reclamation activities, pursuant to the proposed project's Mining and Reclamation Plan, that would include reclaiming mined areas to grazing land, stabilizing and re-vegetating slopes, and reclaiming the processing site, roads, and the cessation of mining. The proposed project is in conformance with the Santa Clara County *General Plan* and the County's zoning code land use designations (AR agricultural Ranchland) for the site.

Access to the project site will be provided via Old Monterey Road. The project site location and study facilities are shown on Figure 1. The project site plan is shown on Figure 2.

Scope of Study

This traffic impact analysis documents the impacts to the surrounding transportation system associated with implementation of the proposed Sargent Quarry Mining and Reclamation Plan (hereafter referred to as the project). The potential impacts of the project were evaluated in accordance with the standards set forth by Santa Clara County and Caltrans. The study included an analysis of two intersections, five freeway/highway segments, and five freeway ramps. The study facilities are listed below and shown on Figure 1. The jurisdiction of each of the study facilities listed below is denoted with the following superscripts:

[CT] = Caltrans
[SCC] = Santa Clara County

Study Intersections

1. US 101 Southbound Ramps and State Route (SR) 25 [CT]
2. US 101 Northbound Ramps and SR 25 [CT]

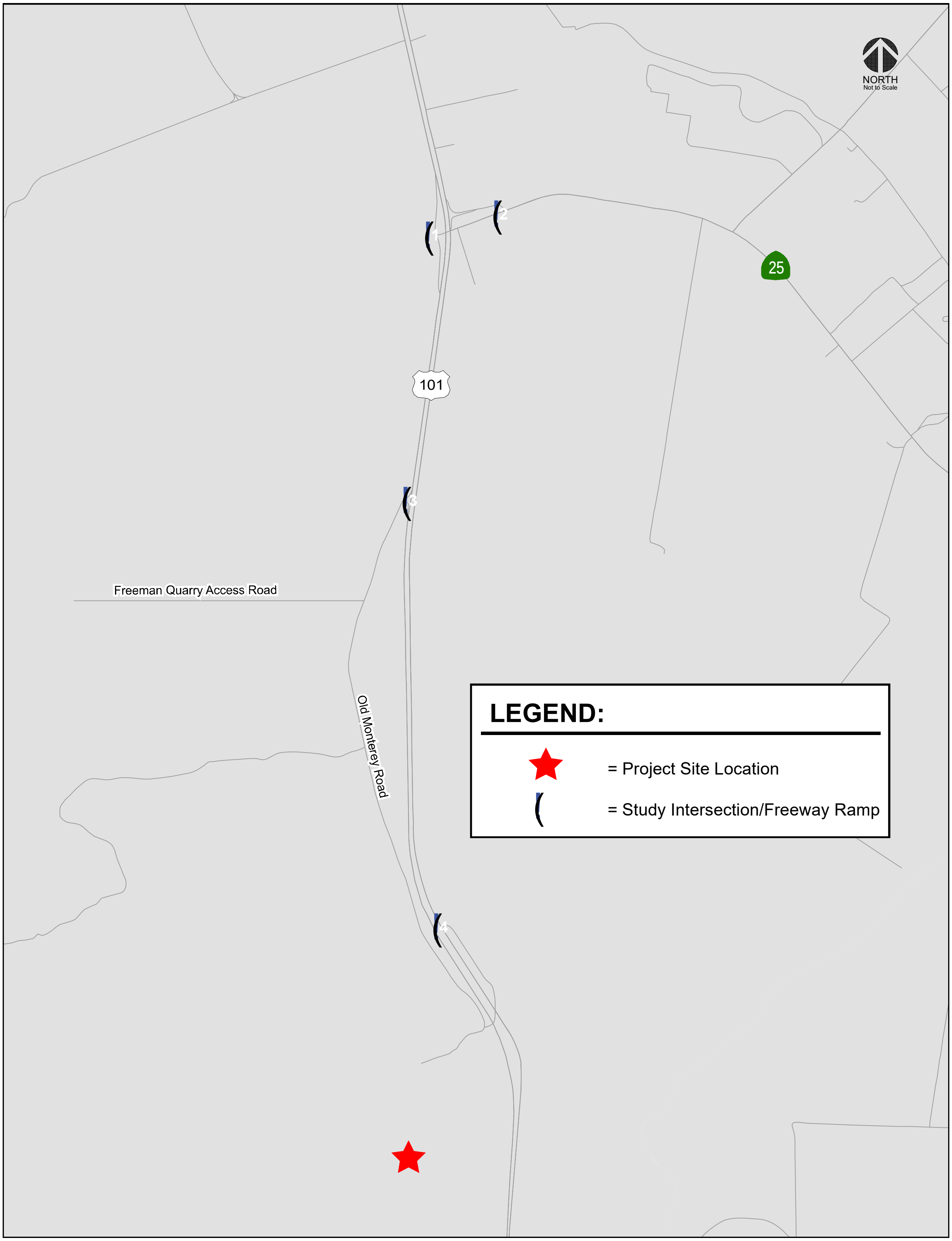


Figure 1
Site Location and Study Facilities

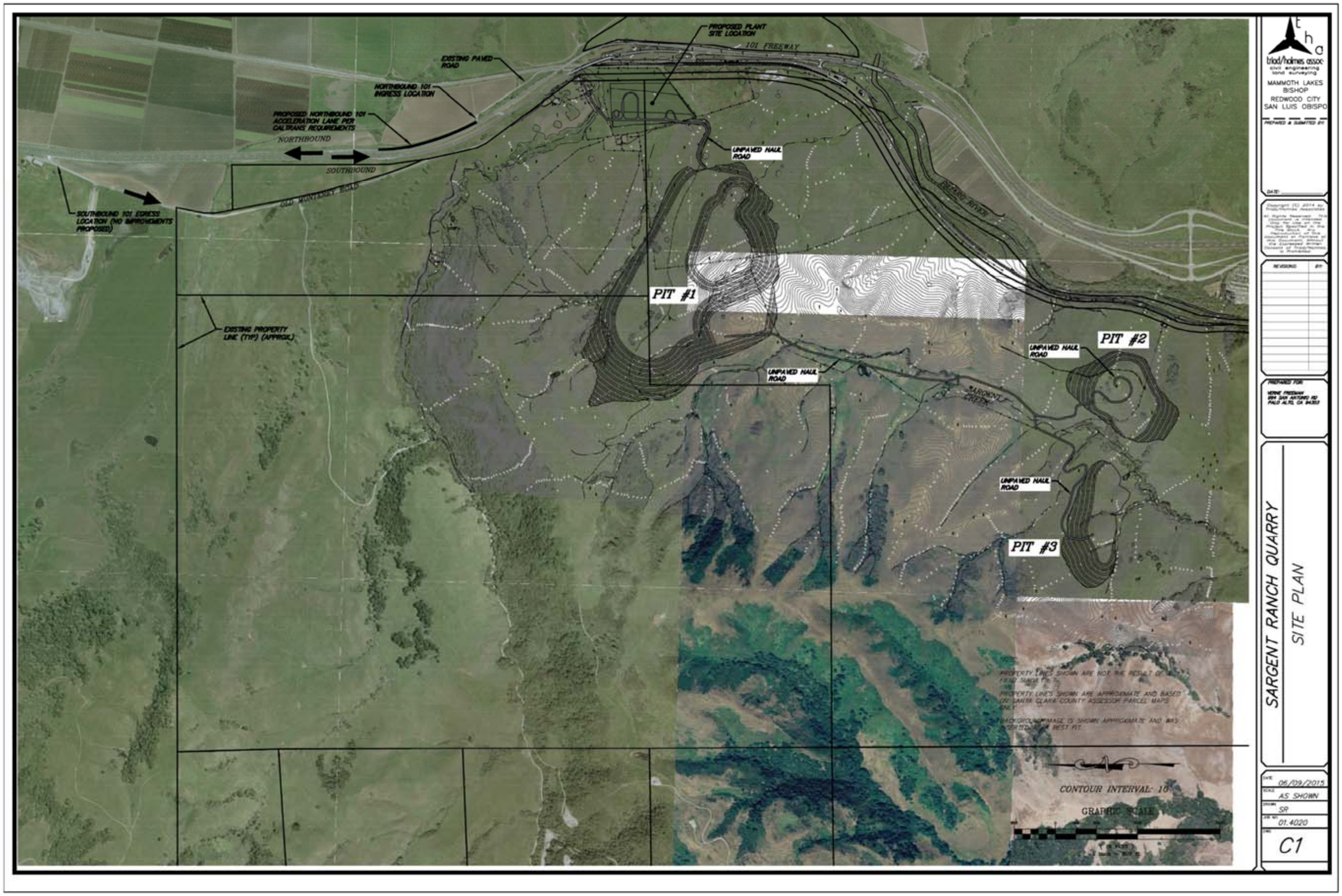


Figure 2
Project Site Plan

Study Freeway/Highway Segments

6. US 101, between SR 156 and SR 129 CT
7. US 101, between SR 129 and Betabel Road CT
8. US 101, between Betabel Road and Bloomfield Avenue (SR 25) CT
9. US 101, between Bloomfield Avenue (SR 25) and Monterey Road CT
10. SR 25, east of US 101 CT

Study Freeway Ramps

6. US 101 Southbound On-Ramp at SR 25 CT
7. US 101 Northbound Off-Ramp at SR 25 CT
8. US 101 Southbound Off-Ramp at Old Monterey Road CT
9. US 101 Southbound On-Ramp at Old Monterey Road CT
10. US 101 Northbound On-Ramp at North/South Roadway (Old Monterey Road) CT

Study Time Periods

Traffic conditions were analyzed for the weekday AM and PM peak hours of traffic. The weekday AM peak-hour of traffic generally falls within the 7:00 to 9:00 AM period and the weekday PM peak-hour is typically in the 4:00 to 6:00 PM period. It is during these times that the most congested traffic conditions occur on an average day.

Study Scenarios

Traffic conditions were evaluated for the following scenarios:

Scenario 1: *Existing Conditions.* Existing conditions were represented by existing peak-hour traffic volumes on the existing roadway network. Existing traffic volumes were obtained from new turn-movement counts.

Scenario 2: *Existing plus Project Conditions.* Existing plus project conditions were represented by traffic volumes, with the project, on the existing roadway network. Traffic volumes with the project were estimated by adding to existing traffic volumes the traffic generated by the proposed project. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential project impacts.

Scenario 3: *Near-Term (Background) Conditions.* Near-term (background) traffic conditions represent future traffic volumes on the existing transportation network. Background traffic volumes were represented by adding trips from approved but not yet constructed development projects to existing peak-hour traffic volumes. Information on approved projects was obtained from both the City of Gilroy and City of Hollister. Background conditions represent the baseline conditions to which project conditions are compared for the purpose of determining project impacts.

Scenario 4: *Background plus Project Conditions.* Background plus project conditions (also referred to as *Project Conditions*) were represented by background traffic volumes, with the addition of project trips, on the existing roadway network. Background plus project conditions were evaluated relative to background conditions in order to determine potential project impacts.

Scenario 3: *Long-Term Conditions.* Long-term traffic conditions represent future traffic volumes on the future transportation network that would result from traffic growth projected to occur both locally and regionally over approximately the next 25 years. Long-term traffic volumes, without the proposed project, were obtained from the Gilroy General Plan Update traffic study. Long-term traffic conditions were evaluated for two scenarios: (1) without the proposed project and (2) with project-generated traffic. The change between these two scenarios illustrates the relative impact the proposed project could have on long-term traffic conditions.

Methodology

This section presents the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

Data Requirements

The data required for the analysis were obtained from new traffic counts (conducted in September 2016), the Santa Clara County Congestion Management Program (CMP) Annual Monitoring Report, Caltrans, and field observations. The following data were collected from these sources:

- existing traffic volumes
- existing and planned lane configurations and traffic control
- freeway volumes and average speeds

Intersection Level of Service Standards and Analysis Methodologies

Traffic conditions at the study intersections were evaluated using level of service (LOS). *Level of Service* is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The various levels of service are based on the average amount of delay incurred by drivers traveling through the intersection.

The analysis methods and level of service standards are described below.

Level of Service Standards

The Caltrans level of service standard is LOS C or better. However, Caltrans acknowledges that a LOS C standard may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If maintaining a LOS C is not feasible, Caltrans attempts to maintain the existing level of service when assessing the impact of a new project. For the purpose of this study, a LOS C standard was applied to Caltrans facilities, as noted below.

The Santa Clara County defines an acceptable level of service for freeways as LOS E or better.

Analysis Methodologies

The study methodologies are described below.

Study Intersections

The two study intersections are located within unincorporated Santa Clara County, however, they are under the jurisdiction of Caltrans. Therefore, the study intersections were evaluated against Caltrans level of service standard (LOS C) and impact thresholds. It should be noted that the study intersections are currently unsignalized but are planned to be signalized in the future.

Signalized Intersections

The level of service methodology chosen for the analysis of signalized study intersections is Synchro and the *2010 Highway Capacity Manual* (2010HCM) methodology. The 2010HCM methodology evaluates signalized intersection operations based on average control delay time for all vehicles at the intersection. *Control delay* is the amount of delay that is attributed to the particular traffic control device at the intersection, and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The correlation between average delay and level of service for signalized intersections is shown in Table 1.

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

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

Source: Transportation Research Board, 2010 Highw ay Capacity Manual.(Washington, D.C., 2010)

Unsignalized Intersections

Synchro is used to determine the level of service for unsignalized intersections, which is based on the 2010HCM methodology for unsignalized intersection analysis. This method is applicable for both two-way and all-way stop-controlled intersections. For the analysis of stop-controlled intersections, the *2010HCM* methodology evaluates intersection operations on the basis of average control delay time for all vehicles on the stop-controlled approaches. For the purpose of reporting level of service for one- and two-way stop-controlled intersections, the delay and corresponding level of service for the stop-controlled minor street approach with the highest delay is reported. For all-way stop-controlled intersections, the reported average delay and corresponding level of service is the average for all approaches at the intersection. The correlation between average control delay and level of service for unsignalized intersections is shown in Table 2.

Signal Warrants

The level of service analysis at unsignalized intersections is supplemented with an assessment of the need for signalization of the intersection. This assessment is made on the basis of signal warrant criteria adopted by Caltrans. For this study, the need for signalization is assessed on the basis of the peak-hour traffic signal warrant, Warrant #3, described in the 2014 *California Manual on Uniform Traffic Control Devices for Streets and Highways* (CAMUTCD), Part 4, Highway Traffic Signals. This method provides an indication of whether traffic conditions and peak-hour traffic levels are, or would be, sufficient to justify installation of a traffic signal. Other traffic signal warrants are available, however, they cannot be checked under future conditions because they rely on data for which forecasts are not available (such as accidents, pedestrian volume, and four- or eight-hour vehicle volumes).

Table 2
Unsignalized Intersection Level of Service Definitions Based on Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (Sec.)
A	Operations with very low delays occurring with favorable progression.	Up to 10.0
B	Operations with low delays occurring with good progression.	10.1 to 15.0
C	Operations with average delays resulting from fair progression.	15.1 to 25.0
D	Operation with longer delays due to a combination of unfavorable progression of high V/C ratios.	25.1 to 35.0
E	Operation with high delay values indicating poor progression and high V/C ratios. This is considered to be the limited of acceptable delay.	35.1 to 50.0
F	Operation with delays unacceptable to most drivers occurring due to oversaturation and poor progression.	Greater than 50.0

Source: Transportation Research Board, 2010 Highway Capacity Manual.(Washington, D.C., 2010)

The decision to install a traffic signal should not be based purely on the warrants alone. Instead, the installation of a signal should be considered and further analysis performed when one or more of the warrants are met. Additionally, engineering judgment is exercised on a case-by-case basis to evaluate the effect a traffic signal could have on certain types of accidents and traffic conditions at the subject intersection as well as at adjacent intersections.

Freeway/Highway Segment Analysis

The study freeway segments and highway segment are located within Santa Clara County and are under the jurisdiction of Caltrans. In addition, the study freeway segments are part of the Santa Clara County Congestion Management Program (CMP) network. Therefore, for this analysis, the study freeway segments were evaluated using CMP procedures and methodologies. The study highway segment was evaluated following the recommended Caltrans methodologies.

Santa Clara County Freeway Segment Analysis

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

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

where:

D= density, in vehicles per mile per lane (vpmpl)
V= peak-hour volume, in vehicles per hour (vph)
N= number of travel lanes
S= average travel speed, in miles per hour (mph)

The vehicle density on a segment is correlated to level of service as shown in Table 3. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from high-occupancy vehicle (HOV) lanes. The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for

Table 3
Freeway Levels of Service Based on Density

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

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

segments six lanes or wider in both directions and a capacity of 2,200 vphpl be used for segments four lanes wide in both directions.

The study freeway segments are subject to Santa Clara CMP level of service standards (LOS E) and impact thresholds.

Caltrans Highway Segment Analysis

The highway segments were evaluated based on the 2010HCM methodology and using the Highway Capacity Software (HCS). The HCM defines the level of service for two-lane, two-way highways in terms of both percent time-spent-following and average travel speed. Percent time-spent-following represents the freedom to maneuver and the comfort and convenience of travel. Average travel speed reflects the mobility on a two-lane highway. Additionally, two-lane highways are categorized into two classes for analysis: Class I and Class II. Class I are defined as two-lane highways on which the motorists expect to travel at relatively high speeds (i.e. major intercity routes, primary arterials, and major commute routes). Class II are defined as two-lane highways on which motorists do not necessarily expect to travel at high speeds (i.e. access routes, scenic or recreational routes that are not primary arterials, and routes through rugged terrain). Level of service for Class I highways is defined by both the percent time-spent-following and average travel speed criteria, while Class II highway level of service is defined only by the percent time-spent-following criteria. The study highway segments are classified as Class I highways. Additional roadway characteristics utilized in the calculation of level of service include lane and shoulder width, access point density, specific grade or general terrain, percentage of no-passing zones, base free-flow speed, peak-hour factor (PHF), directional split, and percent of heavy vehicles.

The study highway segment is subject to Caltrans level of service standard (LOS C) and impact thresholds.

Freeway Ramp Analysis

The study freeway ramps are under the jurisdiction of Caltrans. The analysis was performed to evaluate the existing operating conditions and the effect of project traffic on ramp operations. The evaluation is based on ramp capacity (volume-to-capacity ratios) and projected queue lengths at the study freeway ramps. The correlation between volume-to-capacity (V/C) ratio and level of service for freeway ramps is shown in Table 4.

The study freeway ramps are subject to Caltrans level of service standard (LOS C) and impact thresholds.

Table 4
Freeway Ramp Levels of Service Based on Volume-to-Capacity Ratio

Level of Service	V/C Ratio
A	Less than 0.600
B	0.600-0.699
C	0.700-0.799
D	0.800-0.899
E	0.900-0.999
F	1.000 and Greater

Source: Transportation Research Board, 2000 Highw ay Capacity Manual. (Washington, D.C., 2000)

Freeway Ramp Capacities

Typical capacity for diagonal freeway ramps is 1,800 vehicles per hour per lane (vphpl). Loop ramps have a typical capacity of 1,600 vphpl. Although none of the study freeway on-ramps are currently controlled by a ramp meter, it can be expected that in the future they will be. Therefore, the analysis assumes the installation of ramp metering at the US 101 on-ramps at SR 25 under long-term traffic conditions.

For metered on-ramps, the capacity depends on the ramp meter rate. Based on previous correspondence with Caltrans as well as observation of existing ramp meters, it was determined that 4.0 seconds per vehicle is the maximum meter rate output used for District 4 (San Francisco Bay Area), or approximately 900 vph. This rate is applicable to both mixed-flow and HOV traffic volumes, regardless of the number of lanes. Therefore, it was assumed in the analysis that metered ramps would not serve more than 900 mixed-flow vehicles and 900 HOV each during an hour.

Freeway Ramp Queue Lengths

Vehicular queue length projections at the study freeway ramps under existing and near-term traffic conditions (existing roadway network) were obtained from Synchro. Under long-term traffic conditions, and assuming the proposed future roadway network (described in more detailed under cumulative conditions), traffic control at the study freeway ramps would change from stop-controlled without ramp meters to signalized with ramp meters. Therefore, under long-term conditions, queue lengths for the off-ramps were obtained from the Synchro level of service calculations for the intersections at the off-ramp terminus while queue lengths at the ramp meters on the on-ramps were calculated using the

Synchro/SimTraffic software package by replicating the ramp meter operation. The Synchro model was coded to allow the metered maximum number of vehicles to enter the freeway (900 vph each for the mixed-flow and HOV traffic). Both the mixed-flow meter and the HOV meter are modeled this way.

Report Organization

The remainder of this report is divided into seven chapters. Chapter 2 describes existing conditions in terms of the existing roadway facilities providing access to the project site and adequacy of the existing transportation system. Chapter 3 describes the method used to estimate project traffic under existing plus project conditions and its impact on the existing transportation system and describes the recommended mitigation measures. Chapter 4 presents the intersection levels of service under background conditions with the addition of traffic from approved development projects. Chapter 5 presents the intersection level of service analysis under background plus project conditions and its impact on the existing transportation system and describes the recommended mitigation measures. Chapter 6 presents the traffic conditions in the study area under long-term (year 2040) traffic conditions without and with traffic from the proposed project. Chapter 7 contains an evaluation of other transportation-related issues than may not be considered environmental issues, and may not be evaluated in the environmental assessment, but have been included in the traffic study to meet the requirements of Santa Clara County and Caltrans. Chapter 8 presents the conclusions of the traffic impact analysis.

2.
Existing Conditions

This chapter describes the existing conditions in the vicinity of the proposed project site, including the surrounding transportation system and adequacy of the existing roadway network serving the project site.

Existing Roadway Network

Regional access to the project area is provided by US 101, and State Routes 25 and 129. Local access to the project site is provided by Old Monterey Road. These facilities are described below.

US 101 is a north/south freeway traversing from northern California (extending through Salinas, Gilroy, San Jose) to Southern California. North of the Monterey Street interchange in Gilroy, US 101 is a six-lane freeway and transitions to a four-lane freeway south of that point, including in the vicinity of the project site. US 101 provides regional access to/from the project site to both the north and south. Direct access to/from US 101 to the project site is provided via its freeway ramps at Old Monterey Road. The posted speed limit on US 101 in the vicinity of the project site is 65 miles per hour (mph).

State Route 25 is a two-lane east-west highway that carries regional traffic between Gilroy and Hollister. It begins at its junction with Highway 101 in Gilroy and extends southward through Hollister towards Paicines, providing regional access to/from the project site to the east. The posted speed limit on SR 25 is 55 mph near its interchange with US 101.

State Route 129 is generally a two-lane highway that extends from SR 1 in Watsonville (Santa Cruz County) to US 101 near San Juan Bautista (San Benito County). It provides regional access to/from the project site to the west. SR 129 serves as a truck route for traffic traveling between SR 1 and US 101.

Old Monterey Road is a two-lane north-south roadway that runs parallel to and west of US 101, and provides direct access to the project site. It begins at its ramps with US 101, less than one mile south of the SR 25 overpass, and extends southward for approximately half a mile to a gated entrance where it becomes a private roadway that provides access to the project site. At its southern end, within the project site area, the private roadway extends eastward and under US 101 to connect to northbound US 101. For ease of reference, the private roadway that provides direct access to the project site and to northbound US 101 will be referred to as the *Old Monterey Road extension* within this document.

Old Monterey Road is a narrow undeveloped roadway that is approximately 25 feet wide between the southbound freeway ramps and the project site access gate and narrows to 20 feet or less south of the site access gate. The segment of the Old Monterey Road extension east of US 101 was measured to be only approximately 12 feet wide.

In addition to providing direct access to the project site, Old Monterey Road also provides access to the Freeman Quarry, several farm equipment storage buildings, a fruit/vegetable stand, and a private residence.

The US 101 southbound ramps at Old Monterey Road include a 500-foot deceleration lane and a 1,000-foot acceleration lane that facilitate access between Old Monterey Road and southbound US 101. The US 101 northbound ramps at the Old Monterey Road extension do not meet Caltrans design standards and do not include acceleration/deceleration lanes.

Other Existing Transportation Facilities

Since the project site is located in an undeveloped area, there are no other transportation facilities (such as sidewalks, bike lanes, bike routes, transit services) in the study area. Due to the location and nature of the proposed project, it is anticipated that all trips generated by the project would consist of passenger vehicles and trucks.

Existing Intersection Lane Configurations and Traffic Controls

The existing lane configurations and traffic controls at the study intersections were determined by observations in the field, and are shown on Figure 3.

Existing Traffic Volumes

Existing weekday AM and PM peak-hour traffic volumes were obtained from new intersection turning movement counts and 24-hour machine (tube) counts conducted in September 2016. The existing peak-hour intersection volumes are shown on Figure 3.

Caltrans requires its intersections to be analyzed using peak 15-minute flow rates. Therefore, the peak one-hour traffic volumes used in this analysis for the study intersections were calculated by multiplying the peak 15-minute volumes within each peak-hour by four.

The traffic count data are included in Appendix A. Peak-hour intersection turning movement volumes for the study intersections and study scenarios are tabulated in Appendix B.

Existing Intersection Analyses

The results of the intersection level of service and signal warrant analyses under existing conditions are summarized in Table 5.

Intersection Level of Service Analysis

It should be noted that the calculated peak-hour intersection delays are excessive and most likely would never be experienced at an intersection (drivers tend to look for alternative routes, or different times to travel, when long delays are experienced at an intersection). The large reported delays are a result of the limitations of the HCM methodology, which is not applicable to oversaturated conditions. Nevertheless, all intersection delays are reported for the purpose of quantifying the projected increase in delay due to the proposed project.

The results of the intersection level of service analysis indicate that both of the study intersections currently operate at unacceptable levels (LOS F) during at least one of the peak hours, based on Caltrans level of service standards.

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

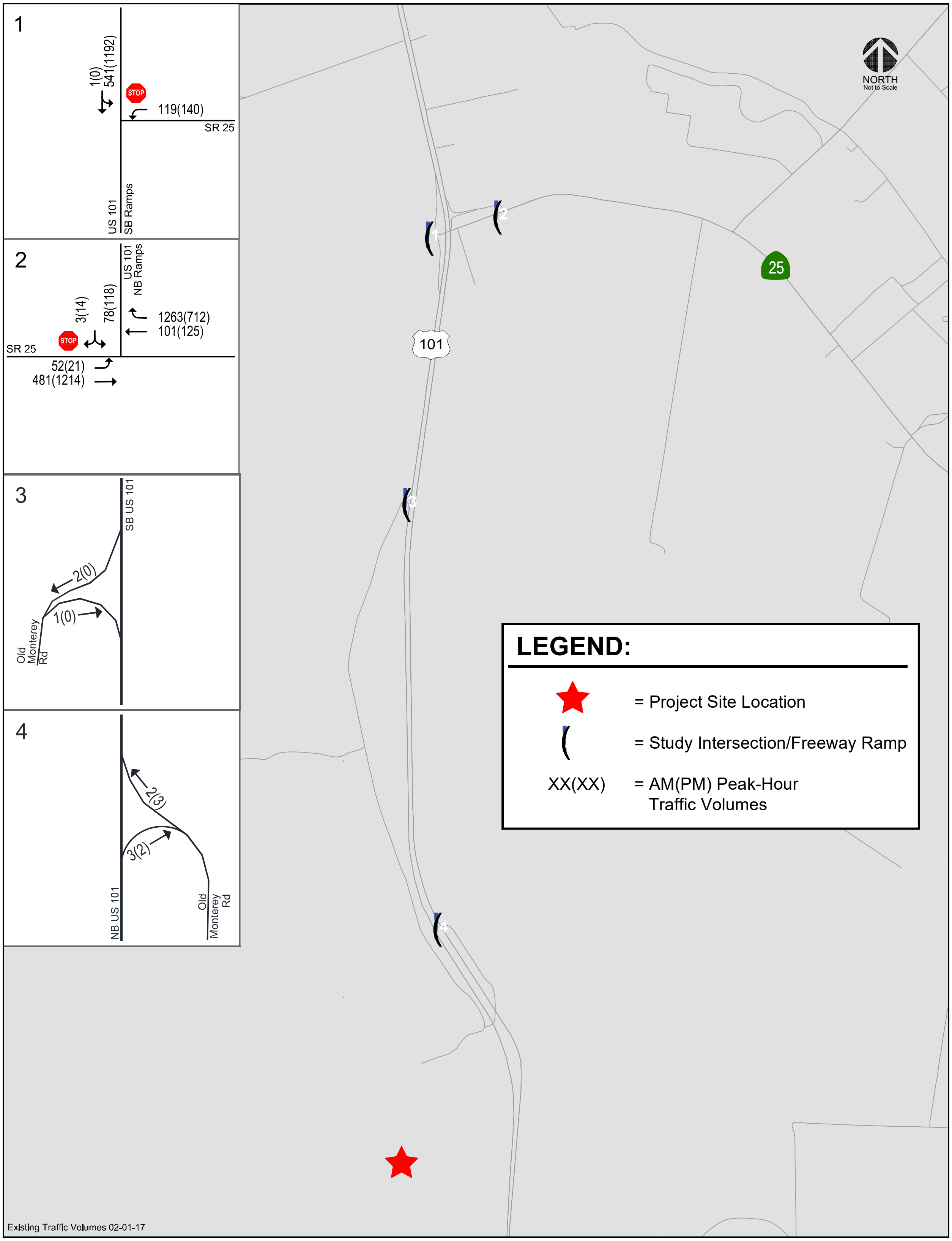


Figure 3
Existing Lane Configurations and Traffic Volumes

Table 5
Existing Intersection Level of Service and Signal Warrant Analyses Summary

#	Intersection	Peak Hour	Count Date	Warrant Met?	Worst Delay[1] (sec/veh)	LOS
1	US 101 SB Ramps and SR 25	AM	09/13/16	No	**110.8**	**F**
		PM	09/13/16	**Yes**	**2439.3**	**F**
2	US 101 NB Ramps and SR 25	AM	09/13/16	**Yes**	19.3	C
		PM	09/13/16	**Yes**	**169.4**	**F**

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for one- and two-way stop-controlled intersections are based on the stop-controlled approach with the highest delay.
Bold indicates unacceptable LOS/signal warrant met.

Intersection Signal Warrant Analysis

The peak hour signal warrant analysis indicates that both of the study intersections currently have peak-hour traffic volumes that meet the thresholds that warrant signalization during at least one of the peak hours. Since both of the study intersections also are projected to operate at unacceptable levels of service, a traffic signal is recommended at both locations under existing conditions.

The peak-hour signal warrant sheets are contained in Appendix D.

Existing Freeway/Highway Segment Analyses

Described below are the results of the freeway and highway segment analyses.

Freeway Segment Level of Service Analysis

A total of four freeway segments (eight directional segments) on US 101 were evaluated. Traffic volumes for the subject freeway segments were obtained from the 2014 Santa Clara County CMP Annual Monitoring Report, which is the latest available monitoring report. The results of the analysis are summarized in Table 6. The results show that all eight study directional freeway segments currently operate at an acceptable LOS E or better during both the AM and PM peak hours, based on CMP level of service standards.

Highway Segment Level of Service Analysis

One segment of SR 25 located just east of US 101 was evaluated. Traffic volumes on the study highway segment were derived from the new intersection turn-movement counts conducted at the study intersections at the SR 25/US 101 interchange. Roadway characteristics, such as lane width, shoulder width, terrain type, segment length, number of access points, and percent of no passing zone were obtained from observations in the field and/or aerial images. Default truck and recreational vehicle percentages for rural areas (HCM Exhibit 12-14) were utilized in the analysis.

The highway segment studied currently operates at an unacceptable LOS E during both peak hours, based on the HCM methodology and Caltrans level of service standards.

The results of the highway segments level of service analysis under existing conditions are summarized in Table 7. The highway segment level of service calculations are included in Appendix E.

Table 6
Existing Freeway Segment Level of Service Analysis Results

#	Freeway	Segment	Direction	Peak Hour	Avg. Speed[1]	# of Lanes[1]	Volume[1]	Density[1]	LOS[1]
1	US 101	SR 129 to Betabel Rd	NB	AM	67	2	1,870	14	B
			NB	PM	67	2	1,870	14	B
2	US 101	Betabel Rd to SR 25	NB	AM	67	2	2,000	15	B
			NB	PM	67	2	1,870	14	B
3	US 101	SR 25 to Monterey Rd	NB	AM	65	2	3,900	30	D
			NB	PM	66	2	2,910	22	C
4	US 101	Monterey Rd to Pacheco Pass Hwy	NB	AM	67	3	3,000	15	B
			NB	PM	67	3	2,400	12	B
5	US 101	Pacheco Pass Hwy to Monterey Rd	SB	AM	67	3	2,220	11	A
			SB	PM	67	3	2,600	13	B
6	US 101	Monterey Rd to SR 25	SB	AM	67	2	2,000	15	B
			SB	PM	35	2	4,060	58	E
7	US 101	SR 25 to Betabel Rd	SB	AM	67	2	1,730	13	B
			SB	PM	67	2	2,270	17	B
8	US 101	Betabel Rd to SR 129	SB	AM	67	2	1,480	11	A
			SB	PM	67	2	2,270	17	B

[1] Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2014.

Table 7
Existing Highway Segment Level of Service Analysis Results

Highway	Segment	Peak-Hour	Direction	Existing Vol	Existing ATS	Existing PTSF	Existing LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	628	37.3	73.3%	E
		AM	WB	1508	36.3	96.1%	E
		PM	EB	1448	35.0	94.4%	E
		PM	WB	948	35.3	85.4%	E

Notes: Vol = Volume
ATS = Average Travel Speed (miles per hour)
PTSF = Percent Time-Spent-Following
LOS = Level of Service

Existing Conditions Freeway Ramp Analysis

The five freeway ramps that provide access to the project site were evaluated. Existing peak-hour ramp volumes for the SR 25 ramps were obtained from the intersection turn-movement counts at the US 101/SR 25 ramp intersections. Peak-hour volumes for the Old Monterey Road ramps were derived from the 24-hour machine counts along Old Monterey Road.

Existing Conditions Freeway Ramp Configurations

Each of the freeway off-ramps studied are currently unsignalized and either uncontrolled or stop-controlled. The study on-ramps are currently uncontrolled at the freeway merging point. These ramps are described below.

US 101 Southbound On-Ramp at SR 25 – this ramp currently consists of a single lane diagonal ramp, for a total capacity of 1,800 vehicles per hour (vph), and a queue storage capacity of over 1,000 feet.

US 101 Northbound Off-Ramp at SR 25 – this ramp currently consists of a single lane loop ramp, for a total capacity of 1,600 vph and a queue storage capacity of more than 900 feet.

US 101 Southbound Off-Ramp at Old Monterey Road – this ramp currently consists of a short diagonal ramp with deceleration lane on US 101, for a total capacity of 1,800 vph and a queue storage capacity of approximately 500 feet within the ramp and deceleration lane.

US 101 Southbound On-Ramp at Old Monterey Road – this ramp currently consists of a short diagonal ramp with acceleration lane on US 101, for a total capacity of 1,800 vph. Potential vehicular queues within this on-ramp could store along Old Monterey Road.

US 101 Northbound On-Ramp at Old Monterey Road Extension – this ramp currently consists of a short diagonal ramp, however, it does not include acceleration lanes on US 101. Thus, the capacity of the existing ramp is assumed to be 900 vph, or half the capacity of a standard diagonal ramp. Potential vehicular queues within this on-ramp could store along the Old Monterey Road extension.

Freeway Ramp Analysis Results

Table 8 shows the existing ramp volumes and volume-to-capacity ratios during the peak hours. Based on the volume-to-capacity ratios, all study interchange ramps currently operate at acceptable levels, based on Caltrans level of service standards.

Existing queue lengths at the study freeway ramps were obtained from Synchro. All freeway on-ramps, with the exception of the northbound on-ramp at the Old Monterey Road extension, currently provide uncontrolled access to the freeway. Thus, the freeway on-ramps evaluated do not currently experience measurable queues at the freeway merging point. The US 101 northbound on-ramp at the Old Monterey Road extension, although uncontrolled at the freeway merging point, does not include acceleration lanes which results in traffic on the ramp slowing down or stopping at the merging point with the freeway and waiting for a gap in through traffic, making the ramp function as a yield-controlled access to the freeway. However, the traffic volumes on this ramp are very low such that no vehicle queues are projected along this on-ramp.

The northbound off-ramp at SR 25 is currently controlled by a stop sign. The queue length calculations show a maximum queue of 225 feet (or 9 vehicles) along this off-ramp during the PM peak hour, and only one vehicle during the AM peak hour. The available queue storage capacity for this off-ramp is adequate to accommodate the calculated existing vehicle queue lengths.

Field observations, conducted in January 2017, revealed that during the PM peak hour, a maximum of three vehicles were observed to be queued at the US 101 Northbound Off-Ramp at SR 25. All other study freeway ramps were observed to not currently experience measurable queue lengths during the peak hours. Based on the field observations, the calculated queue lengths obtained from Synchro can be considered a worst-case scenario.

Table 8
Existing Freeway Ramp Analysis

Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Peak Hour	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]
US 101 at SR 25										
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	900	AM	120	0.067	A	0
				1,800		PM	140	0.078	A	0
Northbound Off-Ramp	Loop	Stop	1	1,600	825	AM	81	0.051	A	25
				1,600		PM	132	0.083	A	225
US 101 at Old Monterey Road										
Southbound Off-Ramp	Diagonal	Uncontrolled	1	1,800	475	AM	2	0.001	A	0
				1,800		PM	0	0.000	A	0
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	800	AM	1	0.001	A	0
				1,800		PM	0	0.000	A	0
Northbound On-Ramp	Diagonal	Uncontrolled	1	900	1,800	AM	2	0.002	A	0
		- No Accel Lane		900		PM	3	0.003	A	0

Notes:

[1] A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 1,600 vphpl for loop ramps, with the exception of the northbound on-ramp at Old Monterey Road, which does not include acceleration lanes and, therefore, its capacity was assumed to be half the capacity of a diagonal ramp.

[2] Ramp volumes were obtained from peak-hour turn-movement counts at the ramp intersections and 24-hour machine counts at the ramps.

[3] Ramp level of service based on the calculated ramp volume-to-capacity ratio.

[4] 95th percentile vehicle queue length projections (in feet) were obtained from Synchro/SimTraffic. Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.

3. Existing Plus Project Conditions

This chapter describes existing traffic conditions with the addition of the traffic that would be generated by the proposed Sargent Quarry project if the project was complete and operating today. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential impacts on the existing transportation network attributable to the project. Included are descriptions of the significance criteria that define an impact, estimates of project-generated traffic, identification of any impacts, and descriptions of any mitigation measures that may be necessary. Existing plus project conditions are represented by existing traffic conditions with the addition of traffic generated by the project.

Significant Impact Criteria

Significance criteria are used to establish what constitutes an impact. For this analysis, the set of relevant criteria for impacts on the transportation network is based on Level of Service standards and significance thresholds for Santa Clara County and Caltrans. The criteria for identifying impacts on the study facilities are described below.

Caltrans Definition of Significant Intersection Level of Service Impacts

Caltrans identifies a level of service standard of LOS C for intersections. However, Caltrans does not have adopted thresholds of significance criteria for determining project impacts. Therefore, for the purpose of this traffic analysis, the following thresholds of significance were applied:

Signalized Intersection Thresholds of Significance

The project is said to create a significant adverse impact on traffic conditions at a Caltrans signalized intersection if for either peak hour:

- The level of service at the intersection degrades from an acceptable LOS C or better under baseline conditions to an unacceptable LOS D or worse under project conditions, or
- The level of service at the intersection is an unacceptable LOS D or worse under baseline conditions and the addition of project traffic causes the average intersection control delay to increase by one (1) or more seconds.

A significant project impact is said to be satisfactorily mitigated when measures are implemented that would restore traffic conditions to better than no project conditions.

<u>Unsignalized Intersection Thresholds of Significance</u>

For unsignalized intersections, the project is said to create a significant adverse impact on traffic conditions at the intersection if for any peak hour:

- *All-way stop*: The average overall level of service at the intersection degrades from an acceptable LOS C or better under conditions without the project to an unacceptable LOS D or worse under project conditions, or
- *All-way stop*: The average overall intersection level of service is already at an unacceptable LOS D or worse without the project and the addition of project traffic causes the average overall delay to increase five (5) or more seconds, or
- *One- or two-way stop*: The delay on the worst approach at a one- or two-way stop-controlled intersection degrades from an acceptable LOS C or better under conditions without the project to an unacceptable LOS D or worse under project conditions <u>and</u> the traffic volumes at the intersection under project conditions are high enough to satisfy the peak-hour volume traffic signal warrant adopted by Caltrans, or
- *One- or two-way stop*: The delay on the worst approach at a one- or two-way stop-controlled intersection is already at an unacceptable LOS D or worse without the project <u>and</u> the traffic volumes at the intersection under project conditions are high enough to satisfy the peak-hour volume traffic signal warrant adopted by Caltrans, <u>and</u> the addition of project traffic causes the delay on the worst stop-controlled approach to increase beyond what it was without the project.

A significant project impact is said to be satisfactorily mitigated when measures are implemented that would restore traffic conditions to better than no project conditions.

Santa Clara County CMP Definition of Significant Freeway Segment Impacts

The Santa Clara County CMP identifies a level of service standard of LOS E for their facilities. Based on CMP level of service impact criteria for freeway segments, the project is said to create a significant adverse impact on traffic conditions on a CMP freeway segment if for either peak hour:

1. The level of service on the freeway segment is an unacceptable LOS F under no-project conditions, <u>and</u> the number of project trips added to that segment constitutes at least one percent of the capacity of that segment.
2. The level of service on the freeway segment degrades from an acceptable LOS E or better under no-project conditions to an unacceptable LOS F under project conditions.

A significant impact by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore freeway conditions to LOS E or better.

Caltrans Highway Level of Service Standards and Impact Criteria

Caltrans identifies a level of service standard of LOS C for their facilities, including intersections, highways, and freeway facilities. Based on Caltrans level of service impact criteria, the project is said to create a significant adverse impact on traffic conditions at a study highway segment if for either peak-hour:

- The level of service at the study segment degrades from an acceptable LOS C or better under baseline conditions to an unacceptable LOS D or worse under project conditions, <u>or</u>
- The project results in the addition of trips to a segment that is already operating at unacceptable levels (LOS D or worse).

A significant project impact is said to be satisfactorily mitigated when measures are implemented that would restore traffic conditions to better than no project conditions.

Transportation Network under Existing Plus Project Conditions

The roadway network under existing plus project conditions would be the same as described under existing conditions, with the exception of the following site access and on-site roadway improvements:

US 101 Northbound On-Ramp at Old Monterey Road Extension. The project is proposing to improve the northbound on-ramp at the Old Monterey Road extension to provide an acceleration lane on US 101 that will allow project traffic traveling to destinations north of the quarry to utilize this on-ramp. The acceleration lane is proposed to be 13 feet wide and approximately 0.25 miles long. Additionally, the existing Old Monterey Road extension would be widened and repaved to provide adequate width for truck circulation.

Other on-site roadway improvements are being proposed by the project to provide adequate project site access and on-site circulation. These improvements include the following:

- Old Monterey Road and the Old Monterey Road extension are proposed to be widened and repaved to accommodate two-way truck traffic circulation.
- Construction of access and maintenance roads that would extend from the quarry entrance to the processing plant and to all four mining areas. The proposed new roads would be constructed to County standards for drainage and erosion control.
- Construction of a bridge over Tar Creek to provide truck access to the processing area, truck scales, and office. The proposed new bridge would be approximately 24 feet wide and 50 feet long, and would be constructed to County standards.

Project Description

Existing Project Site Conditions

The proposed project site is located along the west side of US 101, approximately four miles south of Gilroy. It is located within Santa Clara County, along the easternmost portion of the 6,400-acre Sargent Ranch property, and has been primarily used as a cattle ranch. Graded ranch roads, corrals, and a few ranch buildings are the only improvements on the site.

The project site currently has a land use designation of “AR-Agricultural Ranchland” in the current Santa Clara County *General Plan* and is also zoned Agricultural Ranchlands in the County’s zoning code. Aggregate extraction/mining operations are permitted under the current zoning, subject to a Conditional Use Permit.

Direct access to the project site is provided via Old Monterey Road while regional access is provided via US 101.

Proposed Project Site Conditions

The project applicant is requesting approval of a Conditional Use Permit and Reclamation Plan for the proposed Sargent Quarry project.

The proposed project would consist of pit mining operations for the production of aggregates and materials (such as sand, gravel, and rock) which can be used for concrete and asphalt production. Of the project’s 300 acres, approximately 238 acres would comprise the area of proposed mining. The proposed project also would include an approximately 14-acre processing plant located in the northeastern portion of the project site, near US 101. The processing plant would include an office, shop, maintenance buildings, equipment storage yard, 17-space parking area, truck scales, and loading area.

The primary market for products produced from the mine would be contractors and public agencies in Santa Clara, San Benito, and Monterey Counties. The proposed project is requesting a 30-year term on the Conditional Use Permit for the site. The proposed project also would include reclamation activities, pursuant to the proposed project’s Mining and Reclamation Plan, that would include reclaiming mined areas to grazing land, stabilizing and re-vegetating slopes, and reclaiming the processing site, roads, and the cessation of mining.

Proposed Operations

Mining is proposed to be conducted in four phases, in an open pit fashion (no blasting is proposed). The total volume of material to be mined would be dependent on market demand. The level of activity at the quarry would be the highest during the construction season between April and October, and lowest during the rainy season. It is anticipated that a maximum of 1,000,000 (1 million) cubic yards (cy) of material would be mined in a single year. Reclamation activities would be conducted on mining phases that are completed.

Mining operations are proposed to occur year round. The plant's hours of operation would be Monday through Saturday from 7:00 AM to 4:30 PM. Occasional extended processing plant operational hours also would be permitted as required to serve market conditions, nighttime public works projects, and emergency or special circumstances. Although the number of employees at the project site would fluctuate based on extraction and processing plant production rates, it is anticipated that up to 15 full-time employees would be needed for mining and processing operations. As proposed, the plant is anticipating to serve a maximum of approximately 150 truckloads of aggregate sales per day. Other traffic that would be accessing the project site on a daily basis includes materials delivery to the site (approximately 6 trucks per day) and maintenance vehicles (approximately 2 per day).

Project Site Access

As described previously, improvements to the US 101 northbound on-ramp at the Old Monterey Road extension are being proposed as part of the project. The improvements include the addition of an acceleration lane that would allow access to northbound US 101 from the project site. No improvements are proposed for the northbound off-ramp at the Old Monterey Road extension. With these improvements, the project is proposing access to and from US 101 as follows:

- From US 101 north – access from the north would be provided via the Old Monterey Road southbound off-ramp.
- From US 101 south – access from the south would be provided via SR 25 and Old Monterey Road. Project traffic traveling northbound on US 101 would exit the freeway at SR 25, enter US 101 southbound at SR 25, and exit the freeway again at Old Monterey Road.
- To US 101 north – access to the north would be provided via the improved Old Monterey Road extension northbound on-ramp.
- To US 101 south – access to the south would be provided via the Old Monterey Road southbound on-ramp.

Project Traffic Estimates

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

Trip Generation

Trip generation resulting from new development projects are typically estimated by multiplying the Institute of Transportation Engineers (ITE) recommended trip generation rates by the size of the development. However, for projects such as the proposed project (a quarry), standard trip generation rates do not exist or the available information is very limited. For such projects, the magnitude of traffic generated by the proposed facility can be estimated based on information specific to the project, such as the anticipated demand, production capacity of the plant, the capacity and service rate of trucks delivering material into and out of the site, the number of employees, and hours of operation.

Based on information provided by the applicant, the plant would be able to serve an average of five (5) trucks at any given time, and the loading time per truck would range from 10 to 20 minutes (average of 15 minutes per truck). Under these assumptions, the anticipated average service rate at the plant would be 20 trucks per hour. The anticipated material demand for the site is approximately 150 truckloads of aggregate sales per day. Traffic associated with the aggregates sales would access the project site between 7:00 AM and 3:30 PM, resulting in an average of approximately 18 truckloads per hour (see Table 9). The site would be staffed by 15 full-time employees. Other traffic that would be accessing the project site on a daily basis includes materials delivery to the site (approximately 6 trucks per day) and maintenance vehicles (approximately 2 per day). The plant's hours of operations would be Monday through Saturday from 7:00 AM to 4:30 PM.

The number of trips estimated to be generated by the proposed Sargent Quarry project was estimated based on the anticipated site activity information. Traffic associated with aggregate sales is anticipated to access the site between the hours of 7:00 AM and 3:30 PM only. Employees were assumed to arrive at the site within 15 minutes before the beginning of their shift time and leave the site within 15 minutes of the end of their shift time. Based on these assumptions, it was estimated that the proposed project would generate a total of 346 daily trips, with 40 of those trips (20 inbound and 20 outbound) occurring during the AM peak hour and 15 trips (all outbound trips) occurring during the PM peak hour. It should be noted that all project traffic generated during the PM peak hour is traffic associated with employees leaving the site at the end of the work day.

The daily and peak-hour project trip estimates are summarized in Table 9.

Passenger Car Equivalent Trips

Because a significant portion of the traffic associated with the project would be truck traffic, a more conservative analysis was conducted for this study in which the truck trips were converted to passenger car equivalent (PCE) trips. This is founded on the observation that trucks impact traffic operations at intersections more significantly than passenger cars do. For this analysis, it is assumed that each truck trip is equivalent to 2 passenger car trips. Applying the PCE factors to the estimated project truck trips, it was calculated that the proposed project would generates a total of 80 PCE trips (40 inbound and 40 outbound) during the AM peak hour. The PM peak-hour trip generation is unaffected by the PCE adjustment since PM peak-hour trips are all passenger vehicle trips. These are the project site traffic projections that were utilized for the evaluation of traffic operations at the study intersections. The PCE trips also are shown in Table 9.

Trip Distribution and Assignment

The estimated peak-hour project traffic, as discussed in the above trip generation section, was distributed on the transportation network based on the anticipated service areas provided by the applicant. The primary market for the proposed project is anticipated to be Santa Clara County (80% of production), San Benito County (10% of production), and Monterey County (10% of production). The peak-hour vehicle trips associated with the proposed project were added to the transportation network based on these assumptions.

The project trip distribution pattern and the assignment of project trips are presented graphically on Figure 4. A tabular summary of project traffic at each study intersection is contained in Appendix B.

Table 9
Project Trip Generation Estimates

Hours of Operation		Passenger Car: Facility Employees [2]	Truck: Aggregate Sales [3]	Truck: Materials Delivery	Truck: Maintenance Vehicles	Total Site Trips: In	Total Site Trips: Out	Total Site Trips: Total	Total Passenger Car Equivalent Trips [4]: In	Total Passenger Car Equivalent Trips [4]: Out	Total Passenger Car Equivalent Trips [4]: Total
6:00 AM	Arrivals	15				15	0	15	15	0	15
to 7:00 AM	Departures										
7:00 AM	Arrivals		18			18	18	36	36	36	72
to 8:00 AM	Departures		18								
8:00 AM	Arrivals		18	1	1	**20**	**20**	**40**	**40**	**40**	**80**
to 9:00 AM	Departures		18	1	1						
9:00 AM	Arrivals		18	1		19	19	38	38	38	76
to 10:00 AM	Departures		18	1							
10:00 AM	Arrivals		18	1		19	19	38	38	38	76
to 11:00 AM	Departures		18	1							
11:00 AM	Arrivals		18	1		19	19	38	38	38	76
to 12:00 PM	Departures		18	1							
12:00 PM	Arrivals		18	1		19	19	38	38	38	76
to 1:00 PM	Departures		18	1							
1:00 PM	Arrivals		18	1		19	19	38	38	38	76
to 2:00 PM	Departures		18	1							
2:00 PM	Arrivals		18		1	19	19	38	38	38	76
to 3:00 PM	Departures		18		1						
3:00 PM	Arrivals		6			6	6	12	12	12	24
to 4:00 PM	Departures		6								
4:00 PM	Arrivals					**0**	**15**	**15**	**0**	**15**	**15**
to 5:00 PM	Departures	15									
5:00 PM	Arrivals					0	0	0	0	0	0
to 6:00 PM	Departures										
TOTAL DAILY TRIPS:		**30**	**300**	**12**	**4**	**173**	**173**	**346**	**331**	**331**	**662**

Vehicle Trip Generation Estimates [1]

Notes:

[1] Daily project site traffic activity was estimated based on the number of facility employees, hours of operation, and site activity information provided by the project applicant. The plant is anticipated to be operated with 15 full-time employees, serve approximately 300 aggregate sales truck loads per day, and receive an average of 6 deliveries and 2 maintenance trucks per day.

[2] Facility employees were assumed to arrive at the site within 15 minutes before and leave within 15 minutes after the proposed hours of operation (7:00 AM to 4:30 PM).

[3] Truck activity would occur between the hours of 7:00 AM and 3:30 PM only. With the anticipated 300 truck loads per day, this represents an average of approximately 18 trucks accessing the site every hour.

[4] Passenger car equivalent (PCE) trips were estimated by multiplying the number of truck trips by a PCE factor of 2. PCE trips were utilized for the evaluation of traffic operations at the study intersections.

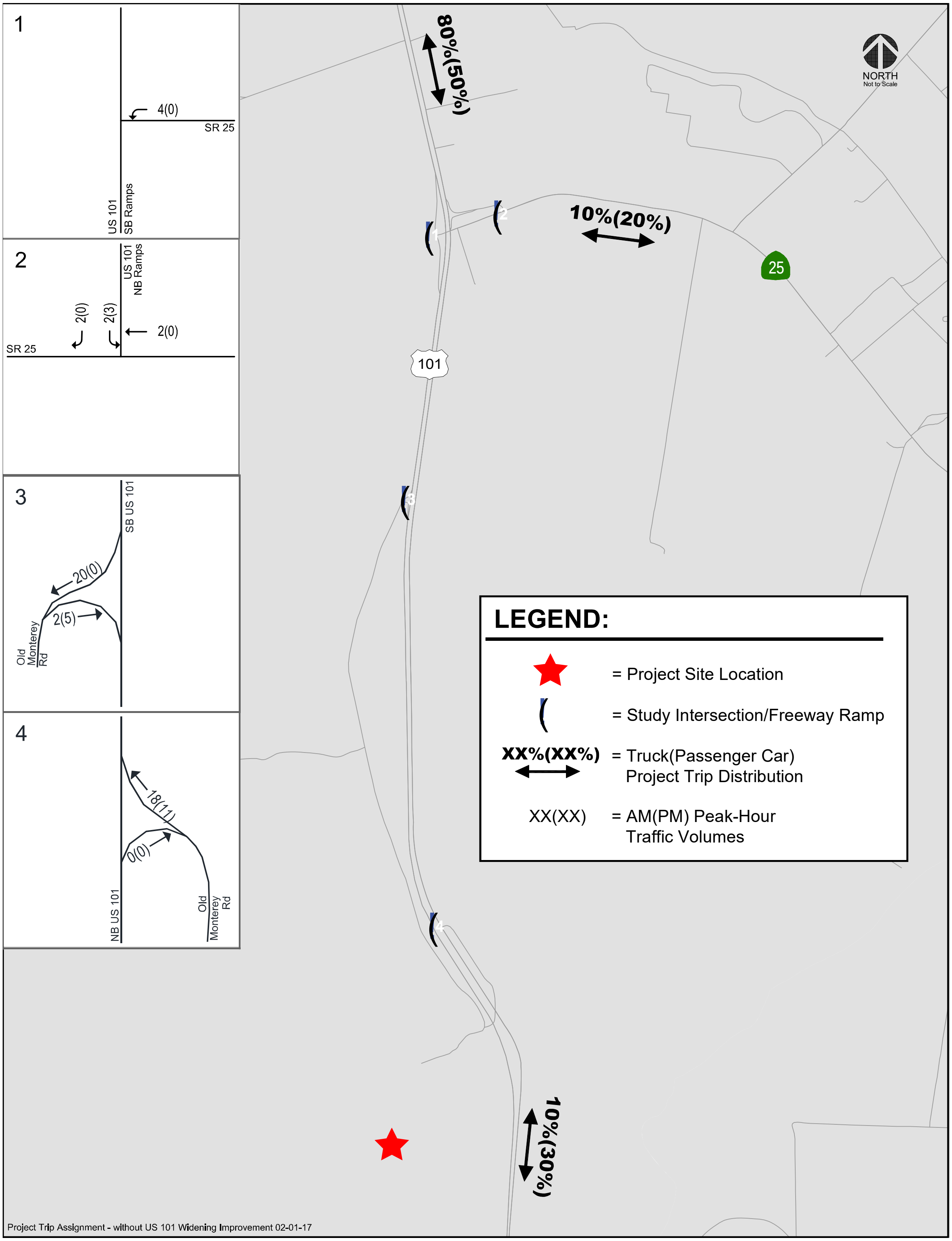


Figure 4
Project Trip Distribution Pattern and Trip Assignment

Existing plus Project Traffic Volumes

Project trips, as presented in the above project trip assignment, were added to existing traffic volumes to obtain existing plus project traffic volumes. The existing plus project traffic volumes are shown on Figure 5.

Existing plus Project Intersection Analyses

The results of the intersection level of service and signal warrant analyses under existing plus project conditions are summarized in Table 10.

Intersection Analysis

It should be noted that the calculated peak-hour intersection delays are excessive, due to limitations in the HCM methodology, and most likely would never be experienced at an intersection, as discussed in the previous chapter. Nevertheless, all intersection delays are reported for the purpose of quantifying the projected increase in delay due to the proposed project.

The results of the intersection level of service analysis indicate that both of the study intersections would continue to operate at unacceptable levels (LOS F) during at least one of the peak hours under existing plus project conditions. Delay increases are only projected during one peak-hour at each intersection. In addition, the peak hour signal warrant analysis indicates that both of the study intersections would continue to have peak-hour traffic volumes that meet the thresholds that warrant signalization during at least one of the peak hours under existing plus project conditions.

The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met at the following intersection during the noted peak hour:

2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, the above study intersection is projected to be significantly impacted by the proposed project.

The impact and proposed improvements to mitigate the project impact are described below. The intersection level of service calculation sheets are included in Appendix C. The traffic signal warrants checks are included in Appendix D.

Existing Plus Project Freeway/Highway Segment Analyses

Described below are the results of the freeway and highway segment analyses under existing plus project conditions.

Freeway Segment Level of Service Analysis

The results of the CMP freeway level of service analysis under existing plus project conditions are summarized in Table 11. Traffic volumes on the study freeway segments under existing plus project conditions were estimated by adding the project trips to the existing volumes obtained from the 2014 CMP Annual Monitoring Report. The results show that all of the study freeway segments currently operate at acceptable LOS E or better during both peak hours, and the addition of project trips to the freeway segments would not cause any of them to degrade to an unacceptable LOS F. Therefore, the proposed project is not projected to significantly impact any of the study freeway segments, based on CMP level of service impact criteria.

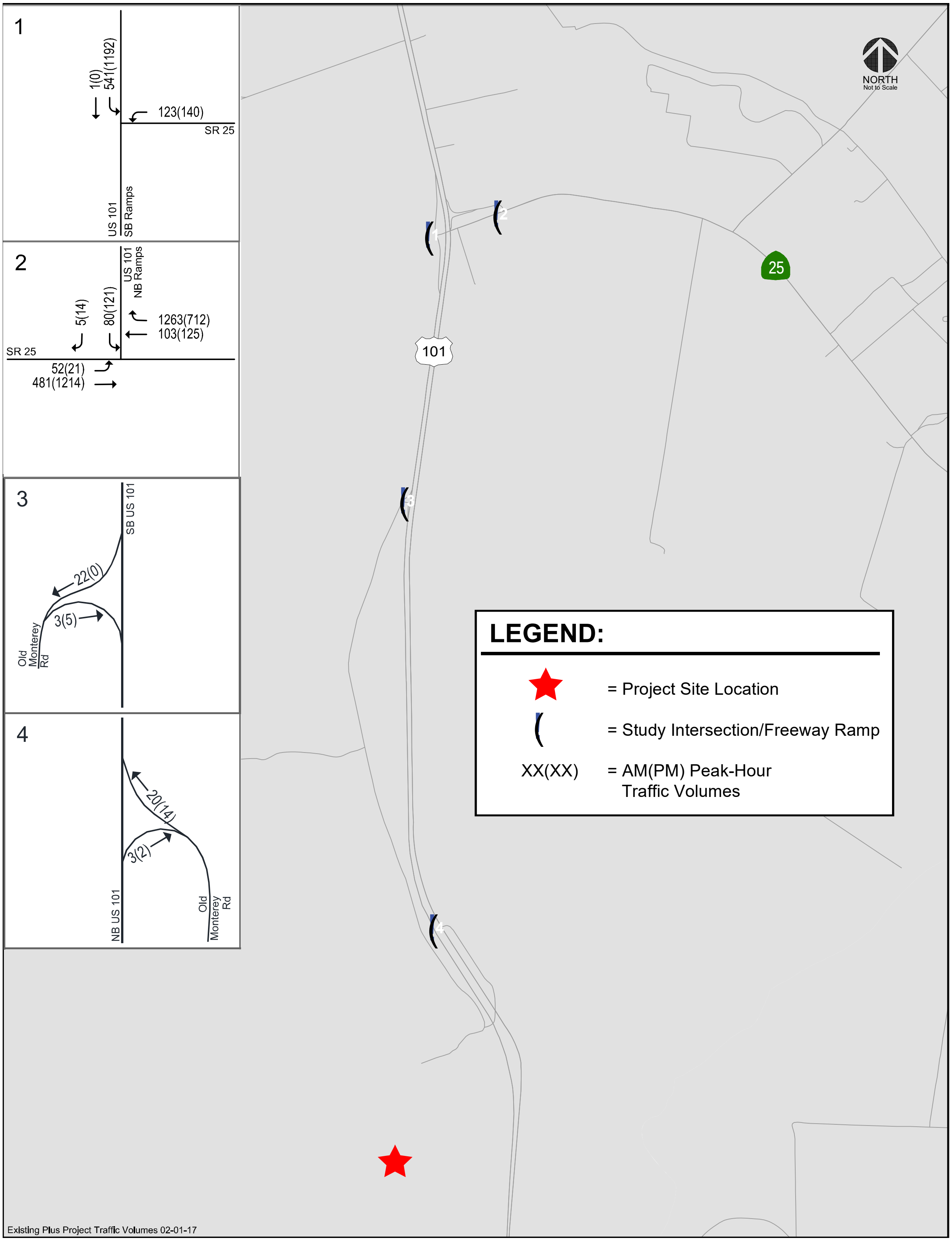


Figure 5
Existing Plus Project Traffic Volumes

Table 10
Existing Plus Project Intersection Level of Service and Signal Warrant Analyses Summary

#	Intersection	Peak Hour	Count Date	Existing: Warrant Met?	Existing: Worst Delay[1] (sec/veh)	Existing: LOS	Existing Plus Project: Warrant Met?	Existing Plus Project: Worst Delay[1] (sec/veh)	Existing Plus Project: LOS	Existing Plus Project: Delay Change[2] (sec)
1	US 101 SB Ramps and SR 25	AM	09/13/16	No	**110.8**	**F**	No	**123.0**	**F**	**+12.2**
		PM	09/13/16	**Yes**	**2439.3**	**F**	**Yes**	**2439.3**	**F**	+0.0
2	US 101 NB Ramps and SR 25	AM	09/13/16	**Yes**	19.3	C	**Yes**	19.3	C	+0.0
		PM	09/13/16	**Yes**	**169.4**	**F**	**Yes**	**176.1**	**F**	**+6.7**

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for one- and two-way stop-controlled intersections are based on the stop-controlled approach with the highest delay.
[2] Change in delay measured relative to existing conditions.
Bold indicates unacceptable LOS/signal warrant met.
Box indicates significant project impact.

Table 11
Existing Plus Project Freeway Segment Level of Service Analysis Results

#	Freeway	Segment	Direction	Peak Hour	Existing Plus Project: Avg. Speed[1]	# of Lanes[1]	Capacity (vph)	Volume	Density	LOS	Project Trips: Volume	% of Capacity
1	US 101	SR 129 to Betabel Rd	NB	AM	67	2	4,400	1,872	14	B	2	0.0
			NB	PM	67	2	4,400	1,870	14	B	0	0.0
2	US 101	Betabel Rd to SR 25	NB	AM	67	2	4,400	2,020	15	B	20	0.5
			NB	PM	67	2	4,400	1,881	14	B	11	0.3
3	US 101	SR 25 to Monterey Rd	NB	AM	65	2	4,400	3,916	30	D	16	0.4
			NB	PM	66	2	4,400	2,918	22	C	8	0.2
4	US 101	Monterey Rd to Pacheco Pass Hwy	NB	AM	67	3	6,900	3,015	15	B	15	0.2
			NB	PM	67	3	6,900	2,407	12	B	7	0.1
5	US 101	Pacheco Pass Hwy to Monterey Rd	SB	AM	67	3	6,900	2,235	11	A	15	0.2
			SB	PM	67	3	6,900	2,600	13	B	0	0.0
6	US 101	Monterey Rd to SR 25	SB	AM	67	2	4,400	2,016	15	B	16	0.4
			SB	PM	35	2	4,400	4,060	58	E	0	0.0
7	US 101	SR 25 to Betabel Rd	SB	AM	67	2	4,400	1,750	13	B	20	0.5
			SB	PM	67	2	4,400	2,270	17	B	0	0.0
8	US 101	Betabel Rd to SR 129	SB	AM	67	2	4,400	1,482	11	A	2	0.0
			SB	PM	67	2	4,400	2,275	17	B	5	0.1

[1] Source: Santa Clara Valley Transportation Authority Congestion Management Program Monitoring Study, 2014.

Highway Segment Level of Service Analysis

The results of the highway segments level of service analysis under existing plus project conditions are summarized in Table 12. Based on the HCM methodology, the highway segment studied is projected to continue to operate at an unacceptable LOS E in both directions during both peak hours under existing plus project conditions. Additionally, the proposed project would result in the addition of peak-hour trips to both directions of the highway segment during at least one peak-hour. Therefore, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

The highway segment level of service calculations are included in Appendix E.

Table 12
Existing Plus Project Highway Segment Level of Service Analysis Results

Highway Segment		Peak-Hour	Direction	Existing				Existing Plus Project			
				Vol	ATS	PTSF	LOS	Vol	ATS	PTSF	LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	559	37.3	73.3%	E	561	37.3	73.5%	E
		AM	WB	1364	36.3	96.1%	E	1366	36.3	95.9%	E
		PM	EB	1332	35.0	94.4%	E	1335	35.0	94.4%	E
		PM	WB	837	35.3	85.4%	E	837	35.3	85.4%	E

Notes: Vol = Volume
ATS = Average Travel Speed (miles per hour)
PTSF = Percent Time-Spent-Following
LOS = Level of Service

Existing Plus Project Freeway Ramp Analysis

Ramp and queue storage capacities for the study freeway ramps would remain the same as described under existing conditions, with the exception of the US northbound on-ramp at Old Monterey Road extension, where an acceleration lane along US 101 and roadway improvements along Old Monterey Road extension are proposed as part of the project, increasing the ramp capacity to 1,800 vph.

Results of the freeway ramp analysis under existing plus project conditions are summarized in Table 13. Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under existing plus project conditions, based on Caltrans level of service standards.

The addition of project traffic to the study freeway ramps is not projected to significantly affect the vehicle queue lengths estimated under existing conditions. Projected queue lengths at the ramps would continue to be able to store within the existing ramp storage space.

Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under existing plus project conditions.

Table 13
Existing Plus Project Freeway Ramp Analysis Results

							Existing				Existing Plus Project			
Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Peak Hour	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]
US 101 at SR 25														
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	900	AM	120	0.067	A	0	124	0.069	A	0
				1,800		PM	140	0.078	A	0	140	0.078	A	0
Northbound Off-Ramp	Loop	Stop	1	1,600	825	AM	81	0.051	A	25	85	0.053	A	25
				1,600		PM	132	0.083	A	225	135	0.084	A	250
US 101 at Old Monterey Road														
Southbound Off-Ramp	Diagonal	Uncontrolled	1	1,800	475	AM	2	0.001	A	0	22	0.012	A	0
				1,800		PM	0	0.000	A	0	0	0.000	A	0
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	800	AM	1	0.001	A	0	3	0.002	A	0
				1,800		PM	0	0.000	A	0	5	0.003	A	0
Northbound On-Ramp	Diagonal	Uncontrolled	1	900/1,800	1,800	AM	2	0.002	A	0	20	0.011	A	0
				900/1,800		PM	3	0.003	A	0	14	0.008	A	0

Notes:
[1] A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 1,600 vphpl for loop ramps, with the exception of the northbound on-ramp at Old Monterey Road, which does not include acceleration lanes and, therefore, its capacity was assumed to be half the capacity of a diagonal ramp. With implementation of the project and proposed project improvements, the ramp capacity would increase to 1,800 vph.
[2] Ramp volumes were obtained from peak-hour turn-movement counts at the ramp intersections and 24-hour machine counts at the ramps.
[3] Ramp level of service based on the calculated ramp volume-to-capacity ratio.
[4] 95th percentile vehicle queue length projections (in feet) were obtained from Synchro/SimTraffic.
Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.

Project Impacts and Recommended Mitigation Measures

Described below are the intersection and highway impacts under existing plus project conditions and recommended mitigation measures necessary to maintain the level of service standards.

Intersection Mitigation and Impact Fees

2. US 101 NB Ramps and SR 25 (Caltrans)

Impact: This unsignalized intersection's level of service is currently an unacceptable LOS F during the PM peak hour under existing conditions and the addition of project traffic would cause the delay at the intersection to increase and the intersection would have traffic volumes that meet peak-hour signal warrants during the same peak hour. This constitutes a significant project impact by Caltrans standards.

Mitigation Measures. The Valley Transportation Authority (VTA), Santa Clara County's Congestion Management Agency, in its Valley Transportation Plan (VTP) 2040 document has identified the widening of US 101 from Monterey Street (in Gilroy) to SR 129 (in San Benito County). The proposed improvements (identified as VTP ID #H25 and also known as the *US 101 Widening Project – Monterey Road to SR 129*) include widening of US 101 from four lanes to six lanes, the construction of a new interchange at SR 25, extending Santa Teresa Boulevard to connect to SR 25 at the new US 101/SR 25 interchange, and improvements along SR 25 required to support efficient traffic operations at the new US 101/SR 25 interchange. The Final Environmental Impact Report (FEIR) for the project was approved in June 2013 and the project report was approved by Caltrans in November 2013. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

Highway Segment Mitigation and Impact Fees

SR 25, East of US 101

Impact: This highway segment is projected to operate at an unacceptable LOS E in both directions during both peak hours under existing conditions. The proposed project would result in the addition of peak-hour trips to both directions of the highway segment during at least one peak-hour. This constitutes a significant project impact by Caltrans standards.

Mitigation Measures. The improvements necessary to mitigate the project impacts at the study highway segment consist of widening the highway to provide additional capacity. Regional projects that would provide additional capacity along SR 25 have been identified and include the following:

- *SR 25 Widening and Realignment Project* – This project consists of the widening of SR 25 from the existing 2-lane highway to a 4-lane expressway from San Felipe Road (Hollister) to US 101 (Santa Clara County). In June 2016, Caltrans approved the Hollister to Gilroy State Route 25 Route Adoption project. In the Route Adoption study, Caltrans identifies two alternatives to eventually replace 11.2 miles of the existing SR 25 two-lane highway with a four-lane expressway in San Benito and Santa Clara Counties. The Route Adoption study establishes and documents an exact alignment and location of the future expressway in the San Benito and Santa Clara

Counties' General Plans, allowing for future land use planning, such as establishing right-of-way boundaries and acquiring most of the parcels within the defined corridor area.

Additionally, the widening of SR 25 is included as part of the improvement projects of the San Benito County Transportation Impact Mitigation Fee (TIMF). The San Benito County TIMF identifies the improvement project as the widening of SR 25 from two-to-four lanes between San Felipe Road in Hollister to the Santa Clara County line. According to the *Highway 25 Widening Design Alternatives Analysis* report, dated August 2016 by WMH, the adopted San Benito County Traffic Impact Mitigation Fee Nexus Study (January 2016, Appendix A – TIMF Improvement Costs and Cost Allocations) identifies $88 million in funding from new development to be contributed to the SR 25 Widening project.

- *VTA's US 101 widening project – Monterey Road to SR 129* – This project is described above.

With implementation of the planned improvements along SR 25, the impacts to the study highway segment would be less-than-significant. However, the magnitude of the above roadway widening improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned improvements to widen SR 25. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

4.
Background Conditions

This chapter describes background traffic conditions. Background conditions are defined as conditions just prior to completion of the proposed project. Traffic volumes for background conditions comprise volumes from the existing traffic counts plus traffic generated by approved developments in the vicinity of the site which would add traffic to the study intersections. Background conditions represent the baseline conditions to which background plus project conditions will be compared for the purpose of determining project impacts. This chapter describes the procedure used to determine background traffic volumes and the resulting traffic conditions.

Background Roadway Network

It is assumed in this analysis that the transportation network under near-term conditions would be the same as the existing transportation network.

Approved Developments

Since both of the study intersections mainly serve regional traffic to/from Hollister and the Gilroy area, approved projects located within those two jurisdictions that would add traffic to the study intersections were included in the analysis of the project. Approved project information received from the City of Hollister (dated August 2016) and the City of Gilroy (dated December 2016) were utilized for this analysis. The traffic added to the study intersections from approved but not yet constructed developments was estimated by distributing and assigning trips generated by these developments to the roadway network. The process of trip generation, distribution, and assignment is described in the previous chapter.

Background Traffic Volumes

Background peak-hour traffic volumes were calculated by adding to existing volumes the estimated traffic from approved but not yet constructed developments. Background traffic volumes at the study intersections are shown on Figure 6.

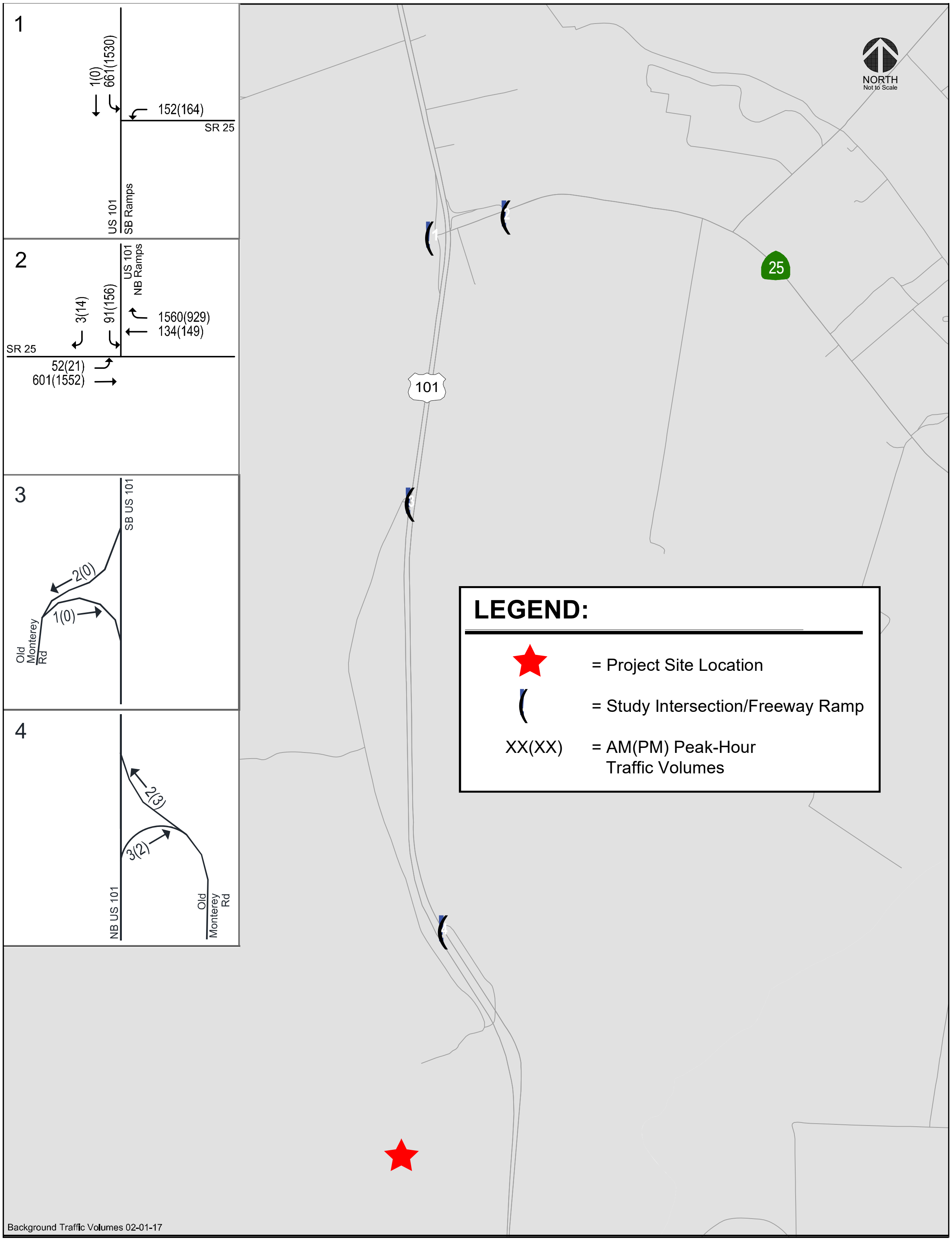


Figure 6
Background Traffic Volumes

Background Intersection Analyses

The results of the intersection level of service and signal warrant analyses under background conditions are summarized in Table 14.

Intersection Analysis

It should be noted that the calculated peak-hour intersection delays are excessive, due to limitations in the HCM methodology, and most likely would never be experienced at an intersection, as discussed in Chapter 2. Nevertheless, all intersection delays are reported for the purpose of quantifying the projected increase in delay due to the proposed project.

The results of the intersection level of service analysis indicate that both of the study intersections are projected to operate at unacceptable levels (LOS F) during at least one of the peak hours under background conditions, based on Caltrans level of service standards.

The peak hour signal warrant analysis indicates that both of the study intersections are projected to have peak-hour traffic volumes that meet the thresholds that warrant signalization during both peak hours under background conditions. Since both of the study intersections also are projected to operate at unacceptable levels of service, a traffic signal is recommended at both locations.

The intersection level of service calculation sheets are included in Appendix C. The peak-hour signal warrant sheets are contained in Appendix D.

Background Freeway/Highway Segment Analyses

The Santa Clara County CMP guidelines do not require evaluation of freeway segments under future traffic conditions, such as background conditions, since approved development trips on freeways are not on record or otherwise available. Therefore, only a highway segment level of service analysis was conducted under background conditions.

Highway Segment Level of Service Analysis

The directional highway segments studied are projected to operate at an unacceptable LOS F during both peak hours under background conditions, based on the HCM methodology and Caltrans level of service standards.

The results of the highway segments level of service analysis under background conditions are summarized in Table 15. The highway segment level of service calculations are included in Appendix E.

Background Freeway Ramp Analysis

Ramp and queue storage capacities for the study freeway ramps would remain the same as described under existing conditions.

Table 16 shows the results of the freeway ramp analysis. Based on the volume-to-capacity ratios, all study freeway ramps are projected to continue to operate at acceptable levels during both peak hours, based on Caltrans level of service standards.

The queue length projections show a maximum queue of 475 feet (or 19 vehicles) for the northbound off-ramp at SR 25 during the PM peak hour (2 vehicles during the AM peak hour). This represents an increase of 10 vehicles from existing conditions. However, the northbound off-ramp at SR 25 is projected to have adequate queue storage capacity to accommodate the projected queue length. All other study ramps would continue to experience no measurable queue lengths.

Table 14
Background Intersection Level of Service and Signal Warrant Analyses Summary

#	Intersection	Peak Hour	Count Date	Existing Warrant Met?	Existing Worst Delay[1] (sec/veh)	Existing LOS	Background Warrant Met?	Background Worst Delay[1] (sec/veh)	Background LOS
1	US 101 SB Ramps and SR 25	AM	09/13/16	No	**110.8**	**F**	**Yes**	**380.5**	**F**
		PM	09/13/16	**Yes**	**2439.3**	**F**	**Yes**	**8886.8**	**F**
2	US 101 NB Ramps and SR 25	AM	09/13/16	**Yes**	19.3	C	**Yes**	**25.2**	**D**
		PM	09/13/16	**Yes**	**169.4**	**F**	**Yes**	**719.6**	**F**

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for one- and two-way stop-controlled intersections are based on the stop-controlled approach with the highest delay.
Bold indicates unacceptable LOS/signal warrant met.

Table 15
Background Highway Segment Level of Service Analysis Results

Highway Segment		Peak-Hour	Direction	Existing Vol	Existing ATS	Existing PTSF	Existing LOS	Background Vol	Background ATS	Background PTSF	Background LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	559	37.3	73.3%	E	692	33.8	79.6%	F
		AM	WB	1364	36.3	96.1%	E	1694	33.1	100.0%	F
		PM	EB	1332	35.0	94.4%	E	1708	30.4	99.2%	F
		PM	WB	837	35.3	85.4%	E	1078	30.7	90.8%	F

Notes: Vol = Volume
ATS = Average Travel Speed (miles per hour)
PTSF = Percent Time-Spent-Following
LOS = Level of Service

Table 16
Background Freeway Ramp Analysis Results

Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Peak Hour	Existing Volume [2]	Existing V/C	Existing LOS [3]	Existing 95th Percentile Queue (ft)[4]	Background Volume [2]	Background V/C	Background LOS [3]	Background 95th Percentile Queue (ft)[4]
US 101 at SR 25														
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	900	AM	120	0.067	A	0	153	0.085	A	0
				1,800		PM	140	0.078	A	0	164	0.091	A	0
Northbound Off-Ramp	Loop	Stop	1	1,600	825	AM	81	0.051	A	25	94	0.059	A	50
				1,600		PM	132	0.083	A	225	170	0.106	A	475
US 101 at Old Monterey Road														
Southbound Off-Ramp	Diagonal	Uncontrolled	1	1,800	475	AM	2	0.001	A	0	2	0.001	A	0
				1,800		PM	0	0.000	A	0	0	0.000	A	0
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	800	AM	1	0.001	A	0	1	0.001	A	0
				1,800		PM	0	0.000	A	0	0	0.000	A	0
Northbound On-Ramp	Diagonal	Uncontrolled	1	900	1,800	AM	2	0.002	A	0	2	0.002	A	0
				900		PM	3	0.003	A	0	3	0.003	A	0

Notes:
1 A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 1,600 vphpl for loop ramps, with the exception of the northbound on-ramp at Old Monterey Road, which does not include acceleration lanes and, therefore, its capacity was assumed to be half the capacity of a diagonal ramp.
2 Ramp volumes were obtained from peak-hour turn-movement counts at the ramp intersections and 24-hour machine counts at the ramps.
3 Ramp level of service based on the calculated ramp volume-to-capacity ratio.
4 95th percentile vehicle queue length projections (in feet) were obtained from Synchro/SimTraffic.
Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.

5.
Background Plus Project Conditions

This chapter describes project traffic conditions, significant project impacts, and measures that are recommended to mitigate project impacts under background plus project conditions (also referred to as project conditions). Included are descriptions of the significance criteria that define an impact, estimates of project-generated traffic, identification of any impacts, and descriptions of any mitigation measures that may be necessary. Background plus project conditions are represented by background traffic conditions with the addition of traffic generated by the project.

Although some of the information provided below has already been described in Chapter 3 – Existing Plus Project Conditions, it is presented again within this chapter for the reader's convenience.

Significant Impact Criteria

Significance criteria are used to establish what constitutes an impact. For this analysis, the set of relevant criteria for impacts on the transportation network is based on Level of Service standards and significance thresholds for Santa Clara County and Caltrans. The criteria for identifying impacts on the study facilities are described in Chapter 3.

Transportation Network under Background Plus Project Conditions

The roadway network under background plus project conditions would be the same as described under existing plus project conditions (Chapter 3).

Project Description

A full project description is provided in Chapter 3.

Project Traffic Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear are estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. These procedures are described in detailed in Chapter 3 – Existing Plus Project Conditions, and briefly summarized below.

Trip Generation

The number of trips estimated to be generated by the proposed Sargent Quarry project was estimated based on the anticipated site activity information provided by the project applicant. Based on these assumptions, it was estimated that the proposed project would generate a total of 346 daily trips, with 40 of those trips (20 inbound and 20 outbound) occurring during the AM peak hour and 15 trips (all outbound trips) occurring during the PM peak hour. The trip generation analysis for the project is presented in Chapter 3, Table 9.

Passenger Car Equivalent Trips

Applying a PCE factor of 2.0 (each truck trip is equivalent to 2 passenger car trips) to the estimated project truck trips, it was calculated that the proposed project would generates a total of 80 PCE trips (40 inbound and 40 outbound) during the AM peak hour. The PM peak hour trip generation would remain the same since PM peak hour trips are all employee (passenger vehicle) trips. These are the project site traffic projections that were utilized for the evaluation of traffic operations at the study intersections. The PCE trips also are shown in Table 9.

Trip Distribution and Assignment

The project trip distribution pattern and assignment of project trips are discussed in Chapter 3 and shown graphically on Figure 4 (Chapter 3). A tabular summary of project traffic at each study intersection is contained in Appendix B.

Background plus Project Traffic Volumes

The project trip assignment, as described in the Existing plus Project Conditions chapter (Chapter 3) and shown on Figure 4, was added to background traffic volumes to obtain background plus project traffic volumes. The traffic volumes under background plus project conditions are shown on Figure 7.

Background plus Project Intersection Analyses

The results of the intersection level of service and signal warrant analyses under background plus project conditions are summarized in Table 17.

Intersection Analysis

As discussed in previous chapters, it should be noted that the calculated peak-hour intersection delays are excessive and most likely would never be experienced at an intersection due to limitations of the HCM methodology. Nevertheless, all intersection delays are reported for the purpose of quantifying the projected increase in delay due to the proposed project.

The results of the intersection level of service analysis indicate that both of the study intersections are projected to operate at unacceptable levels (LOS D or worse) during both peak hours under background plus project conditions. Delay increases are only projected during one peak-hour at each intersection. In addition, the peak hour signal warrant analysis indicates that both of the study intersections would have peak-hour traffic volumes that meet the thresholds that warrant signalization during both peak hours under background plus project conditions.

The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met (described below) at the study intersections during the noted peak hours:

1. US 101 SB Ramps and SR 25 (**Impact**: AM peak hour)
2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, both of the study intersections are projected to be significantly impacted by the proposed project.

The impacts and proposed improvements to mitigate the project impacts are described below. The intersection level of service calculation sheets are included in Appendix C. The traffic signal warrants checks are included in Appendix D.

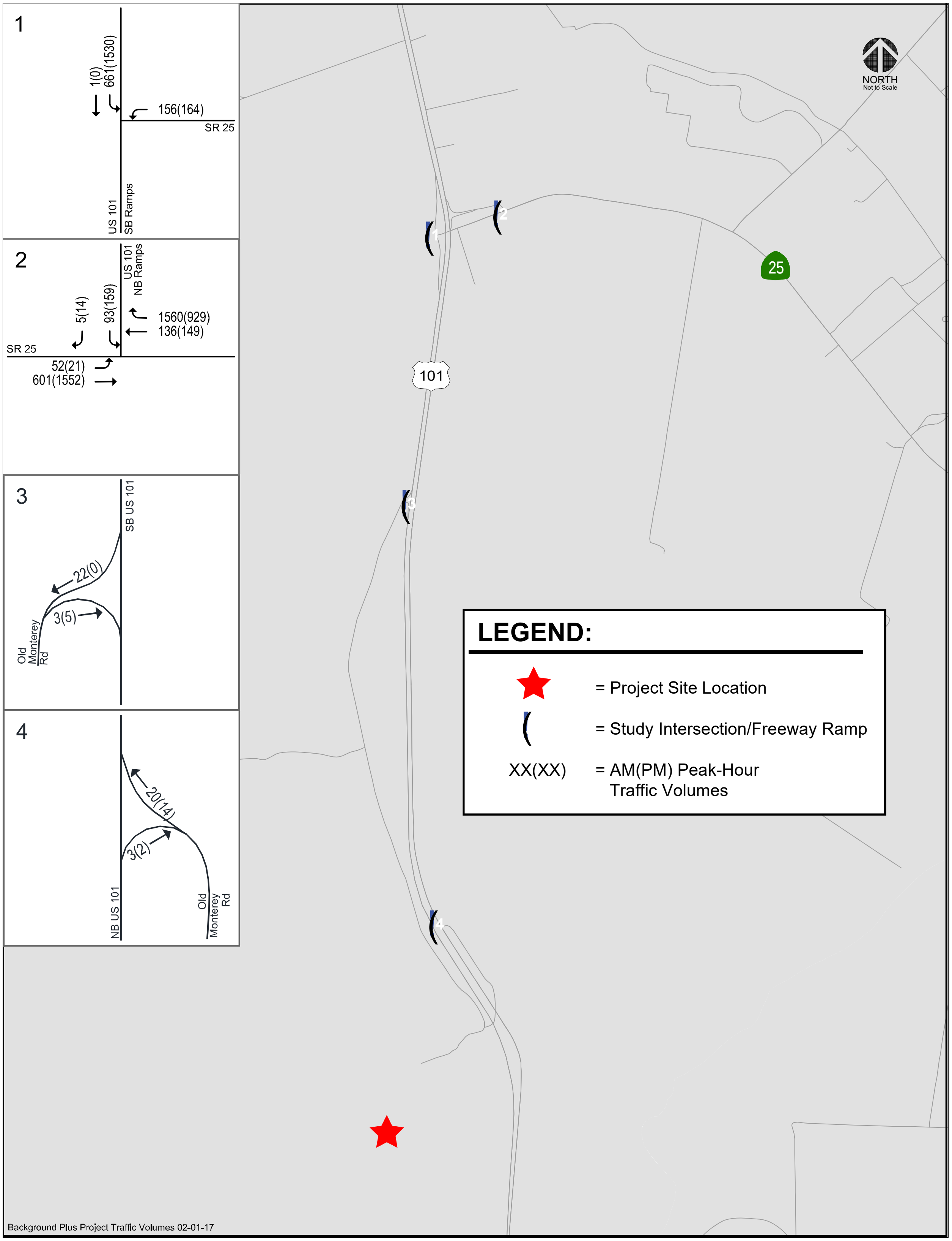


Figure 7
Background Plus Project Traffic Volumes

Table 17
Background Plus Project Intersection Level of Service and Signal Warrant Analyses Summary

#	Intersection	Peak Hour	Background			Background Plus Project			
			Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Warrant Met?	Worst Delay[1] (sec/veh)	LOS	Delay Change[2] (sec)
1	US 101 SB Ramps and SR 25	AM	**Yes**	**380.5**	**F**	**Yes**	**407.9**	**F**	**+27.4**
		PM	**Yes**	**8886.8**	**F**	**Yes**	**8886.8**	**F**	+0.0
2	US 101 NB Ramps and SR 25	AM	**Yes**	**25.2**	**D**	**Yes**	**25.4**	**D**	+0.2
		PM	**Yes**	**719.6**	**F**	**Yes**	**734.8**	**F**	**+15.2**

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for one- and two-way stop-controlled intersections are based on the stop-controlled approach with the highest delay.
[2] Change in delay measured relative to background conditions.
Bold indicates unacceptable LOS/signal warrant met.
Box indicates significant project impact.

Background Plus Project Freeway/Highway Segment Analyses

The Santa Clara County CMP guidelines do not require evaluation of freeway segments under future traffic conditions, such as background conditions, since approved development trips on freeways are not on record or otherwise available. Project impacts on freeway segments are typically evaluated by addition the proposed project trips to the existing traffic volumes on the freeway. This analysis is presented in Chapter 3, Existing plus Project Conditions (Table 11). Therefore, only a highway segment level of service analysis is presented under background plus project conditions.

Highway Segment Level of Service Analysis

The results of the highway segments level of service analysis under background plus project conditions are summarized in Table 18. Based on the HCM methodology, the highway segment studied is projected to operate at an unacceptable LOS F in both directions during both peak hours under background plus project conditions. Additionally, the proposed project would result in the addition of peak-hour trips to both directions of the study highway segment during at least one peak hour. Therefore, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

The highway segment level of service calculations are included in Appendix E.

Background Plus Project Freeway Ramp Analysis

Ramp and queue storage capacities for the study freeway ramps would remain the same as described under existing conditions, with the exception of the US northbound on-ramp at Old Monterey Road extension, where an acceleration lane along US 101 and roadway improvements along Old Monterey Road extension are proposed as part of the project, increasing the ramp capacity to 1,800 vph.

Table 18
Background Plus Project Highway Segment Level of Service Analysis Results

Highway Segment		Peak-Hour	Direction	Background Vol	Background ATS	Background PTSF	Background LOS	Background Plus Project Vol	Background Plus Project ATS	Background Plus Project PTSF	Background Plus Project LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	692	33.8	79.6%	F	694	33.8	79.7%	F
		AM	WB	1694	33.1	100.0%	F	1696	33.0	100.0%	F
		PM	EB	1708	30.4	99.2%	F	1711	30.3	99.2%	F
		PM	WB	1078	30.7	90.8%	F	1078	30.7	90.8%	F

Notes: Vol = Volume
ATS = Average Travel Speed (miles per hour)
PTSF = Percent Time-Spent-Following
LOS = Level of Service

Results of the freeway ramp analysis under background plus project conditions are summarized in Table 19. Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under background plus project conditions, based on Caltrans level of service standards. Additionally, the addition of project traffic to the study freeway ramps is not projected to affect the vehicle queue lengths estimated under background conditions. Projected queue lengths at the ramps would continue to be able to store within the existing ramps. Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under background plus project conditions.

Project Impacts and Recommended Mitigation Measures

Described below are the intersection and highway impacts under background plus project conditions and recommended mitigation measures necessary to maintain the level of service standards.

Intersection Mitigation and Impact Fees

1. US 101 SB Ramps and SR 25 (Caltrans)

Impact: This unsignalized intersection's level of service is projected to be an unacceptable LOS F during the AM peak hour under background conditions and the addition of project traffic would cause the delay at the intersection to increase and the intersection would have traffic volumes that meet peak-hour signal warrants during the same peak hour. This constitutes a significant project impact by Caltrans standards.

Mitigation Measures. The Valley Transportation Authority (VTA), Santa Clara County's Congestion Management Agency, in its Valley Transportation Plan (VTP) 2040 document has identified the widening of US 101 from Monterey Street (in Gilroy) to SR 129 (in San Benito County). The proposed improvements (identified as VTP ID #H25 and also known as the *US 101 Widening Project – Monterey Road to SR 129*) include widening of US 101 from four lanes to six lanes, the construction of a new interchange at SR 25, extending Santa Teresa Boulevard to connect to SR 25 at the new US 101/SR 25 interchange, and improvements along SR 25 required to support efficient traffic operations at the new US 101/SR 25 interchange. The Final Environmental Impact Report (FEIR) for the project was approved in June 2013 and the project report was approved by Caltrans in November 2013. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

Table 19
Background Plus Project Conditions Freeway Ramp Analysis Results

							Background				Background Plus Project			
Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Peak Hour	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]
US 101 at SR 25														
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	900	AM	153	0.085	A	0	157	0.087	A	0
				1,800		PM	164	0.091	A	0	164	0.091	A	0
Northbound Off-Ramp	Loop	Stop	1	1,600	825	AM	94	0.059	A	50	98	0.061	A	50
				1,600		PM	170	0.106	A	475	173	0.108	A	475
US 101 at Old Monterey Road														
Southbound Off-Ramp	Diagonal	Uncontrolled	1	1,800	475	AM	2	0.001	A	0	22	0.012	A	0
				1,800		PM	0	0.000	A	0	0	0.000	A	0
Southbound On-Ramp	Diagonal	Uncontrolled	1	1,800	800	AM	1	0.001	A	0	3	0.002	A	0
				1,800		PM	0	0.000	A	0	5	0.003	A	0
Northbound On-Ramp	Diagonal	Uncontrolled	1	900/1,800	1,800	AM	2	0.002	A	0	20	0.011	A	0
				900/1,800		PM	3	0.003	A	0	14	0.008	A	0

Notes:
[1] A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 1,600 vphpl for loop ramps, with the exception of the northbound on-ramp at Old Monterey Road, which does not include acceleration lanes and, therefore, its capacity was assumed to be half the capacity of a diagonal ramp. With implementation of the project and proposed project improvements, the ramp capacity would increase to 1,800 vph.
[2] Ramp volumes were obtained from peak-hour turn-movement counts at the ramp intersections and 24-hour machine counts at the ramps.
[3] Ramp level of service based on the calculated ramp volume-to-capacity ratio.
[4] 95th percentile vehicle queue length projections (in feet) were obtained from Synchro/SimTraffic.
Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

2. US 101 NB Ramps and SR 25 (Caltrans)

Impact: This unsignalized intersection's level of service is projected to be an unacceptable LOS F during the PM peak hour under background conditions and the addition of project traffic would cause the delay at the intersection to increase and the intersection would have traffic volumes that meet peak-hour signal warrants during the same peak hour. This constitutes a significant project impact by Caltrans standards.

Mitigation Measures. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, described above, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

Highway Segment Mitigation and Impact Fees

SR 25, East of US 101

Impact: This highway segment is projected to operate at an unacceptable LOS E in both directions during both peak hours under existing conditions. The proposed project would result in the addition of peak-hour trips to both directions of the highway segment during at least one peak-hour. This constitutes a significant project impact by Caltrans standards.

Mitigation Measures. The improvements necessary to mitigate the project impacts at the study highway segment consist of widening the highway to provide additional capacity. Regional projects that would provide additional capacity along SR 25 have been identified and include the following:

- *SR 25 Widening and Realignment Project* – This project consists of the widening of SR 25 from the existing 2-lane highway to a 4-lane expressway from San Felipe Road (Hollister) to US 101 (Santa Clara County). In June 2016, Caltrans approved the Hollister to Gilroy State Route 25 Route Adoption project. In the Route Adoption study, Caltrans identifies two alternatives to eventually replace 11.2 miles of the existing SR 25 two-lane highway with a four-lane expressway in San Benito and Santa Clara Counties. The Route Adoption study establishes and documents an exact alignment and location of the future expressway in the San Benito and Santa Clara Counties' General Plans, allowing for future land use planning, such as establishing right-of-way boundaries and acquiring most of the parcels within the defined corridor area.

  Additionally, the widening of SR 25 is included as part of the improvement projects of the San Benito County Transportation Impact Mitigation Fee (TIMF). The San Benito County TIMF identifies the improvement project as the widening of SR 25 from two-to-four lanes between San Felipe Road in Hollister to the Santa Clara County line. According to the *Highway 25 Widening*

Design Alternatives Analysis report, dated August 2016 by WMH, the adopted San Benito County Traffic Impact Mitigation Fee Nexus Study (January 2016, Appendix A – TIMF Improvement Costs and Cost Allocations) identifies $88 million in funding from new development to be contributed to the SR 25 Widening project.

- *VTA's US 101 widening project – Monterey Road to SR 129* – This project is described above.

With implementation of the planned improvements along SR 25, the impacts to the study highway segment would be less-than-significant. However, the magnitude of the above roadway widening improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned improvements to widen SR 25. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

6. Cumulative Conditions

This chapter presents a summary of the traffic conditions that would occur under cumulative conditions. For this analysis, cumulative conditions are represented by Year 2040 traffic conditions. This chapter describes the roadway network improvements expected to be in place under cumulative conditions, the procedure used to determine cumulative traffic volumes, and the resulting traffic conditions with the proposed project.

Transportation Network under Cumulative Conditions

Various roadway improvements are planned under cumulative conditions. Although these improvements are currently not fully funded, it is assumed in this analysis that these improvement would be in place by the year 2040. The roadway improvements, identified in previous chapters within this report, include the following:

***SR 25 Widening and Realignment Project**.* This project consists of the widening of SR 25 from the existing 2-lane highway to a 4-lane expressway from San Felipe Road (Hollister) to US 101 (Santa Clara County). This project is described in more detail in the previous chapters.

***US 101 Widening Project**.* The VTA's VTP2040 document identifies the widening of US 101 from Monterey Street (in Gilroy) to SR 129 (in San Benito County). The planned improvements would address existing deficiencies along this stretch of US 101, which include insufficient capacity to accommodate future traffic volumes along US 101, inadequate design of existing US 101/SR 25 interchange to accommodate existing demand that results in backup of traffic onto the US 101 and SR 25 mainline, uncontrolled and/or not to standards local and private access to/from US 101, and lack of frontage roads along US 101 requiring local traffic associated with adjacent land uses to utilize US 101, among others.

The planned improvements include widening of US 101 from four lanes to six lanes, the construction of a new interchange at SR 25, extending Santa Teresa Boulevard to connect to SR 25 at the new US 101/SR 25 interchange, and improvements along SR 25 required to support efficient traffic operations at the new US 101/SR 25 interchange. Additionally, the improvements would include the construction or improvement of various frontage roads along both side of US 101, including Old Monterey Road, and the elimination of uncontrolled local and private access to/from US 101, including the existing US 101 southbound ramps at Old Monterey Road. The Final Environmental Impact Report (FEIR) for the US 101 Widening project was approved in June 2013 and the project report was approved by Caltrans in November 2013.

Preliminary improvement plans show the construction of the new US 101/SR 25 interchange some 1,200 feet north of the existing interchange. The interchange would consist of a partial cloverleaf interchange. Old Monterey Road is shown to extend from the existing US 101 southbound ramps northward to connect to the Santa Teresa Boulevard extension. The existing US 101 southbound ramps at Old Monterey Road would be abandoned. With the planned US 101 Widening project in place, access to the project site would be provided as follows:

- From US 101 north – access from the north would be provided via the new US 101/SR 25 interchange. Project traffic traveling southbound on US 101 would exit at the US 101/SR 25 southbound off-ramp, make a right-turn and travel westbound to the new Old Monterey Road/Santa Teresa Boulevard intersection, then make a left-turn to southbound Old Monterey Road toward the project site.
- From US 101 south – access from the south would be provided via the new US 101/SR 25 interchange. Project traffic traveling northbound on US 101 would exit at the US 101/SR 25 northbound off-ramp, make a left-turn and travel westbound to the new Old Monterey Road/Santa Teresa Boulevard intersection, then make a left-turn to southbound Old Monterey Road towards the project site.
- To US 101 north – It was assumed in this analysis that, with the proposed project-sponsored improvements at the US 101 northbound ramp at Old Monterey Road extension (described in Chapter 3), the ramp would remain and continue to provide access to project traffic traveling north of the project site.
- To US 101 south – access to the south would be provided via the new US 101/SR 25 interchange. Project traffic heading southbound on US 101 from the project site would travel northbound on Old Monterey Road, make a right-turn and travel eastbound along Santa Teresa Boulevard/SR 25 to the US 101 southbound on-ramp.

New Project Site Access Intersection Lane Configurations

With the planned US 101 Widening project, main access to/from the project site would be provided via the two new intersections of the US 101 freeway ramps with Santa Teresa Boulevard/SR 25. Since a final design for the US 101 Widening project is not available, the lane geometry at the two new interchange intersections utilized for this analysis was derived based on the projected traffic volumes at the two intersections. Based on the traffic volume forecasts, it was assumed in the analysis that SR 25 would be 4 lanes wide (two lanes in each direction), the southbound off-ramp would include two left-turn and one right-turn lanes, and the northbound off-ramp would include one left-turn and one right-turn lane. Additionally, it was assumed that both new interchange intersections would be signal-controlled, and the freeway on-ramps would be controlled by a ramp meter at the ramps merging point with the freeway mainline and would consists of a single lane.

The assumed lane configuration at the study intersections is shown graphically on Figure 8.

Cumulative Conditions Traffic Volumes

Unlike near-term (background) conditions where the traffic volumes were estimated by assigning approved project trips to the roadway network based on existing travel patterns, long-term (cumulative) conditions include planned changes to the roadway network that would result in changes to the existing travel patterns in the project area. For this reason, traffic volumes under cumulative conditions were obtained from the City of Gilroy Year 2040 General Plan Update traffic study, which were produced using the Gilroy Travel Demand Forecasting (TDF) Model. The Gilroy TDF Model and procedures to obtain cumulative conditions traffic volumes are described below.

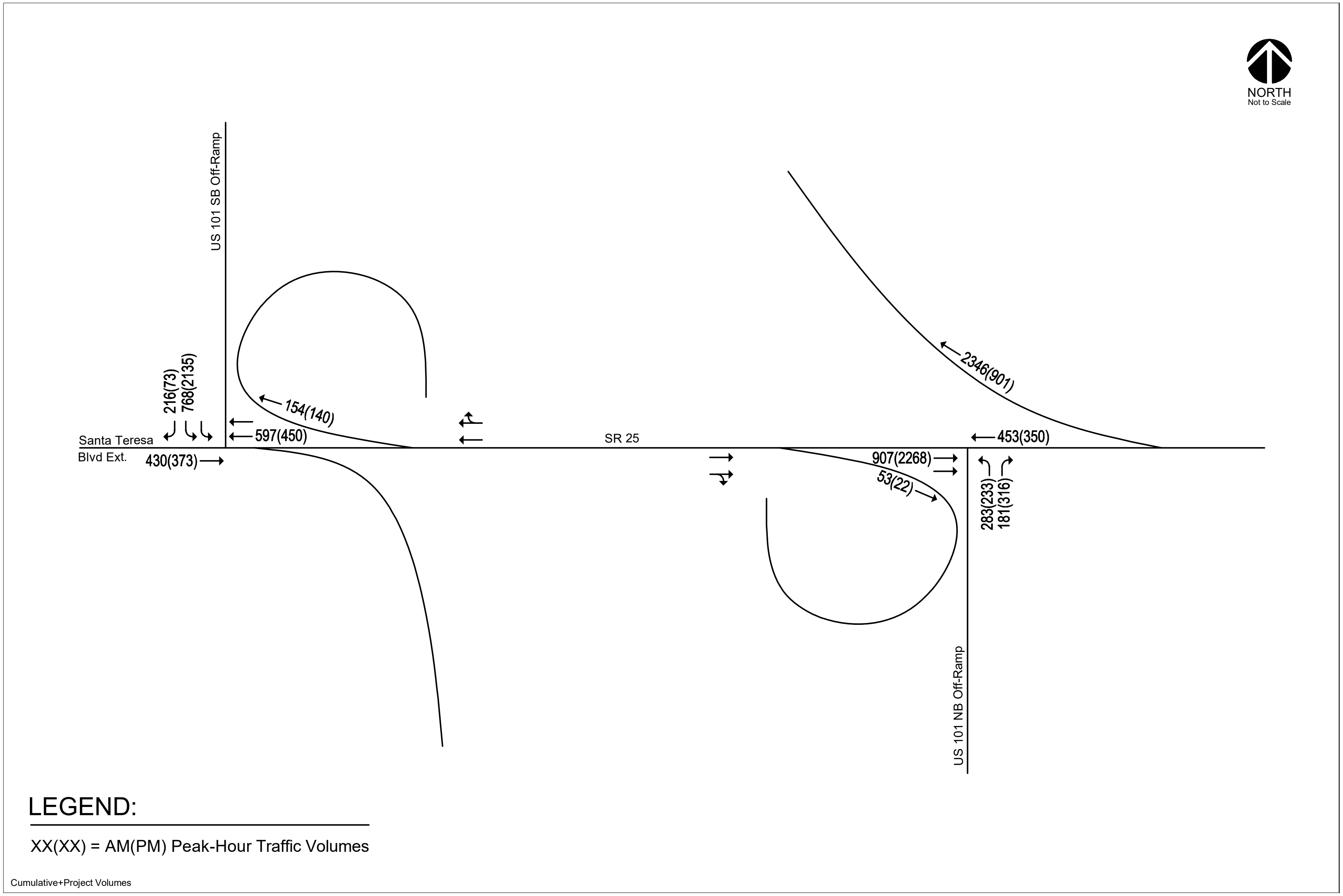


Figure 8
Assumed Lane Configurations and Cumulative Plus Project Traffic Volumes

City of Gilroy Travel Demand Forecasting Model

The Gilroy TDF Model, built in 2014, was developed as an extension and refinement of the Santa Clara Valley Transportation Authority Model (VTA Model). The Gilroy Model is a subarea model of VTA's Model and provides a more detailed roadway network and zone system within Gilroy and adjacent areas. The Gilroy Model is consistent with the VTA Model in terms of trip generation, distribution and mode choice. The Gilroy 2040 General Plan Model also includes roadway network improvements, such as the US 101 and SR 25 Widening projects, that result in new travel patterns, in addition to traffic volumes changes, reflected in the volume forecasts.

Cumulative Traffic Volumes

Cumulative peak-hour traffic volumes at the study facilities were obtained from the Gilroy 2040 General Plan Update traffic forecasts. These volumes represent long-term traffic conditions without the proposed project. Additionally, traffic associated with the proposed project was added to the cumulative traffic volumes to obtain traffic volumes under cumulative plus project conditions. Cumulative plus project traffic volumes are shown on Figure 8.

Cumulative Plus Project Intersection Analyses

A significant cumulative traffic impact at an intersection is identified by comparing cumulative with project traffic conditions against cumulative no project traffic conditions and applying the same impact criteria used to evaluate background plus project conditions described in Chapter 5. The results of the intersection level of service under cumulative conditions are summarized in Table 20. A signal warrant check was not completed since both study intersection were assumed to be signalize under cumulative conditions.

Intersection Level of Service Analysis

The results of the intersection level of service analysis indicates that both of the study intersections are projected to operate at acceptable LOS C or better during both peak hours under cumulative plus project conditions.

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

Cumulative Plus Project Freeway/Highway Segment Analyses

The Santa Clara County CMP guidelines do not require evaluation of freeway segments under future traffic conditions, such as cumulative conditions, since future development trips on freeways are not on record or otherwise available. Therefore, only a highway segment level of service analysis is presented under cumulative conditions.

Highway Segment Level of Service Analysis

Under cumulative conditions, and assuming the implementation of the SR 25 Widening and Realignment project, the study highway segment analysis was updated to evaluate a four-lane expressway (multi-lane facility) based on the *2010HCM* methodology and using the Highway Capacity Software.

The results of the highway segments level of service analysis under cumulative plus project conditions are summarized in Table 21. Based on the HCM methodology, both directions of the highway segment studied are projected to operate at acceptable LOS C or better during both peak hours under cumulative and cumulative plus project conditions. Therefore, the proposed project would not have a significant impact on the highway segment studied under cumulative plus project conditions, based on Caltrans level of service impact criteria.

The highway segment level of service calculations are included in Appendix E.

Table 20
Cumulative Intersection Level of Service Analysis Summary

#	Intersection	Peak Hour	Cumulative Avg. Delay[1] (sec/veh)	Cumulative LOS	Cumulative Plus Project Avg. Delay[1] (sec/veh	Cumulative Plus Project LOS	Cumulative Plus Project Delay Change[2] (sec)
1	US 101 SB Ramps and SR 25	AM	20.0	B	20.0	B	+0.0
		PM	22.9	C	23.2	C	+0.3
2	US 101 NB Ramps and SR 25	AM	24.0	C	23.9	C	-0.1
		PM	21.3	C	21.5	C	+0.2

Notes:
Delay and LOS results were obtained from Synchro and are based on the 2010 *Highway Capacity Manual* (HCM) methodology.
[1] The reported delay and corresponding level of service for signalized intersections represents the average delay for all approaches at the intersection.
[2] Change in delay measured relative to cumulative no project conditions.

Table 21
Cumulative Highway Segment Level of Service Analysis Results

Highway Segment		Peak-Hour	Direction	Cumulative Vol	Cumulative Density (pcphpl)	Cumulative LOS	Cumulative Plus Project Vol	Cumulative Plus Project Density (pcphpl)	Cumulative Plus Project LOS
SR 25	between US 101 and Bloomfield Avenue	AM	EB	1086	9.6	A	1088	9.7	A
		AM	WB	2797	23.9	C	2799	23.9	C
		PM	EB	2581	21.9	C	2584	22.0	C
		PM	WB	1251	10.7	A	1251	10.7	A

Notes: Vol = Volume
pcphpl = passenger car per hour per lane
LOS = Level of Service

Cumulative Plus Project Freeway Ramp Analysis

As described earlier, with implementation of the US 101 Widening project, access to and from the project site would be mainly provided via the new US 101/SR 25 interchange. In addition to utilizing the US 101 southbound on-ramp and northbound off-ramp at SR 25, with the planned improvements, project traffic also would utilize the southbound off-ramp at SR 25. All freeway ramps at the US 101/SR 25 interchange would be controlled by either a traffic signal or a freeway ramp meter. The assumed freeway ramp configurations and capacities under cumulative conditions are described below.

Cumulative Conditions Freeway Ramp Configurations

US 101 Southbound Off-Ramp at SR 25 – this off-ramp would provide access to the project area from the north and it is assumed to consist of two lanes at the point where it diverges from the freeway mainline, for a total capacity of 3,600 vehicles per hour (vph).

US 101 Southbound On-Ramp at SR 25 – this on-ramp would provide access from the project area to the south. It is assumed to consist of a single lane controlled by a ramp meter during the peak hours, for a total capacity of 900 vph.

US 101 Northbound Off-Ramp at SR 25 – this off-ramp would provide access to the project area from the south and it is assumed to consist of a single lane at the point where it diverges from the freeway mainline, for a total capacity of 1,800 vph.

US 101 Southbound Off-Ramp at Old Monterey Road – this off-ramp would be abandoned.

US 101 Southbound On-Ramp at Old Monterey Road – this on-ramp would be abandoned.

US 101 Northbound On-Ramp at Old Monterey Road Extension – this on-ramp was assumed to remain unchanged from project conditions, and would continue to provide outbound access from the project site to the north. It is assumed to have a total capacity of 1,800 vph.

Freeway Ramp Analysis Results

Results of the freeway ramp analysis under cumulative plus project conditions are summarized in Table 22. Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels during both peak hours under cumulative and cumulative plus project conditions, based on Caltrans level of service standards. Additionally, the addition of project traffic to the study freeway ramps is not projected to change the vehicle queue lengths estimated under cumulative conditions. Therefore, the proposed project is not projected to have a significant impact at any of the study freeway ramps under cumulative plus project conditions.

The projected vehicle queue lengths at the study freeway ramps indicate that the US 101 southbound off-ramp at SR 25 would require a minimum of 675 feet per lane to store the projected southbound left-turn queue lengths while the US 101 northbound off-ramp at SR 25 would require a minimum of 325 feet per lane to store the projected queue lengths. The southbound on-ramp at SR 25 shows a maximum vehicle queue length of 100 feet.

Table 22
Cumulative Conditions Freeway Ramp Analysis Results

	Proposed (Future Conditions)					Cumulative				Cumulative Plus Project			
Interchange/Ramp	Ramp Type	Control Type	Number of Lanes	Ramp Capacity [1]	Available Queue Storage (ft)	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]	Volume [2]	V/C	LOS [3]	95th Percentile Queue (ft)[4]
US 101 at SR 25													
Southbound Off-Ramp	Diagonal	Signal	2	3,600	Future	968	0.269	A	200	984	0.273	A	200
				3,600		2,208	0.613	B	675	2,208	0.613	B	675
Southbound On-Ramp	Diagonal	Meter	1	900	Future	227	0.252	A	100	229	0.254	A	100
				900		255	0.283	A	100	260	0.289	A	100
Northbound Off-Ramp	Diagonal	Signal	1	1,800	Future	460	0.256	A	175	462	0.257	A	175
				1,800		546	0.303	A	325	549	0.305	A	325
US 101 at Old Monterey Road													
Southbound Off-Ramp	Ramp to be abandoned [5]												
Southbound On-Ramp	Ramp to be abandoned [5]												
Northbound On-Ramp	Diagonal	Uncontrolled	1	1,800	1,800	2	0.001	A	0	20	0.011	A	0
				1,800		3	0.002	A	0	14	0.008	A	0

Notes:
[1] A ramp capacity of 1,800 vehicles per hour per lane (vphpl) was assumed for diagonal ramps and 900 vphpl for metered ramps.
[2] Cumulative conditions ramp volumes were obtained from the Gilroy 2040 General Plan Traffic Study and Travel Demand Forecasting Model.
[3] Ramp level of service based on the calculated ramp volume-to-capacity ratio.
[4] 95th percentile vehicle queue length per lane projections (in feet) were obtained from Synchro/SimTraffic. Vehicle queue lengths were translated into feet by assuming 25 feet per vehicle.
[5] Ramp is proposed to be abandoned under cumulative conditions as part of the US 101 Widening project.

7. Other Transportation Issues

Other issues related to transportation were evaluated to determine if any deficiencies would exist under project conditions that are not specifically linked to environmental impact reporting. These are not considered environmental issues, and may not be evaluated in an environmental assessment, but have been included in the traffic study to meet the requirements of the Santa Clara County and Caltrans. The other transportation issues considered in this chapter are vehicle miles traveled and site access.

Vehicle Miles Traveled Analysis

Based on guidance from VTA and CEQA, the preparation of Transportation Impact Analyses in the past has relied to a great extent on evaluation of Level of Service (LOS) at intersections and on freeways to determine whether a proposed project would have significant traffic impacts. However, recent trends in the transportation planning field have expanded the range of metrics to be evaluated beyond Level of Service, in order to better capture the potential impacts of a project on other modes of transportation and on the greenhouse gases associated with vehicular travel. For example, the State's Office of Planning and Research has adopted the use of Vehicle Miles Travelled (VMT) instead of Level of Service to evaluate potential project impacts. VMT is a metric that is used in noise, air quality, and greenhouse gas emissions analyses because it provides an indication of the usage level of the automobile and truck transportation system within an area. A greater number of vehicle miles traveled generally means more noise and more air pollution.

Santa Clara County does not currently have an established VMT standard for what is considered acceptable or a threshold for what change in VMT would constitute a significant impact. For this reason, the VMT analysis is included in the report for informational purposes.

VMT Analysis Methodology and Results

For the purpose of evaluating the effects of the proposed project on travel patterns within the County, the projected change in VMT associated with the proposed project was estimated by comparing VMT for the Year 2018 (proposed project opening year) along roadway facilities projected to be utilized by project traffic to the estimated project VMT.

VMT is calculated as the number of vehicle trips multiplied by the length of the trips in miles. It is estimated that the proposed project would generate at total of 316 daily truck trips and 30 daily employee trips. Additionally, it is anticipated that 80% of the truck traffic would travel to/from Santa Clara County (north of the project site, with an average trip length of 40 miles), 10% to/from San Benito County (Hollister, with an average trip length of 17 miles), and 10% to/from Monterey County (Salinas, with an average trip length of 27 miles). Employee trips were assumed to originate from the Gilroy and Hollister areas, with an average trip length of 18 miles. Project trips would mainly utilize US 101 and SR 25 between the project site and their origin/destination. Based on this information, the proposed project is estimated to add approximately 12,028 VMT to the roadway facilities anticipated to serve the project traffic (see Table 23).

For comparison, year 2018 ADT volumes along the roadway facilities anticipated to serve the project traffic were obtained from Santa Clara County Model (utilized for the recently completed Santa Clara County Roadways Study). Based on the ADT volumes and the length of the roadways, it was calculated that the roadway facilities anticipated to serve the project traffic would include approximately 6,000,300 daily VMTs.

Based on the estimated VMT projections associated with the proposed project and roadway facilities anticipated to serve the project traffic, the proposed project represents an increase of approximately 0.2% in the daily VMT on the roadway facilities serving the project.

Site Access Analysis

An evaluation of the project site access was performed to identify potential deficiencies along the facilities providing direct access to the project site. Direct access to the project site is provided via Old Monterey Road and the US 101 ramps at Monterey Road and the Monterey Road extension. The analysis also identifies necessary roadway and ramp improvements to provide adequate traffic operations for project traffic and all other traffic on the roadway.

US 101 Ramps at Old Monterey Road

All inbound access to the project site and outbound access to the south would be provided via the US 101 southbound ramps at Old Monterey Road. Outbound access to the north is proposed to be provided via the US 101 northbound on-ramp at Old Monterey Road extension.

Analysis of the freeway ramps was presented within the previous chapters of this report. The ramp analysis shows that the US 101 ramps at Old Monterey Road/Old Monterey Road extension are projected to operate at acceptable levels under project conditions, and projected vehicular queue lengths would be accommodated within the ramps' existing queue storage capacity.

The US 101 southbound ramps at Old Monterey Road include acceleration/deceleration lanes along US 101 that facilitate access between the freeway and Old Monterey Road, in particular for truck traffic, which require additional space to accelerate/decelerate to the approaching speed. The existing deceleration lane is approximately 500 feet long from the end of the taper to the ramp exit curve. The acceleration lane is approximately 1,000 feet long from the ramp entrance curve to the beginning of the taper.

The US 101 northbound ramp at Old Monterey Road extension does not currently include an acceleration lane on US 101 and Old Monterey Road extension is only approximately 12 feet wide with no shoulders. The project is proposing to widen the Old Monterey Road extension to provide adequate truck circulation to/from the project site and install an acceleration lane at the US 101 northbound on-ramp to provide direct access from the project site to US 101 to the north.

Freeway Ramps Design Standards

The geometric design of the freeway ramps at Old Monterey Road/Monterey Road extension was evaluated based on Caltrans standards and on the American Association of State Highway and Transportation Officials (AASHTO) publication titled *A Policy on Geometric Design of Highways and Streets*, 6th Edition, also known as the "Green Book".

The Caltrans *Highway Design Manual* (HDM) Topic 504 (interchange design standards) and the AASHTO Green Book, section 10.9.6 (Ramps), describe the following design standards for freeway off- and on-ramps.

Sight Distance – A clear line of sight should be provided between the driver on the minor street (in this case freeway on-ramp) and the approaching traffic (freeway mainline). Sight distance along a ramp should be at least as great as the design stopping sight distance.

Table 23
Vehicle Miles Traveled Projections for Project

Trip Description	Percent	Average Trip Length (mi)	Daily Trips	VMT
Trucks (316 Daily Trips)				
North on Hwy 101(to/from Santa Clara)	80%	40	252	10,080
State Route 25 (to/from Hollister)	10%	17	32	544
South on Hwy 101 (to/from Salinas)	10%	27	32	864
Subtotal:	100%		316	11,488
Employee (30 Daily Trips)	100%	18	30	540
Total Project VMT:				**12,028**

Based on the design speed along US 101 (posted speed limit of 65 mph, 55 mph for truck with three axles or more), the required stopping sight distance for the on-ramps at Old Monterey Road/Old Monterey Road extension must be no less than 660 ft. (Table 201.1 of the HDM).

The existing acceleration lane for the southbound on-ramp (1,000 feet long) provides the required stopping sight distance. At the northbound on-ramp, the existing sight distance (without acceleration lane) is less than 600 feet. The proposed project-sponsored acceleration lane would correct the existing sight-distance deficiency at the northbound on-ramp.

Ramp Width – Ramp lanes shall be a minimum of 12 feet in width. Where ramps have curve radii of 300 feet or less, the ramp width shall be widened to accommodate large truck wheel paths. Ramps with radius of 150 feet or less must be a minimum of 18 feet wide.

The US 101 southbound ramps at Old Monterey Road are 12 feet wide, and widen to a minimum of 22 feet at the point where the ramps curve.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required ramp width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Shoulder Width – typical ramp shoulder widths are 4 feet on the left and 8 feet on the right.

The shoulder width at the US 101 southbound ramps at Old Monterey Road is at least 8 feet wide.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required shoulder width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Deceleration Lane Length – Deceleration lane length is governed by the freeway's design speed and the design speed at the ramp's exit curve. Table 10-5 in the AASHTO Green Book lists minimum deceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum deceleration length ranges from 540 feet for ramps with exit curve design speeds of 15 mph, 520 feet for exit curve design speeds of 20 mph, 500 feet for exit curve design speeds of 25 mph, to 280 feet for exit curve design speeds of 50 mph. In addition, a taper length of a minimum of 250 feet also must be provided.

The existing deceleration lane at the US 101 southbound off-ramp at Old Monterey Road is designed to accommodate design speed at the exit curve of 25 mph. However, the existing deceleration lane taper is only approximately 130 feet long.

The US 101 northbound off-ramp at Old Monterey Road extension does not include a deceleration lane.

Recommendation: It is recommended that the minimum recommended taper length be provided at the existing US 101 southbound off-ramp at Old Monterey Road deceleration lane, based on the above standards and to the satisfaction of Caltrans.

Acceleration Lane Length – Acceleration lane length is governed by the speed differential between the ramp's entrance curve design speed and the design speed of the freeway. Table 10-3 in the AASHTO Green Book lists minimum acceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum acceleration length ranges from 1,350 feet for entrance curve design speed of 15 mph, 1,220 feet for entrance curve design speed of 25 mph, 1,000 feet for entrance curve design speed of 35 mph, to 370 feet for entrance curve design speed of 50 mph. In addition, a taper length of a minimum of 300 feet (suitable for design speeds up to 70 mph) also must be provided starting at the end of the acceleration lane.

The existing acceleration lane at the US 101 southbound on-ramp at Old Monterey Road is designed to accommodate entrance curve design speeds of 35 mph and includes the minimum required 300-foot taper.

Recommendation: The proposed acceleration lanes at the northbound on-ramp must be designed following the above standards and to the satisfaction of Caltrans.

Old Monterey Road Roadway Segment Analysis

A roadway segment analysis was conducted to evaluate the project's effect on Old Monterey Road. In addition to providing direct access to the project site, Old Monterey Road also provides access to the Freeman Quarry (a formerly active aggregate quarry located west of the US 101/Old Monterey Road southbound ramps), several farm equipment storage buildings, a fruit/vegetable stand, and a private residence.

Three roadway segments along Old Monterey Road, all under the jurisdiction of Santa Clara County, were included in the analysis. The analysis consists of an evaluation of the average daily traffic (ADT) volumes, the projected traffic volume increases associated with the proposed project, and the adequacy of the roadway segments to serve the projected traffic demand. The analysis provides an indication of operational and/or safety issues that may arise as traffic volumes on the study roadway segments increase.

Note that Santa Clara County does not have adopted analysis methodologies or impact thresholds for the evaluation of roadway segments. For this reason, the roadway segment analysis is provided for informational purposes.

Study Roadway Segments

Three roadway segments were evaluated:

1. Old Monterey Road, south of US 101 Southbound Ramps
2. Old Monterey Road, south of Freeman Quarry Access Road
3. Old Monterey Road, south of US 101 Northbound Ramps

Roadway Segment Volumes

The existing roadway segment volumes were obtained from new 24-hour machine counts collected in September 2016 (included in Appendix A). The daily traffic volumes along Old Monterey Road are shown not to exceed 45 daily trips. The existing traffic data are summarized on Table 24.

Table 24
Roadway Segments Analysis Results

	Roadway Segment	Count Date	Direction		Volume Existing /a/	Project Trip	Existing Plus Project	% Increase
1	Old Monterey Road, South of US 101 Southbound Ramp	09/13/16	NB	AM	1	2	3	200%
			NB	PM	0	5	5	--
			NB	Daily	22	20	42	91%
			SB	AM	2	20	22	1000%
			SB	PM	0	0	0	--
			SB	Daily	23	174	197	757%
			Both	AM	3	22	25	733%
			Both	PM	0	5	5	--
			Both	**Daily**	**45**	**194**	**239**	**431%**
2	Old Monterey Road, South of Maintenance Road	09/13/16	NB	AM	0	2	2	--
			NB	PM	0	5	5	--
			NB	Daily	6	20	26	333%
			SB	AM	2	20	22	1000%
			SB	PM	0	0	0	--
			SB	Daily	9	174	183	1933%
			Both	AM	2	22	24	1100%
			Both	PM	0	5	5	--
			Both	**Daily**	**15**	**194**	**209**	**1293%**
3	Old Monterey Road, South of US 101 Northbound Ramp	09/13/16	NB	AM	2	18	20	900%
			NB	PM	3	11	14	367%
			NB	Daily	20	153	173	765%
			SB	AM	3	0	3	0%
			SB	PM	2	0	2	0%
			SB	Daily	21	0	21	0%
			Both	AM	5	18	23	360%
			Both	PM	5	11	16	220%
			Both	**Daily**	**41**	**153**	**194**	**373%**

/a/ Source: twenty-four hour machine counts conducted on September 13, 2016.

Roadway Segment Traffic Projections

The proposed project is projected to add a maximum of 194 daily trips to the study roadway segments. With the proposed project, the study roadway segments are project to carry from approximately 200 to 240 daily trips (see Table 24).

Although the proposed project is shown to increase existing traffic volumes along the study roadway segments by a relatively large percentage (compared to existing conditions), the existing traffic volumes are very low and the study roadway segments would continue to carry traffic volumes that are well below the capacity of a two-lane roadway segment. Additionally, with the proposed project improvements that include widening portions of and repaving Old Monterey Road to accommodate two-way truck traffic circulation, Old Monterey Road would adequately serve the projected traffic volumes with the project.

Roadway Design Standards

Typical roadway cross sections for minor streets in rural areas include two 12-foot lanes with 8-foot shoulders. However, as described in the AASHTO Green Book (section 5.5, Very Low-Volume Local Roads), the geometric design of very low-volume local roadways (ADT less than or equal to 400 daily vehicles) is a unique challenge because the very low traffic volumes, which result in reduced frequency of vehicle conflicts, make design standards normally applied on higher volume roads less cost-effective.

The project is proposing to improve Old Monterey Road/Old Monterey Road extension to accommodate two-way truck traffic circulation to and from the project site.

Recommendation: The project should work with Santa Clara County Roads and Airports staff to identify the required roadway cross section for Old Monterey Road/Old Monterey Road extension and implement the proposed improvements along this roadway in accordance to Santa Clara County roadway design standards.

8. Conclusions

This traffic impact analysis documents the impacts to the surrounding transportation system associated with implementation of the proposed Sargent Quarry Mining and Reclamation Plan. The potential impacts of the project were evaluated in accordance with the standards set forth by Santa Clara County and Caltrans. The study included an analysis of two intersections, five freeway/highway segments, and five freeway ramps.

Evaluation of Project Conditions

Existing Plus Project Conditions

Intersection Analysis

The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met at the following intersection during the noted peak hour:

2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, the above study intersection is projected to be significantly impacted by the proposed project.

Freeway Segment Level of Service Analysis

The results show that all of the study freeway segments currently operate at acceptable LOS E or better during both peak hours, and the addition of project trips to the freeway segments would not cause any of them to degrade to an unacceptable LOS F. Therefore, the proposed project is not projected to significantly impact any of the study freeway segments, based on CMP level of service impact criteria.

Highway Segment Level of Service Analysis

Based on the HCM methodology, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under existing plus project conditions, based on Caltrans level of service standards. Projected queue lengths at the ramps would continue to be able to store within the existing ramp storage space. Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under existing plus project conditions.

Background Plus Project Conditions

Intersection Analysis

The proposed project would cause the intersection delay to increase by more than one second and the signal warrant would be met (described below) at the study intersections during the noted peak hours:

1. US 101 SB Ramps and SR 25 (**Impact**: AM peak hour)
2. US 101 NB Ramps and SR 25 (**Impact**: PM peak hour)

Therefore, based on Caltrans level of service impact criteria, both of the study intersections are projected to be significantly impacted by the proposed project.

Freeway Segment Level of Service Analysis

The Santa Clara County CMP guidelines do not require evaluation of freeway segments under future traffic conditions, such as background conditions, since approved development trips on freeways are not on record or otherwise available.

Highway Segment Level of Service Analysis

Based on the HCM methodology, the proposed project would have a significant impact to both directions of the highway segment studied, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels of service during both peak hours under background plus project conditions, based on Caltrans level of service standards. Projected queue lengths at the ramps would continue to be able to store within the existing ramps. Therefore, the proposed project is not projected to have an impact at any of the study freeway ramps under background plus project conditions.

Project Impacts and Recommended Mitigation Measures

Described below are the intersection and highway impacts and recommended mitigation measures necessary to maintain the level of service standards.

1. US 101 SB Ramps and SR 25 (Caltrans)

Mitigation Measures. The Valley Transportation Authority (VTA), Santa Clara County's Congestion Management Agency, in its Valley Transportation Plan (VTP) 2040 document has identified the widening of US 101 from Monterey Street (in Gilroy) to SR 129 (in San Benito County). The proposed improvements (identified as VTP ID #H25 and also known as the *US 101 Widening Project – Monterey Road to SR 129*) include widening of US 101 from four lanes to six lanes, the construction of a new interchange at SR 25, extending Santa Teresa Boulevard to connect to SR 25 at the new US 101/SR 25 interchange, and improvements along SR 25 required to support efficient traffic operations at the new US 101/SR 25 interchange. The Final Environmental Impact Report (FEIR) for the project was approved in June 2013 and the project report was approved by Caltrans in November 2013. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

2. US 101 NB Ramps and SR 25 (Caltrans)

Mitigation Measures. With implementation of the highway widening project and US 101/SR 25 interchange reconstruction, described above, the impacts to the study intersection would be less-than-significant. However, only partial funding (approximately 1 percent) has been secured for the project.

The magnitude of the above roadway widening and interchange improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned project to rebuild the US 101/SR 25 interchange. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange improvements to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

SR 25, East of US 101

Mitigation Measures. The improvements necessary to mitigate the project impacts at the study highway segment consist of widening the highway to provide additional capacity. Regional projects that would provide additional capacity along SR 25 have been identified and include the following:

- *SR 25 Widening and Realignment Project* – This project consists of the widening of SR 25 from the existing 2-lane highway to a 4-lane expressway from San Felipe Road (Hollister) to US 101 (Santa Clara County). In June 2016, Caltrans approved the Hollister to Gilroy State Route 25 Route Adoption project. In the Route Adoption study, Caltrans identifies two alternatives to eventually replace 11.2 miles of the existing SR 25 two-lane highway with a four-lane expressway in San Benito and Santa Clara Counties. The Route Adoption study establishes and documents an exact alignment and location of the future expressway in the San Benito and Santa Clara Counties' General Plans, allowing for future land use planning, such as establishing right-of-way boundaries and acquiring most of the parcels within the defined corridor area.

  Additionally, the widening of SR 25 is included as part of the improvement projects of the San Benito County Transportation Impact Mitigation Fee (TIMF). The San Benito County TIMF identifies the improvement project as the widening of SR 25 from two-to-four lanes between San Felipe Road in Hollister to the Santa Clara County line. According to the *Highway 25 Widening Design Alternatives Analysis* report, dated August 2016 by WMH, the adopted San Benito County Traffic Impact Mitigation Fee Nexus Study (January 2016, Appendix A – TIMF Improvement Costs and Cost Allocations) identifies $88 million in funding from new development to be contributed to the SR 25 Widening project.

- *VTA's US 101 widening project – Monterey Road to SR 129* – This project is described above.

With implementation of the planned improvements along SR 25, the impacts to the study highway segment would be less-than-significant. However, the magnitude of the above roadway widening improvements is beyond the financial capability of a single development such as the proposed project. Thus, the developer may be required to pay a fair-share contribution towards programs/plans, if available, that have been established to fund the planned improvements to widen SR 25. However, payment of a fee alone will not guarantee the timely construction of the identified freeway interchange to mitigate the project impacts. Therefore, in the event that the developer makes a fair-share contribution in the form of fee payment rather than constructing the improvements, or in the case there is not a funding mechanism in place that the project can contribute to, this impact would be considered significant and unavoidable.

Evaluation of Cumulative Conditions

Intersection Level of Service Analysis

The results of the intersection level of service analysis indicates that both of the study intersections are projected to operate at acceptable LOS C or better during both peak hours under cumulative plus project conditions.

Highway Segment Level of Service Analysis

Under cumulative conditions, and assuming the implementation of the SR 25 Widening and Realignment project, the study highway segment analysis was updated to evaluate a four-lane expressway (multi-lane facility) based on the *2010HCM* methodology and using the Highway Capacity Software.

Based on the HCM methodology, both directions of the highway segment studied are projected to operate at acceptable LOS C or better during both peak hours under cumulative and cumulative plus project conditions. Therefore, the proposed project would not have a significant impact on the highway segment studied under cumulative plus project conditions, based on Caltrans level of service impact criteria.

Freeway Ramp Analysis

Based on a volume-to-capacity evaluation, all study interchange ramps are projected to continue to operate at acceptable levels during both peak hours under cumulative and cumulative plus project conditions, based on Caltrans level of service standards. Additionally, the addition of project traffic to the study freeway ramps is not projected to change the vehicle queue lengths estimated under cumulative conditions. Therefore, the proposed project is not projected to have a significant impact at any of the study freeway ramps under cumulative plus project conditions.

Other Transportation Issues

Vehicle Miles Traveled Analysis

For the purpose of evaluating the effects of the proposed project on travel patterns within the County, the projected change in VMT associated with the proposed project was estimated by comparing VMT for the Year 2018 (proposed project opening year) along roadway facilities projected to be utilized by project traffic to the estimated project VMT.

Based on the estimated VMT projections associated with the proposed project and roadway facilities anticipated to serve the project traffic, the proposed project represents an increase of approximately 0.2% in the daily VMT on the roadway facilities serving the project.

Site Access Analysis

An evaluation of the project site access was performed to identify potential deficiencies along the facilities providing direct access to the project site. Direct access to the project site is provided via Old Monterey Road and the US 101 ramps at Monterey Road and the Monterey Road extension. The analysis also identifies necessary roadway and ramp improvements to provide adequate traffic operations for project traffic and all other traffic on the roadway.

US 101 Ramps at Old Monterey Road

Freeway Ramps Design Standards

Sight Distance – A clear line of sight should be provided between the driver on the minor street (in this case freeway on-ramp) and the approaching traffic (freeway mainline). Sight distance along a ramp should be at least as great as the design stopping sight distance.

Based on the design speed along US 101 (posted speed limit of 65 mph, 55 mph for truck with three axles or more), the required stopping sight distance for the on-ramps at Old Monterey Road/Old Monterey Road extension must be no less than 660 ft. (Table 201.1 of the HDM).

The existing acceleration lane for the southbound on-ramp (1,000 feet long) provides the required stopping sight distance. At the northbound on-ramp, the existing sight distance (without acceleration lane) is less than 600 feet. The proposed project-sponsored acceleration lane would correct the existing sight-distance deficiency at the northbound on-ramp.

Ramp Width – Ramp lanes shall be a minimum of 12 feet in width. Where ramps have curve radii of 300 feet or less, the ramp width shall be widened to accommodate large truck wheel paths. Ramps with radius of 150 feet or less must be a minimum of 18 feet wide.

The US 101 southbound ramps at Old Monterey Road are 12 feet wide, and widen to a minimum of 22 feet at the point where the ramps curve.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required ramp width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Shoulder Width – typical ramp shoulder widths are 4 feet on the left and 8 feet on the right.

The shoulder width at the US 101 southbound ramps at Old Monterey Road is at least 8 feet wide.

The US 101 northbound ramps at Old Monterey Road extension are currently not to standard.

Recommendation: the minimum required shoulder width at the US 101 northbound ramp at Old Monterey Road extension should be provided, based on Caltrans design guidelines and requirements.

Deceleration Lane Length – Deceleration lane length is governed by the freeway's design speed and the design speed at the ramp's exit curve. Table 10-5 in the AASHTO Green Book lists minimum deceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum deceleration length ranges from 540 feet for ramps with exit curve design speeds of 15 mph, 520 feet for exit curve design speeds of 20 mph, 500 feet for exit curve design speeds of 25 mph, to 280 feet for exit curve design speeds of 50 mph. In addition, a taper length of a minimum of 250 feet also must be provided.

The existing deceleration lane at the US 101 southbound off-ramp at Old Monterey Road is designed to accommodate design speed at the exit curve of 25 mph. However, the existing deceleration lane taper is only approximately 130 feet long.

The US 101 northbound off-ramp at Old Monterey Road extension does not include a deceleration lane.

Recommendation: It is recommended that the minimum recommended taper length be provided at the existing US 101 southbound off-ramp at Old Monterey Road deceleration lane, based on the above standards and to the satisfaction of Caltrans.

Acceleration Lane Length – Acceleration lane length is governed by the speed differential between the ramp's entrance curve design speed and the design speed of the freeway. Table 10-3 in the AASHTO Green Book lists minimum acceleration lane lengths for different highway design speeds (30 to 75 mph). For highways with design speeds of 65 mph, the minimum acceleration length ranges from 1,350 feet for entrance curve design speed of 15 mph, 1,220 feet for entrance curve design speed of 25 mph, 1,000 feet for entrance curve design speed of 35 mph, to 370 feet for entrance curve design speed of 50 mph. In addition, a taper length of a minimum of 300 feet (suitable for design speeds up to 70 mph) also must be provided starting at the end of the acceleration lane.

The existing acceleration lane at the US 101 southbound on-ramp at Old Monterey Road is designed to accommodate entrance curve design speeds of 35 mph and includes the minimum required 300-foot taper.

Recommendation: The proposed acceleration lanes at the northbound on-ramp must be designed following the above standards and to the satisfaction of Caltrans.

Old Monterey Road Roadway Segment Analysis

The existing roadway segment volumes along Old Monterey Road are shown not to exceed 45 daily trips. The proposed project is projected to add a maximum of 194 daily trips to the study roadway segments.

Although the proposed project is shown to increase existing traffic volumes along the study roadway segments by a relatively large percentage (compared to existing conditions), the existing traffic volumes are very low and the study roadway segments would continue to carry traffic volumes that are well below the capacity of a two-lane roadway segment. Additionally, with the proposed project improvements that include widening portions of and repaving Old Monterey Road to accommodate two-way truck traffic circulation, Old Monterey Road would adequately serve the projected traffic volumes with the project.

Roadway Design Standards

Typical roadway cross sections for minor streets in rural areas include two 12-foot lanes with 8-foot shoulders. However, as described in the AASHTO Green Book (section 5.5, Very Low-Volume Local Roads), the geometric design of very low-volume local roadways (ADT less than or equal to 400 daily vehicles) is a unique challenge because the very low traffic volumes, which result in reduced frequency of vehicle conflicts, make design standards normally applied on higher volume roads less cost-effective.

The project is proposing to improve Old Monterey Road/Old Monterey Road extension to accommodate two-way truck traffic circulation to and from the project site.

Recommendation: The project should work with Santa Clara County Roads and Airports staff to identify the required roadway cross section for Old Monterey Road/Old Monterey Road extension and implement the proposed improvements along this roadway in accordance to Santa Clara County roadway design standards.

Sargent Quarry Project TIA

Technical Appendices

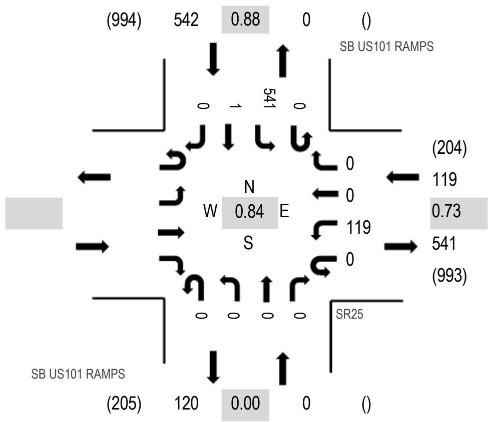
February 24, 2017

Appendix A
Traffic Count Data

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

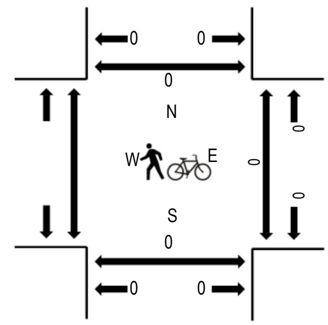
Location: 1 SB US101 RAMPS & SR25 AM
Date and Start Time: Tuesday, September 13, 2016
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Eastbound U-Turn	Eastbound Left	Eastbound Thru	Eastbound Right	SR25 Westbound U-Turn	SR25 Westbound Left	SR25 Westbound Thru	SR25 Westbound Right	SB US101 RAMPS Northbound U-Turn	SB US101 RAMPS Northbound Left	SB US101 RAMPS Northbound Thru	SB US101 RAMPS Northbound Right	SB US101 RAMPS Southbound U-Turn	SB US101 RAMPS Southbound Left	SB US101 RAMPS Southbound Thru	SB US101 RAMPS Southbound Right	Total	Rolling Hour	Pedestrain Crossings West	Pedestrain Crossings East	Pedestrain Crossings South	Pedestrain Crossings North
7:00 AM					0	28	0	0	0	0	0	0	0	125	0	0	153	656		0	0	0
7:15 AM					0	16	0	0	0	0	0	0	0	121	0	0	137	649		0	0	0
7:30 AM					0	41	0	0	0	0	0	0	0	155	0	0	196	661		0	0	0
7:45 AM					0	23	0	0	0	0	0	0	0	147	0	0	170	605		0	0	0
8:00 AM					0	29	0	0	0	0	0	0	0	117	0	0	146	542		0	0	0
8:15 AM					0	26	0	0	0	0	0	0	0	122	1	0	149			0	0	0
8:30 AM					0	20	0	0	0	0	0	0	0	120	0	0	140			0	0	0
8:45 AM					0	21	0	0	0	0	0	0	0	86	0	0	107			0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound U-Turn	Westbound Left	Westbound Thru	Westbound Right	Northbound U-Turn	Northbound Left	Northbound Thru	Northbound Right	Southbound U-Turn	Southbound Left	Southbound Thru	Southbound Right	Total
Articulated Trucks					0	24	0	0	0	0	0	0	0	23	0	0	47
Lights					0	88	0	0	0	0	0	0	0	496	1	0	585
Mediums					0	7	0	0	0	0	0	0	0	22	0	0	29
Total					0	119	0	0	0	0	0	0	0	541	1	0	661

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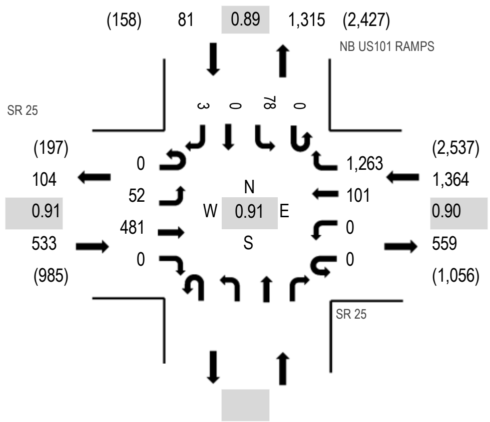
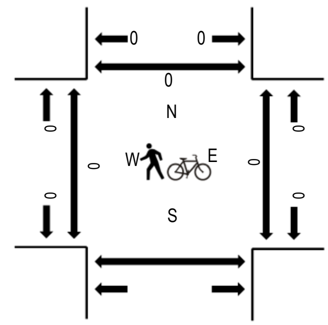
Location: 2 NB US101 RAMPS & SR 25 AM
Date and Start Time: Tuesday, September 13, 2016
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	SR 25 Eastbound U-Turn	Left	Thru	Right	SR 25 Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	NB US101 RAMPS Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
7:00 AM	0	15	105	0	0	0	25	304					0	16	0	1	466	1,978	0	0		0
7:15 AM	0	17	108	0	0	0	13	299					0	21	0	1	459	1,951	0	0		0
7:30 AM	0	8	139	0	0	0	40	337					0	18	0	0	542	1,938	0	0		0
7:45 AM	0	12	129	0	0	0	23	323					0	23	0	1	511	1,817	0	0		0
8:00 AM	0	8	116	0	0	0	25	269					0	20	0	1	439	1,702	0	0		0
8:15 AM	0	8	114	0	0	0	26	277					0	21	0	0	446		0	0		0
8:30 AM	0	10	112	0	0	0	19	262					0	17	0	1	421		0	0		0
8:45 AM	0	4	80	0	0	0	21	274					0	17	0	0	396		0	0		0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	0	18	0	0	0	16	17					0	8	0	0	59
Lights	0	52	428	0	0	0	81	1,222					0	58	0	2	1,843
Mediums	0	0	35	0	0	0	4	24					0	12	0	1	76
Total	0	52	481	0	0	0	101	1,263					0	78	0	3	1,978

Location: 1 SB US101 RAMPS & SR25 PM

Date and Start Time: Tuesday, September 13, 2016

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:00 PM - 05:15 PM

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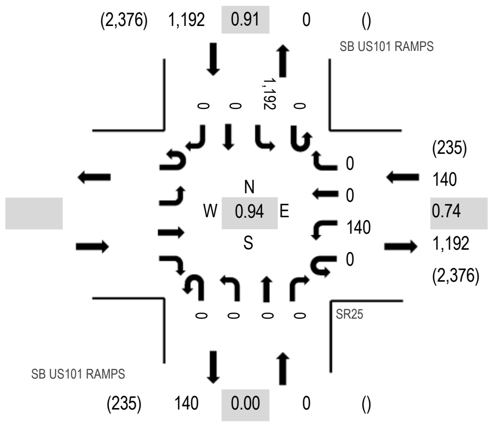
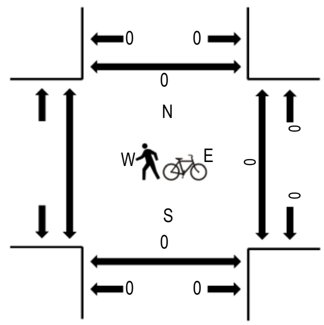
Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Eastbound U-Turn	Eastbound Left	Eastbound Thru	Eastbound Right	SR25 Westbound U-Turn	SR25 Westbound Left	SR25 Westbound Thru	SR25 Westbound Right	SB US101 RAMPS Northbound U-Turn	SB US101 RAMPS Northbound Left	SB US101 RAMPS Northbound Thru	SB US101 RAMPS Northbound Right	SB US101 RAMPS Southbound U-Turn	SB US101 RAMPS Southbound Left	SB US101 RAMPS Southbound Thru	SB US101 RAMPS Southbound Right	Total	Rolling Hour	Pedestrain Crossings West	Pedestrain Crossings East	Pedestrain Crossings South	Pedestrain Crossings North
4:00 PM					0	33	0	0	0	0	0	0	0	293	0	0	326	1,282		0	0	0
4:15 PM					0	17	0	0	0	0	0	0	0	288	0	0	305	1,309		0	0	0
4:30 PM					0	34	0	0	0	0	0	0	0	266	0	0	300	1,332		0	0	0
4:45 PM					0	29	0	0	0	0	0	0	0	322	0	0	351	1,328		0	0	0
5:00 PM					0	47	0	0	0	0	0	0	0	306	0	0	353	1,329		0	0	0
5:15 PM					0	30	0	0	0	0	0	0	0	298	0	0	328			0	0	0
5:30 PM					0	26	0	0	0	0	0	0	0	270	0	0	296			0	0	0
5:45 PM					0	19	0	0	0	0	0	0	0	333	0	0	352			0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound U-Turn	Westbound Left	Westbound Thru	Westbound Right	Northbound U-Turn	Northbound Left	Northbound Thru	Northbound Right	Southbound U-Turn	Southbound Left	Southbound Thru	Southbound Right	Total
Articulated Trucks					0	12	0	0	0	0	0	0	0	20	0	0	32
Lights					0	122	0	0	0	0	0	0	0	1,160	0	0	1,282
Mediums					0	6	0	0	0	0	0	0	0	12	0	0	18
Total					0	140	0	0	0	0	0	0	0	1,192	0	0	1,332

All Traffic Data Services Inc.

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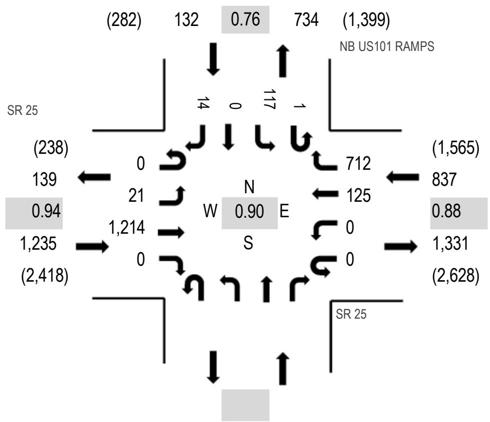
Location: 2 NB US101 RAMPS & SR 25 PM

Date and Start Time: Tuesday, September 13, 2016

Peak Hour: 04:30 PM - 05:30 PM

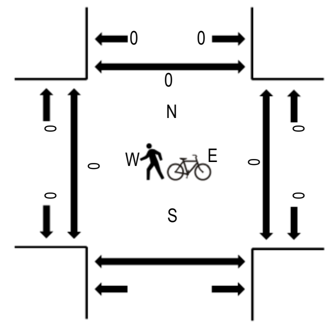
Peak 15-Minutes: 04:45 PM - 05:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	SR 25 Eastbound U-Turn	Left	Thru	Right	SR 25 Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	NB US101 RAMPS Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour	Pedestrain Crossings West	East	South	North
4:00 PM	0	12	280	0	0	0	32	166					0	50	0	1	541	2,177	0	0		0
4:15 PM	0	6	286	0	0	0	16	132					0	32	0	1	473	2,201	0	0		0
4:30 PM	0	7	293	0	0	0	28	194					0	27	0	4	553	2,204	0	0		0
4:45 PM	0	7	325	0	0	0	24	213					0	37	0	4	610	2,176	0	0		0
5:00 PM	0	1	320	0	0	0	47	158					0	35	0	4	565	2,088	0	0		0
5:15 PM	0	6	276	0	0	0	26	147					1	18	0	2	476		0	0		0
5:30 PM	0	3	274	0	0	0	23	181					1	36	0	7	525		0	0		0
5:45 PM	0	4	318	0	0	0	18	160					0	21	0	1	522		0	0		0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	Northbound U-Turn	Left	Thru	Right	Southbound U-Turn	Left	Thru	Right	Total
Articulated Trucks	0	1	17	0	0	0	11	13					1	8	0	1	52
Lights	0	17	1,183	0	0	0	108	687					0	106	0	13	2,114
Mediums	0	3	14	0	0	0	6	12					0	3	0	0	38
Total	0	21	1,214	0	0	0	125	712					1	117	0	14	2,204

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Wheat Ridge, CO 80033
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Date Start: 13-Sep-16
Date End: 13-Sep-16
Site Code: 3
OLD MONTEREY RD S/O US101 SB RAMP

Start	13-Sep-16	NB		Hour Totals		SB		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	1			0	0				
12:15		0	0			0	1				
12:30		0	0			0	0				
12:45		0	2	1	3	0	1	0	2	1	5
01:00		0	1			0	0				
01:15		0	0			0	1				
01:30		0	1			0	0				
01:45		0	0	0	2	0	1	0	2	0	4
02:00		0	0			0	0				
02:15		0	0			0	0				
02:30		0	1			0	0				
02:45		0	0	0	1	0	0	0	0	0	1
03:00		0	1			0	0				
03:15		0	0			0	0				
03:30		0	2			0	0				
03:45		0	0	0	3	0	0	0	0	0	3
04:00		0	0			0	0				
04:15		0	0			0	0				
04:30		0	0			0	0				
04:45		0	0	0	0	0	0	0	0	0	0
05:00		0	0			0	0				
05:15		0	0			0	0				
05:30		0	0			0	0				
05:45		0	0	0	0	0	0	0	0	0	0
06:00		0	0			0	1				
06:15		0	1			1	0				
06:30		0	1			0	1				
06:45		0	1	0	3	3	1	4	3	4	6
07:00		1	0			0	0				
07:15		0	0			0	0				
07:30		0	0			2	0				
07:45		0	0	1	0	0	0	2	0	3	0
08:00		0	0			0	1				
08:15		0	0			0	0				
08:30		0	0			0	0				
08:45		1	0	1	0	0	0	0	1	1	1
09:00		0	0			0	0				
09:15		0	0			0	0				
09:30		0	0			1	0				
09:45		2	0	2	0	2	0	3	0	5	0
10:00		1	0			1	0				
10:15		0	0			0	0				
10:30		2	0			0	0				
10:45		0	0	3	0	0	0	1	0	4	0
11:00		0	0			0	0				
11:15		0	0			0	0				
11:30		0	0			0	0				
11:45		2	0	2	0	5	0	5	0	7	0
Total		10	12			15	8			25	20
Percent		45.5%	54.5%			65.2%	34.8%			55.6%	44.4%
Grand Total		10	12			15	8			25	20
Percent		45.5%	54.5%			65.2%	34.8%			55.6%	44.4%

ADT   ADT 45   AADT 45

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Date Start: 13-Sep-16
Date End: 13-Sep-16
Site Code: 4
OLD MONTEREY RD S/O MAINTENANCE RD

Start	13-Sep-16	NB		Hour Totals		SB		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		1	0			1	0				
12:15		0	0			0	0				
12:30		0	0			0	0				
12:45		0	0	1	0	0	0	1	0	2	0
01:00		0	0			0	0				
01:15		0	0			0	0				
01:30		0	0			0	0				
01:45		0	0	0	0	0	1	0	1	0	1
02:00		0	0			0	0				
02:15		0	0			0	0				
02:30		0	1			0	0				
02:45		0	0	0	1	0	0	0	0	0	1
03:00		0	0			0	0				
03:15		0	0			0	0				
03:30		0	0			0	0				
03:45		0	0	0	0	0	0	0	0	0	0
04:00		0	0			0	0				
04:15		0	0			0	0				
04:30		0	0			0	0				
04:45		0	0	0	0	0	0	0	0	0	0
05:00		0	0			0	0				
05:15		0	0			0	0				
05:30		0	0			0	0				
05:45		0	0	0	0	0	0	0	0	0	0
06:00		0	0			0	1				
06:15		0	1			0	0				
06:30		0	1			0	1				
06:45		0	0	0	2	1	0	1	2	1	4
07:00		0	0			0	0				
07:15		0	0			0	0				
07:30		0	0			2	0				
07:45		0	0	0	0	0	0	2	0	2	0
08:00		0	0			0	1				
08:15		0	0			0	0				
08:30		0	0			0	0				
08:45		1	0	1	0	0	0	0	1	1	1
09:00		0	0			0	0				
09:15		0	0			0	0				
09:30		0	0			0	0				
09:45		0	0	0	0	0	0	0	0	0	0
10:00		1	0			1	0				
10:15		0	0			0	0				
10:30		0	0			0	0				
10:45		0	0	1	0	0	0	1	0	2	0
11:00		0	0			0	0				
11:15		0	0			0	0				
11:30		0	0			0	0				
11:45		0	0	0	0	0	0	0	0	0	0
Total		3	3			5	4			8	7
Percent		50.0%	50.0%			55.6%	44.4%			53.3%	46.7%
Grand Total		3	3			5	4			8	7
Percent		50.0%	50.0%			55.6%	44.4%			53.3%	46.7%

ADT　ADT 15　AADT 15

All Traffic Data Services

9660 W. 44th Ave
Wheat Ridge, CO 80033
www.AllTrafficData.net

Date Start: 13-Sep-16
Date End: 13-Sep-16
Site Code: 5
OLD MONTEREY RD S/O US101 NB RAMP

Start	13-Sep-16	NB		Hour Totals		SB		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	1			0	0				
12:15		0	0			0	0				
12:30		0	0			0	0				
12:45		0	1	0	2	0	0	0	0	0	2
01:00		0	0			0	0				
01:15		0	0			0	0				
01:30		0	0			0	0				
01:45		0	0	0	0	0	1	0	1	0	1
02:00		0	0			0	1				
02:15		0	0			0	0				
02:30		0	0			0	0				
02:45		0	2	0	2	0	0	0	1	0	3
03:00		0	0			0	0				
03:15		0	0			0	0				
03:30		0	3			0	2				
03:45		0	0	0	3	0	0	0	2	0	5
04:00		0	0			0	0				
04:15		0	0			0	0				
04:30		0	0			0	1				
04:45		0	1	0	1	0	1	0	2	0	3
05:00		0	1			0	0				
05:15		0	1			0	0				
05:30		0	1			0	0				
05:45		0	1	0	4	0	1	0	1	0	5
06:00		0	0			0	0				
06:15		0	0			0	1				
06:30		0	0			2	0				
06:45		0	0	0	0	0	0	2	1	2	1
07:00		0	0			1	0				
07:15		0	0			1	0				
07:30		0	0			0	0				
07:45		0	0	0	0	1	0	3	0	3	0
08:00		1	2			2	1				
08:15		1	0			0	0				
08:30		0	0			0	0				
08:45		0	1	2	3	0	0	2	1	4	4
09:00		2	0			0	0				
09:15		0	0			0	0				
09:30		0	0			0	0				
09:45		0	0	2	0	1	0	1	0	3	0
10:00		0	0			0	0				
10:15		0	0			0	0				
10:30		0	0			0	0				
10:45		0	0	0	0	0	0	0	0	0	0
11:00		0	0			1	0				
11:15		0	0			2	0				
11:30		0	1			1	0				
11:45		0	0	0	1	0	0	4	0	4	1
Total		4	16			12	9			16	25
Percent		20.0%	80.0%			57.1%	42.9%			39.0%	61.0%
Grand Total		4	16			12	9			16	25
Percent		20.0%	80.0%			57.1%	42.9%			39.0%	61.0%

ADT ADT 41 AADT 41

Appendix B
Volume Summary Tables

Intersection Number: 1
Traffix Node Number: 3484
Intersection Name: US 101 SB Ramps and SR 25
Peak Hour: AM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
Existing Conditions	0	1	541	0	0	119	0	0	0	0	0	0	661
Proposed Project Trips	0	0	0	0	0	4	0	0	0	0	0	0	4
Existing Plus Project Conditions	0	1	541	0	0	123	0	0	0	0	0	0	665
Approved Project Trips	0	0	120	0	0	33	0	0	0	0	0	0	153
Background Conditions	0	1	661	0	0	152	0	0	0	0	0	0	814
Background Plus Project Conditions	0	1	661	0	0	156	0	0	0	0	0	0	818
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	200	0	768	154	593	0	0	0	0	0	428	0	2143
Proposed Project Trips	16	0	0	0	4	0	0	0	0	0	2	0	22
Cumulative+Project Conditions	216	0	768	154	597	0	0	0	0	0	430	0	2165

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 2
Traffix Node Number: 3483
Intersection Name: US 101 NB Ramps and SR 25
Peak Hour: AM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
Existing Conditions	3	0	78	1263	101	0	0	0	0	0	481	52	1978
Proposed Project Trips	2	0	2	0	2	0	0	0	0	0	0	0	6
Existing Plus Project Conditions	5	0	80	1263	103	0	0	0	0	0	481	52	1984
Approved Project Trips	0	0	13	297	33	0	0	0	0	0	120	0	463
Background Conditions	3	0	91	1560	134	0	0	0	0	0	601	52	2441
Background Plus Project Conditions	5	0	93	1560	136	0	0	0	0	0	601	52	2447
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	0	0	0	2346	451	0	179	0	281	53	907	0	4217
Proposed Project Trips	0	0	0	0	2	0	2	0	2	0	0	0	6
Cumulative+Project Conditions	0	0	0	2346	453	0	181	0	283	53	907	0	4223

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 1
Traffix Node Number: 3484
Intersection Name: US 101 SB Ramps and SR 25
Peak Hour: PM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
Existing Conditions	0	0	1192	0	0	140	0	0	0	0	0	0	1332
Proposed Project Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Plus Project Conditions	0	0	1192	0	0	140	0	0	0	0	0	0	1332
Approved Project Trips	0	0	338	0	0	24	0	0	0	0	0	0	362
Background Conditions	0	0	1530	0	0	164	0	0	0	0	0	0	1694
Background Plus Project Conditions	0	0	1530	0	0	164	0	0	0	0	0	0	1694
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	73	0	2135	140	450	0	0	0	0	0	368	0	3166
Proposed Project Trips	0	0	0	0	0	0	0	0	0	0	5	0	5
Cumulative+Project Conditions	73	0	2135	140	450	0	0	0	0	0	373	0	3171

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 2
Traffix Node Number: 3483
Intersection Name: US 101 NB Ramps and SR 25
Peak Hour: PM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
Existing Conditions	14	0	118	712	125	0	0	0	0	0	1214	21	2204
Proposed Project Trips	0	0	3	0	0	0	0	0	0	0	0	0	3
Existing Plus Project Conditions	14	0	121	712	125	0	0	0	0	0	1214	21	2207
Approved Project Trips	0	0	38	217	24	0	0	0	0	0	338	0	617
Background Conditions	14	0	156	929	149	0	0	0	0	0	1552	21	2821
Background Plus Project Conditions	14	0	159	929	149	0	0	0	0	0	1552	21	2824
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	0	0	0	901	350	0	313	0	233	22	2268	0	4087
Proposed Project Trips	0	0	0	0	0	0	3	0	0	0	0	0	3
Cumulative+Project Conditions	0	0	0	901	350	0	316	0	233	22	2268	0	4090

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 1
Traffix Node Number: 3484
Intersection Name: US 101 SB Ramps and SR 25
Peak Hour: AM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
15-Minute Counts	0	0	155	0	0	41	0	0	0	0	0	0	196
Existing Conditions	0	0	620	0	0	164	0	0	0	0	0	0	784
Proposed Project Trips	0	0	0	0	0	8	0	0	0	0	0	0	8
Existing Plus Project Conditions	0	0	620	0	0	172	0	0	0	0	0	0	792
Approved Project Trips	0	0	120	0	0	33	0	0	0	0	0	0	153
Background Conditions	0	0	740	0	0	197	0	0	0	0	0	0	937
Background Plus Project Conditions	0	0	740	0	0	205	0	0	0	0	0	0	945
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	200	0	768	154	593	0	0	0	0	0	428	0	2143
Proposed Project Trips	32	0	0	0	8	0	0	0	0	0	4	0	44
Cumulative+Project Conditions	232	0	768	154	601	0	0	0	0	0	432	0	2187

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 2
Traffix Node Number: 3483
Intersection Name: US 101 NB Ramps and SR 25
Peak Hour: AM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
15-Minute Counts	0	0	18	337	40	0	0	0	0	0	139	8	542
Existing Conditions	0	0	72	1348	160	0	0	0	0	0	556	32	2168
Proposed Project Trips	4	0	4	0	4	0	0	0	0	0	0	0	12
Existing Plus Project Conditions	4	0	76	1348	164	0	0	0	0	0	556	32	2180
Approved Project Trips	0	0	13	297	33	0	0	0	0	0	120	0	463
Background Conditions	0	0	85	1645	193	0	0	0	0	0	676	32	2631
Background Plus Project Conditions	4	0	89	1645	197	0	0	0	0	0	676	32	2643
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	0	0	0	2346	451	0	179	0	281	53	907	0	4217
Proposed Project Trips	0	0	0	0	4	0	4	0	4	0	0	0	12
Cumulative+Project Conditions	0	0	0	2346	455	0	183	0	285	53	907	0	4229

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 1
Traffix Node Number: 3484
Intersection Name: US 101 SB Ramps and SR 25
Peak Hour: PM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
15-Minute Counts	0	0	306	0	0	47	0	0	0	0	0	0	353
Existing Conditions	0	0	1224	0	0	188	0	0	0	0	0	0	1412
Proposed Project Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Plus Project Conditions	0	0	1224	0	0	188	0	0	0	0	0	0	1412
Approved Project Trips	0	0	338	0	0	24	0	0	0	0	0	0	362
Background Conditions	0	0	1562	0	0	212	0	0	0	0	0	0	1774
Background Plus Project Conditions	0	0	1562	0	0	212	0	0	0	0	0	0	1774
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	73	0	2135	140	450	0	0	0	0	0	368	0	3166
Proposed Project Trips	0	0	0	0	0	0	0	0	0	0	5	0	5
Cumulative+Project Conditions	73	0	2135	140	450	0	0	0	0	0	373	0	3171

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Intersection Number: 2
Traffix Node Number: 3483
Intersection Name: US 101 NB Ramps and SR 25
Peak Hour: PM
Count Date: 09/13/16

Scenario:	North Approach RT	North Approach TH	North Approach LT	East Approach RT	East Approach TH	East Approach LT	South Approach RT	South Approach TH	South Approach LT	West Approach RT	West Approach TH	West Approach LT	Total
Without US 101 Widening Project (Monterey Road to SR 129)													
15-Minute Counts	4	0	37	213	24	0	0	0	0	0	325	7	610
Existing Conditions	16	0	148	852	96	0	0	0	0	0	1300	28	2440
Proposed Project Trips	0	0	3	0	0	0	0	0	0	0	0	0	3
Existing Plus Project Conditions	16	0	151	852	96	0	0	0	0	0	1300	28	2443
Approved Project Trips	0	0	38	217	24	0	0	0	0	0	338	0	617
Background Conditions	16	0	186	1069	120	0	0	0	0	0	1638	28	3057
Background Plus Project Conditions	16	0	189	1069	120	0	0	0	0	0	1638	28	3060
With US 101 Widening Project (Monterey Road to SR 129)													
Cumulative Conditions *	0	0	0	901	350	0	313	0	233	22	2268	0	4087
Proposed Project Trips	0	0	0	0	0	0	3	0	0	0	0	0	3
Cumulative+Project Conditions	0	0	0	901	350	0	316	0	233	22	2268	0	4090

* Cumulative volumes were obtained from the Gilroy Travel Demand Forecasting Model, which was utilized for the analysis of the City of Gilroy 2040 General Plan and includes the US 101 widening project.

Appendix C
Intersection Level of Service Calculations

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	556	160	1348	72	0
Future Vol, veh/h	32	556	160	1348	72	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	10	5	5	26	26
Mvmt Flow	32	556	160	1348	72	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	160	0	-	0	780	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	4.2	-	-	-	6.66	6.46
Critical Hdwy Stg 1	-	-	-	-	5.66	-
Critical Hdwy Stg 2	-	-	-	-	5.66	-
Follow-up Hdwy	2.29	-	-	-	3.734	3.534
Pot Cap-1 Maneuver	1372	-	-	-	332	826
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1372	-	-	-	324	826
Mov Cap-2 Maneuver	-	-	-	-	324	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	482	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1372	-	-	-	324
HCM Lane V/C Ratio	0.023	-	-	-	0.222
HCM Control Delay (s)	7.7	-	-	-	19.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Intersection	
Int Delay, s/veh	23.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	164	0	0	0	620	0
Future Vol, veh/h	164	0	0	0	620	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	27	0	0	9	9
Mvmt Flow	164	0	0	0	620	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	1240	-	0	0
Stage 1	0	-	-	-
Stage 2	1240	-	-	-
Critical Hdwy	6.67	-	4.19	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.67	-	-	-
Follow-up Hdwy	3.743	-	2.281	-
Pot Cap-1 Maneuver	172	0	-	-
Stage 1	-	0	-	-
Stage 2	243	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	172	-	-	-
Mov Cap-2 Maneuver	172	-	-	-
Stage 1	-	-	-	-
Stage 2	243	-	-	-

Approach	WB	SB
HCM Control Delay, s	110.8	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	172	-	-
HCM Lane V/C Ratio	0.953	-	-
HCM Control Delay (s)	110.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	7.4	-	-

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	1300	96	852	148	16
Future Vol, veh/h	28	1300	96	852	148	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	5	5	10	10
Mvmt Flow	28	1300	96	852	148	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	1452	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	1356	-
Critical Hdwy	4.13	-	-	-	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.227	-	-	-	3.59	3.39
Pot Cap-1 Maneuver	1491	-	-	-	~ 138	939
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	230	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1491	-	-	-	~ 135	939
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	226	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	169.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1491	-	-	-	147
HCM Lane V/C Ratio	0.019	-	-	-	1.116
HCM Control Delay (s)	7.5	-	-	-	169.4
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	324.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	188	0	0	0	1224	0
Future Vol, veh/h	188	0	0	0	1224	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	13	0	0	3	3
Mvmt Flow	188	0	0	0	1224	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	2448	-	0	0
Stage 1	0	-	-	-
Stage 2	2448	-	-	-
Critical Hdwy	6.53	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-
Follow-up Hdwy	3.617	-	2.227	-
Pot Cap-1 Maneuver	~ 32	0	-	-
Stage 1	-	0	-	-
Stage 2	~ 62	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	~ 32	-	-	-
Mov Cap-2 Maneuver	~ 32	-	-	-
Stage 1	-	-	-	-
Stage 2	~ 62	-	-	-

Approach	WB	SB
HCM Control Delay, s	$ 2439.3	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	32	-	-
HCM Lane V/C Ratio	5.875	-	-
HCM Control Delay (s)	$ 2439.3	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	22.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	556	164	1348	76	4
Future Vol, veh/h	32	556	164	1348	76	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	10	5	5	26	26
Mvmt Flow	32	556	164	1348	76	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	164	0	-	0	784	164
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	4.2	-	-	-	6.66	6.46
Critical Hdwy Stg 1	-	-	-	-	5.66	-
Critical Hdwy Stg 2	-	-	-	-	5.66	-
Follow-up Hdwy	2.29	-	-	-	3.734	3.534
Pot Cap-1 Maneuver	1367	-	-	-	330	822
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	493	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1367	-	-	-	322	822
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	481	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1367	-	-	-	332
HCM Lane V/C Ratio	0.023	-	-	-	0.241
HCM Control Delay (s)	7.7	-	-	-	19.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	26.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	172	0	0	0	620	0
Future Vol, veh/h	172	0	0	0	620	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	27	0	0	9	9
Mvmt Flow	172	0	0	0	620	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	1240	-	0	0
Stage 1	0	-	-	-
Stage 2	1240	-	-	-
Critical Hdwy	6.67	-	4.19	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.67	-	-	-
Follow-up Hdwy	3.743	-	2.281	-
Pot Cap-1 Maneuver	172	0	-	-
Stage 1	-	0	-	-
Stage 2	243	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	172	-	-	-
Mov Cap-2 Maneuver	172	-	-	-
Stage 1	-	-	-	-
Stage 2	243	-	-	-

Approach	WB	SB
HCM Control Delay, s	123	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	172	-	-
HCM Lane V/C Ratio	1	-	-
HCM Control Delay (s)	123	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	8	-	-

Intersection	
Int Delay, s/veh	12.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	1300	96	852	151	16
Future Vol, veh/h	28	1300	96	852	151	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	5	5	10	10
Mvmt Flow	28	1300	96	852	151	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	1452	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	1356	-
Critical Hdwy	4.13	-	-	-	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.227	-	-	-	3.59	3.39
Pot Cap-1 Maneuver	1491	-	-	-	~ 138	939
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	230	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1491	-	-	-	~ 135	939
Mov Cap-2 Maneuver	-	-	-	-	~ 135	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	226	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	176.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1491	-	-	-	147
HCM Lane V/C Ratio	0.019	-	-	-	1.136
HCM Control Delay (s)	7.5	-	-	-	176.1
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	9.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	324.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	188	0	0	0	1224	0
Future Vol, veh/h	188	0	0	0	1224	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	13	0	0	3	3
Mvmt Flow	188	0	0	0	1224	0

Major/Minor	Minor1				Major2	
Conflicting Flow All	2448	-			0	0
Stage 1	0	-			-	-
Stage 2	2448	-			-	-
Critical Hdwy	6.53	-			4.13	-
Critical Hdwy Stg 1	-	-			-	-
Critical Hdwy Stg 2	5.53	-			-	-
Follow-up Hdwy	3.617	-			2.227	-
Pot Cap-1 Maneuver	~ 32	0			-	-
Stage 1	-	0			-	-
Stage 2	~ 62	0			-	-
Platoon blocked, %						-
Mov Cap-1 Maneuver	~ 32	-			-	-
Mov Cap-2 Maneuver	~ 32	-			-	-
Stage 1	-	-			-	-
Stage 2	~ 62	-			-	-

Approach	WB	SB
HCM Control Delay, s	$ 2439.3	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	32	-	-
HCM Lane V/C Ratio	5.875	-	-
HCM Control Delay (s)	$ 2439.3	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	22.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	676	193	1645	85	0
Future Vol, veh/h	32	676	193	1645	85	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	10	5	5	26	26
Mvmt Flow	32	676	193	1645	85	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	933	193
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	4.2	-	-	-	6.66	6.46
Critical Hdwy Stg 1	-	-	-	-	5.66	-
Critical Hdwy Stg 2	-	-	-	-	5.66	-
Follow-up Hdwy	2.29	-	-	-	3.734	3.534
Pot Cap-1 Maneuver	1334	-	-	-	268	791
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1334	-	-	-	262	791
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	25.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1334	-	-	-	262
HCM Lane V/C Ratio	0.024	-	-	-	0.324
HCM Control Delay (s)	7.8	-	-	-	25.2
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.4

Intersection	
Int Delay, s/veh	80

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	197	0	0	0	740	0
Future Vol, veh/h	197	0	0	0	740	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	27	0	0	9	9
Mvmt Flow	197	0	0	0	740	0

Major/Minor	Minor1				Major2	
Conflicting Flow All	1480	-			0	0
Stage 1	0	-			-	-
Stage 2	1480	-			-	-
Critical Hdwy	6.67	-			4.19	-
Critical Hdwy Stg 1	-	-			-	-
Critical Hdwy Stg 2	5.67	-			-	-
Follow-up Hdwy	3.743	-			2.281	-
Pot Cap-1 Maneuver	~ 121	0			-	-
Stage 1	-	0			-	-
Stage 2	~ 183	0			-	-
Platoon blocked, %						-
Mov Cap-1 Maneuver	~ 121	-			-	-
Mov Cap-2 Maneuver	~ 121	-			-	-
Stage 1	-	-			-	-
Stage 2	~ 183	-			-	-

Approach	WB	SB
HCM Control Delay, s	$ 380.5	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	121	-	-
HCM Lane V/C Ratio	1.628	-	-
HCM Control Delay (s)	$ 380.5	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	14.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	47.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	1638	120	1069	186	16
Future Vol, veh/h	28	1638	120	1069	186	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	5	5	10	10
Mvmt Flow	28	1638	120	1069	186	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	120	0	-	0	1814	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	1694	-
Critical Hdwy	4.13	-	-	-	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.227	-	-	-	3.59	3.39
Pot Cap-1 Maneuver	1462	-	-	-	~ 82	910
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	~ 156	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1462	-	-	-	~ 80	910
Mov Cap-2 Maneuver	-	-	-	-	~ 80	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	~ 153	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	$ 719.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1462	-	-	-	86
HCM Lane V/C Ratio	0.019	-	-	-	2.349
HCM Control Delay (s)	7.5	-	-	-	$ 719.6
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	18.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1062

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	212	0	0	0	1562	0
Future Vol, veh/h	212	0	0	0	1562	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	13	0	0	3	3
Mvmt Flow	212	0	0	0	1562	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	3124	-	0	0
Stage 1	0	-	-	-
Stage 2	3124	-	-	-
Critical Hdwy	6.53	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-
Follow-up Hdwy	3.617	-	2.227	-
Pot Cap-1 Maneuver	~ 11	0	-	-
Stage 1	-	0	-	-
Stage 2	~ 27	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	~ 11	-	-	-
Mov Cap-2 Maneuver	~ 11	-	-	-
Stage 1	-	-	-	-
Stage 2	~ 27	-	-	-

Approach	WB	SB
HCM Control Delay, s	$ 8886.8	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	11	-	-
HCM Lane V/C Ratio	19.273	-	-
HCM Control Delay (s)	$ 8886.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	28	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	676	197	1645	89	4
Future Vol, veh/h	32	676	197	1645	89	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	10	10	5	5	26	26
Mvmt Flow	32	676	197	1645	89	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	197	0	-	0	937	197
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	740	-
Critical Hdwy	4.2	-	-	-	6.66	6.46
Critical Hdwy Stg 1	-	-	-	-	5.66	-
Critical Hdwy Stg 2	-	-	-	-	5.66	-
Follow-up Hdwy	2.29	-	-	-	3.734	3.534
Pot Cap-1 Maneuver	1329	-	-	-	266	787
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	431	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1329	-	-	-	260	787
Mov Cap-2 Maneuver	-	-	-	-	260	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	421	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	25.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1329	-	-	-	268
HCM Lane V/C Ratio	0.024	-	-	-	0.347
HCM Control Delay (s)	7.8	-	-	-	25.4
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.5

Intersection	
Int Delay, s/veh	88.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	205	0	0	0	740	0
Future Vol, veh/h	205	0	0	0	740	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	27	27	0	0	9	9
Mvmt Flow	205	0	0	0	740	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	1480	-	0	0
Stage 1	0	-	-	-
Stage 2	1480	-	-	-
Critical Hdwy	6.67	-	4.19	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.67	-	-	-
Follow-up Hdwy	3.743	-	2.281	-
Pot Cap-1 Maneuver	~ 121	0	-	-
Stage 1	-	0	-	-
Stage 2	~ 183	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	~ 121	-	-	-
Mov Cap-2 Maneuver	~ 121	-	-	-
Stage 1	-	-	-	-
Stage 2	~ 183	-	-	-

Approach	WB	SB
HCM Control Delay, s	$ 407.9	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	121	-	-
HCM Lane V/C Ratio	1.694	-	-
HCM Control Delay (s)	$ 407.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	15.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	49.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	1638	120	1069	189	16
Future Vol, veh/h	28	1638	120	1069	189	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	3	3	5	5	10	10
Mvmt Flow	28	1638	120	1069	189	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	120	0	-	0	1814	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	1694	-
Critical Hdwy	4.13	-	-	-	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	5.5	-
Critical Hdwy Stg 2	-	-	-	-	5.5	-
Follow-up Hdwy	2.227	-	-	-	3.59	3.39
Pot Cap-1 Maneuver	1462	-	-	-	~ 82	910
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	~ 156	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1462	-	-	-	~ 80	910
Mov Cap-2 Maneuver	-	-	-	-	~ 80	-
Stage 1	-	-	-	-	886	-
Stage 2	-	-	-	-	~ 153	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	$ 734.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1462	-	-	-	86
HCM Lane V/C Ratio	0.019	-	-	-	2.384
HCM Control Delay (s)	7.5	-	-	-	$ 734.8
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	18.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1062

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	212	0	0	0	1562	0
Future Vol, veh/h	212	0	0	0	1562	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	13	0	0	3	3
Mvmt Flow	212	0	0	0	1562	0

Major/Minor	Minor1		Major2	
Conflicting Flow All	3124	-	0	0
Stage 1	0	-	-	-
Stage 2	3124	-	-	-
Critical Hdwy	6.53	-	4.13	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-
Follow-up Hdwy	3.617	-	2.227	-
Pot Cap-1 Maneuver	~ 11	0	-	-
Stage 1	-	0	-	-
Stage 2	~ 27	0	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	~ 11	-	-	-
Mov Cap-2 Maneuver	~ 11	-	-	-
Stage 1	-	-	-	-
Stage 2	~ 27	-	-	-

Approach	WB	SB
HCM Control Delay, s	$ 8886.8	
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBL	SBT
Capacity (veh/h)	11	-	-
HCM Lane V/C Ratio	19.273	-	-
HCM Control Delay (s)	$ 8886.8	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	28	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑	↰	↱
Traffic Volume (veh/h)	907	0	0	451	281	179
Future Volume (veh/h)	907	0	0	451	281	179
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	0	0	1810	1508	1508
Adj Flow Rate, veh/h	907	0	0	451	281	179
Adj No. of Lanes	2	0	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	0	0	5	26	26
Cap, veh/h	1295	0	0	714	726	648
Arrive On Green	0.13	0.00	0.00	0.39	0.51	0.51
Sat Flow, veh/h	3455	0	0	1810	1436	1282
Grp Volume(v), veh/h	907	0	0	451	281	179
Grp Sat Flow(s),veh/h/ln	1641	0	0	1810	1436	1282
Q Serve(g_s), s	21.2	0.0	0.0	16.1	9.6	6.4
Cycle Q Clear(g_c), s	21.2	0.0	0.0	16.1	9.6	6.4
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	1295	0	0	714	726	648
V/C Ratio(X)	0.70	0.00	0.00	0.63	0.39	0.28
Avail Cap(c_a), veh/h	1600	0	0	882	726	648
HCM Platoon Ratio	0.33	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.3	0.0	0.0	19.5	12.2	11.4
Incr Delay (d2), s/veh	0.9	0.0	0.0	1.0	1.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	0.0	8.2	4.1	2.4
LnGrp Delay(d),s/veh	31.1	0.0	0.0	20.5	13.7	12.4
LnGrp LOS	C			C	B	B
Approach Vol, veh/h	907			451	460	
Approach Delay, s/veh	31.1			20.5	13.2	
Approach LOS	C			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		44.4		35.6				35.6
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		33.0		39.0				39.0
Max Q Clear Time (g_c+I1), s		11.6		23.2				18.1
Green Ext Time (p_c), s		1.5		8.4				9.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.0
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	428	593	0	768	200
Future Volume (veh/h)	0	428	593	0	768	200
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1727	1496	0	1743	1743
Adj Flow Rate, veh/h	0	428	593	0	768	200
Adj No. of Lanes	0	1	2	0	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	10	27	0	9	9
Cap, veh/h	0	570	939	0	1835	844
Arrive On Green	0.00	0.33	0.11	0.00	0.57	0.57
Sat Flow, veh/h	0	1727	2992	0	3221	1482
Grp Volume(v), veh/h	0	428	593	0	768	200
Grp Sat Flow(s),veh/h/ln	0	1727	1421	0	1610	1482
Q Serve(g_s), s	0.0	17.7	16.0	0.0	10.8	5.4
Cycle Q Clear(g_c), s	0.0	17.7	16.0	0.0	10.8	5.4
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	570	939	0	1835	844
V/C Ratio(X)	0.00	0.75	0.63	0.00	0.42	0.24
Avail Cap(c_a), veh/h	0	820	1350	0	1835	844
HCM Platoon Ratio	1.00	1.00	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.82	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	23.9	31.0	0.0	9.7	8.6
Incr Delay (d2), s/veh	0.0	2.3	0.6	0.0	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.7	6.4	0.0	4.9	2.3
LnGrp Delay(d),s/veh	0.0	26.2	31.6	0.0	10.4	9.2
LnGrp LOS		C	C		B	A
Approach Vol, veh/h		428	593		968	
Approach Delay, s/veh		26.2	31.6		10.2	
Approach LOS		C	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.4		49.6		30.4
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				38.0		34.0		38.0
Max Q Clear Time (g_c+I1), s				19.7		12.8		18.0
Green Ext Time (p_c), s				6.8		3.8		7.0

Intersection Summary			
HCM 2010 Ctrl Delay			20.0
HCM 2010 LOS			B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2268	0	0	350	233	313
Future Volume (veh/h)	2268	0	0	350	233	313
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	0	0	1810	1727	1727
Adj Flow Rate, veh/h	2268	0	0	350	233	313
Adj No. of Lanes	2	0	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	0	0	5	10	10
Cap, veh/h	2359	0	0	1218	373	333
Arrive On Green	0.67	0.00	0.00	0.67	0.23	0.23
Sat Flow, veh/h	3689	0	0	1810	1645	1468
Grp Volume(v), veh/h	2268	0	0	350	233	313
Grp Sat Flow(s),veh/h/ln	1752	0	0	1810	1645	1468
Q Serve(g_s), s	48.0	0.0	0.0	6.3	10.2	16.8
Cycle Q Clear(g_c), s	48.0	0.0	0.0	6.3	10.2	16.8
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2359	0	0	1218	373	333
V/C Ratio(X)	0.96	0.00	0.00	0.29	0.62	0.94
Avail Cap(c_a), veh/h	2366	0	0	1221	373	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.27	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	5.3	27.9	30.4
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.1	7.7	36.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.0	0.0	0.0	3.2	5.4	10.1
LnGrp Delay(d),s/veh	16.0	0.0	0.0	5.4	35.5	66.5
LnGrp LOS	B			A	D	E
Approach Vol, veh/h	2268			350	546	
Approach Delay, s/veh	16.0			5.4	53.3	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.2		57.8				57.8
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		18.0		54.0				54.0
Max Q Clear Time (g_c+I1), s		18.8		50.0				8.3
Green Ext Time (p_c), s		0.0		3.9				36.5

Intersection Summary			
HCM 2010 Ctrl Delay			21.3
HCM 2010 LOS			C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	368	450	0	2135	73
Future Volume (veh/h)	0	368	450	0	2135	73
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1681	0	1845	1845
Adj Flow Rate, veh/h	0	368	450	0	2135	73
Adj No. of Lanes	0	1	2	0	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	3	13	0	3	3
Cap, veh/h	0	410	710	0	2310	1063
Arrive On Green	0.00	0.22	0.44	0.00	0.68	0.68
Sat Flow, veh/h	0	1845	3363	0	3408	1568
Grp Volume(v), veh/h	0	368	450	0	2135	73
Grp Sat Flow(s),veh/h/ln	0	1845	1597	0	1704	1568
Q Serve(g_s), s	0.0	15.5	8.7	0.0	43.2	1.3
Cycle Q Clear(g_c), s	0.0	15.5	8.7	0.0	43.2	1.3
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	410	710	0	2310	1063
V/C Ratio(X)	0.00	0.90	0.63	0.00	0.92	0.07
Avail Cap(c_a), veh/h	0	415	719	0	2310	1063
HCM Platoon Ratio	1.00	1.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.91	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.2	19.7	0.0	11.1	4.4
Incr Delay (d2), s/veh	0.0	21.6	1.6	0.0	7.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.3	3.9	0.0	22.4	0.6
LnGrp Delay(d),s/veh	0.0	51.8	21.3	0.0	18.9	4.5
LnGrp LOS		D	C		B	A
Approach Vol, veh/h		368	450		2208	
Approach Delay, s/veh		51.8	21.3		18.4	
Approach LOS		D	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				21.8		58.2		21.8
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				18.0		54.0		18.0
Max Q Clear Time (g_c+I1), s				17.5		45.2		10.7
Green Ext Time (p_c), s				0.3		6.4		3.0

Intersection Summary		
HCM 2010 Ctrl Delay		22.9
HCM 2010 LOS		C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑	↰	↱
Traffic Volume (veh/h)	907	0	0	455	285	183
Future Volume (veh/h)	907	0	0	455	285	183
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1727	0	0	1810	1508	1508
Adj Flow Rate, veh/h	907	0	0	455	285	183
Adj No. of Lanes	2	0	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	10	0	0	5	26	26
Cap, veh/h	1296	0	0	715	725	647
Arrive On Green	0.13	0.00	0.00	0.39	0.51	0.51
Sat Flow, veh/h	3455	0	0	1810	1436	1282
Grp Volume(v), veh/h	907	0	0	455	285	183
Grp Sat Flow(s),veh/h/ln	1641	0	0	1810	1436	1282
Q Serve(g_s), s	21.2	0.0	0.0	16.3	9.8	6.6
Cycle Q Clear(g_c), s	21.2	0.0	0.0	16.3	9.8	6.6
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	1296	0	0	715	725	647
V/C Ratio(X)	0.70	0.00	0.00	0.64	0.39	0.28
Avail Cap(c_a), veh/h	1600	0	0	882	725	647
HCM Platoon Ratio	0.33	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	0.0	0.0	19.6	12.2	11.4
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	1.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	0.0	8.3	4.2	2.5
LnGrp Delay(d),s/veh	31.1	0.0	0.0	20.6	13.8	12.5
LnGrp LOS	C			C	B	B
Approach Vol, veh/h	907			455	468	
Approach Delay, s/veh	31.1			20.6	13.3	
Approach LOS	C			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		44.4		35.6				35.6
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		33.0		39.0				39.0
Max Q Clear Time (g_c+I1), s		11.8		23.2				18.3
Green Ext Time (p_c), s		1.5		8.4				9.9

Intersection Summary		
HCM 2010 Ctrl Delay		23.9
HCM 2010 LOS		C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	432	601	0	768	232
Future Volume (veh/h)	0	432	601	0	768	232
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1727	1496	0	1743	1743
Adj Flow Rate, veh/h	0	432	601	0	768	232
Adj No. of Lanes	0	1	2	0	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	10	27	0	9	9
Cap, veh/h	0	575	946	0	1826	840
Arrive On Green	0.00	0.33	0.11	0.00	0.57	0.57
Sat Flow, veh/h	0	1727	2992	0	3221	1482
Grp Volume(v), veh/h	0	432	601	0	768	232
Grp Sat Flow(s),veh/h/ln	0	1727	1421	0	1610	1482
Q Serve(g_s), s	0.0	17.8	16.2	0.0	10.8	6.4
Cycle Q Clear(g_c), s	0.0	17.8	16.2	0.0	10.8	6.4
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	575	946	0	1826	840
V/C Ratio(X)	0.00	0.75	0.64	0.00	0.42	0.28
Avail Cap(c_a), veh/h	0	820	1350	0	1826	840
HCM Platoon Ratio	1.00	1.00	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.82	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	23.7	31.0	0.0	9.8	8.9
Incr Delay (d2), s/veh	0.0	2.4	0.6	0.0	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.8	6.5	0.0	5.0	2.8
LnGrp Delay(d),s/veh	0.0	26.1	31.5	0.0	10.6	9.7
LnGrp LOS		C	C		B	A
Approach Vol, veh/h		432	601		1000	
Approach Delay, s/veh		26.1	31.5		10.4	
Approach LOS		C	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.6		49.4		30.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				38.0		34.0		38.0
Max Q Clear Time (g_c+I1), s				19.8		12.8		18.2
Green Ext Time (p_c), s				6.8		3.9		7.1

Intersection Summary		
HCM 2010 Ctrl Delay		20.0
HCM 2010 LOS		B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑	↰	↱
Traffic Volume (veh/h)	2268	0	0	350	233	316
Future Volume (veh/h)	2268	0	0	350	233	316
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	0	0	1810	1727	1727
Adj Flow Rate, veh/h	2268	0	0	350	233	316
Adj No. of Lanes	2	0	0	1	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	0	0	5	10	10
Cap, veh/h	2359	0	0	1218	373	333
Arrive On Green	0.67	0.00	0.00	0.67	0.23	0.23
Sat Flow, veh/h	3689	0	0	1810	1645	1468
Grp Volume(v), veh/h	2268	0	0	350	233	316
Grp Sat Flow(s),veh/h/ln	1752	0	0	1810	1645	1468
Q Serve(g_s), s	48.0	0.0	0.0	6.3	10.2	17.0
Cycle Q Clear(g_c), s	48.0	0.0	0.0	6.3	10.2	17.0
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2359	0	0	1218	373	333
V/C Ratio(X)	0.96	0.00	0.00	0.29	0.62	0.95
Avail Cap(c_a), veh/h	2366	0	0	1221	373	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	5.3	27.9	30.5
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.1	7.7	37.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.9	0.0	0.0	3.2	5.4	10.3
LnGrp Delay(d),s/veh	16.0	0.0	0.0	5.4	35.5	68.3
LnGrp LOS	B			A	D	E
Approach Vol, veh/h	2268			350	549	
Approach Delay, s/veh	16.0			5.4	54.4	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		22.2		57.8				57.8
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		18.0		54.0				54.0
Max Q Clear Time (g_c+I1), s		19.0		50.0				8.3
Green Ext Time (p_c), s		0.0		3.9				36.5

Intersection Summary		
HCM 2010 Ctrl Delay		21.5
HCM 2010 LOS		C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	373	450	0	2135	73
Future Volume (veh/h)	0	373	450	0	2135	73
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1681	0	1845	1845
Adj Flow Rate, veh/h	0	373	450	0	2135	73
Adj No. of Lanes	0	1	2	0	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	0	3	13	0	3	3
Cap, veh/h	0	412	714	0	2305	1061
Arrive On Green	0.00	0.22	0.45	0.00	0.68	0.68
Sat Flow, veh/h	0	1845	3363	0	3408	1568
Grp Volume(v), veh/h	0	373	450	0	2135	73
Grp Sat Flow(s),veh/h/ln	0	1845	1597	0	1704	1568
Q Serve(g_s), s	0.0	15.7	8.7	0.0	43.4	1.3
Cycle Q Clear(g_c), s	0.0	15.7	8.7	0.0	43.4	1.3
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	412	714	0	2305	1061
V/C Ratio(X)	0.00	0.90	0.63	0.00	0.93	0.07
Avail Cap(c_a), veh/h	0	415	719	0	2305	1061
HCM Platoon Ratio	1.00	1.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.91	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.2	19.6	0.0	11.2	4.4
Incr Delay (d2), s/veh	0.0	22.7	1.6	0.0	7.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.6	3.9	0.0	22.4	0.6
LnGrp Delay(d),s/veh	0.0	52.9	21.2	0.0	19.1	4.5
LnGrp LOS		D	C		B	A
Approach Vol, veh/h		373	450		2208	
Approach Delay, s/veh		52.9	21.2		18.6	
Approach LOS		D	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				21.9		58.1		21.9
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				18.0		54.0		18.0
Max Q Clear Time (g_c+I1), s				17.7		45.4		10.7
Green Ext Time (p_c), s				0.1		6.3		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	907	451	281	179
v/c Ratio	0.72	0.65	0.38	0.25
Control Delay	27.5	24.3	15.0	7.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.5	24.3	15.0	7.6
Queue Length 50th (ft)	233	179	80	21
Queue Length 95th (ft)	275	238	162	67
Internal Link Dist (ft)	1306	6504	288	
Turn Bay Length (ft)				
Base Capacity (vph)	1599	882	740	706
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.51	0.38	0.25

Intersection Summary

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	428	593	768	200
v/c Ratio	0.76	0.64	0.42	0.21
Control Delay	32.7	34.7	11.6	2.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.7	34.7	11.6	2.5
Queue Length 50th (ft)	189	160	101	0
Queue Length 95th (ft)	245	191	181	33
Internal Link Dist (ft)	403	1306	566	
Turn Bay Length (ft)				
Base Capacity (vph)	820	1350	1845	936
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.44	0.42	0.21

Intersection Summary

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	2268	350	233	313
v/c Ratio	0.96	0.29	0.63	0.93
Control Delay	13.3	6.0	36.8	65.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.3	6.0	36.8	65.4
Queue Length 50th (ft)	238	60	106	149
Queue Length 95th (ft)	m#704	96	180	#302
Internal Link Dist (ft)	1306	6504	288	
Turn Bay Length (ft)				
Base Capacity (vph)	2365	1221	369	338
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.96	0.29	0.63	0.93

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	368	450	2135	73
v/c Ratio	0.91	0.64	0.92	0.07
Control Delay	58.8	24.9	19.9	1.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	58.8	24.9	19.9	1.4
Queue Length 50th (ft)	179	93	410	0
Queue Length 95th (ft)	#332	130	#671	11
Internal Link Dist (ft)	403	1306	566	
Turn Bay Length (ft)				
Base Capacity (vph)	415	718	2312	1089
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.63	0.92	0.07

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	907	455	285	183
v/c Ratio	0.72	0.66	0.39	0.26
Control Delay	27.4	24.5	15.1	7.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.4	24.5	15.1	7.7
Queue Length 50th (ft)	233	182	81	23
Queue Length 95th (ft)	275	240	165	69
Internal Link Dist (ft)	1306	6504	288	
Turn Bay Length (ft)				
Base Capacity (vph)	1599	882	740	706
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.57	0.52	0.39	0.26

Intersection Summary

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	432	601	768	232
v/c Ratio	0.76	0.64	0.42	0.25
Control Delay	32.6	34.6	11.8	3.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	32.6	34.6	11.8	3.2
Queue Length 50th (ft)	191	161	102	5
Queue Length 95th (ft)	247	192	182	43
Internal Link Dist (ft)	403	1306	566	
Turn Bay Length (ft)				
Base Capacity (vph)	820	1350	1837	936
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.45	0.42	0.25

Intersection Summary

Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	2268	350	233	316
v/c Ratio	0.96	0.29	0.63	0.93
Control Delay	13.3	6.0	36.8	67.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.3	6.0	36.8	67.1
Queue Length 50th (ft)	246	60	106	151
Queue Length 95th (ft)	m#702	96	180	#307
Internal Link Dist (ft)	1306	6504	288	
Turn Bay Length (ft)				
Base Capacity (vph)	2365	1221	369	338
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.96	0.29	0.63	0.93

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	373	450	2135	73
v/c Ratio	0.91	0.64	0.93	0.07
Control Delay	59.9	24.8	20.1	1.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	59.9	24.8	20.1	1.4
Queue Length 50th (ft)	182	93	410	0
Queue Length 95th (ft)	#337	130	#671	11
Internal Link Dist (ft)	403	1306	566	
Turn Bay Length (ft)				
Base Capacity (vph)	415	718	2308	1088
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.90	0.63	0.93	0.07

Intersection Summary

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

SimTraffic Simulation Summary
Cumulative AM

02/02/2017

Summary of All Intervals

Start Time	6:57
End Time	8:07
Total Time (min)	70
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intervals	1
Vehs Entered	221
Vehs Exited	228
Starting Vehs	9
Ending Vehs	2
Travel Distance (mi)	116
Travel Time (hr)	4.4
Total Delay (hr)	0.5
Total Stops	132
Fuel Used (gal)	3.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:07
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:07
End Time	8:07
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	221
Vehs Exited	228
Starting Vehs	9
Ending Vehs	2
Travel Distance (mi)	116
Travel Time (hr)	4.4
Total Delay (hr)	0.5
Total Stops	132
Fuel Used (gal)	3.8

Intersection: 3: US 101 SB On-Ramp from SR 25

Movement	NB
Directions Served	T
Maximum Queue (ft)	100
Average Queue (ft)	49
95th Queue (ft)	86
Link Distance (ft)	2509
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Start Time	6:57
End Time	8:07
Total Time (min)	70
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intervals	1
Vehs Entered	254
Vehs Exited	262
Starting Vehs	10
Ending Vehs	2
Travel Distance (mi)	133
Travel Time (hr)	5.1
Total Delay (hr)	0.6
Total Stops	166
Fuel Used (gal)	4.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:07
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:07
End Time	8:07
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	254
Vehs Exited	262
Starting Vehs	10
Ending Vehs	2
Travel Distance (mi)	133
Travel Time (hr)	5.1
Total Delay (hr)	0.6
Total Stops	166
Fuel Used (gal)	4.3

Intersection: 3: US 101 SB On-Ramp from SR 25

Movement	NB
Directions Served	T
Maximum Queue (ft)	121
Average Queue (ft)	52
95th Queue (ft)	90
Link Distance (ft)	2509
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Start Time	6:57
End Time	8:07
Total Time (min)	70
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intervals	1
Vehs Entered	224
Vehs Exited	231
Starting Vehs	9
Ending Vehs	2
Travel Distance (mi)	117
Travel Time (hr)	4.5
Total Delay (hr)	0.5
Total Stops	137
Fuel Used (gal)	3.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:07
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:07
End Time	8:07
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	224
Vehs Exited	231
Starting Vehs	9
Ending Vehs	2
Travel Distance (mi)	117
Travel Time (hr)	4.5
Total Delay (hr)	0.5
Total Stops	137
Fuel Used (gal)	3.8

Intersection: 3: US 101 SB On-Ramp from SR 25

Movement	NB
Directions Served	T
Maximum Queue (ft)	100
Average Queue (ft)	49
95th Queue (ft)	86
Link Distance (ft)	2509
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Start Time	6:57
End Time	8:07
Total Time (min)	70
Time Recorded (min)	60
# of Intervals	2
# of Recorded Intervals	1
Vehs Entered	257
Vehs Exited	265
Starting Vehs	10
Ending Vehs	2
Travel Distance (mi)	134
Travel Time (hr)	5.2
Total Delay (hr)	0.6
Total Stops	161
Fuel Used (gal)	4.3

Interval #0 Information Seeding

Start Time	6:57
End Time	7:07
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:07
End Time	8:07
Total Time (min)	60

Volumes adjusted by Growth Factors.

Vehs Entered	257
Vehs Exited	265
Starting Vehs	10
Ending Vehs	2
Travel Distance (mi)	134
Travel Time (hr)	5.2
Total Delay (hr)	0.6
Total Stops	161
Fuel Used (gal)	4.3

Intersection: 3: US 101 SB On-Ramp from SR 25

Movement	NB
Directions Served	T
Maximum Queue (ft)	127
Average Queue (ft)	52
95th Queue (ft)	94
Link Distance (ft)	2509
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

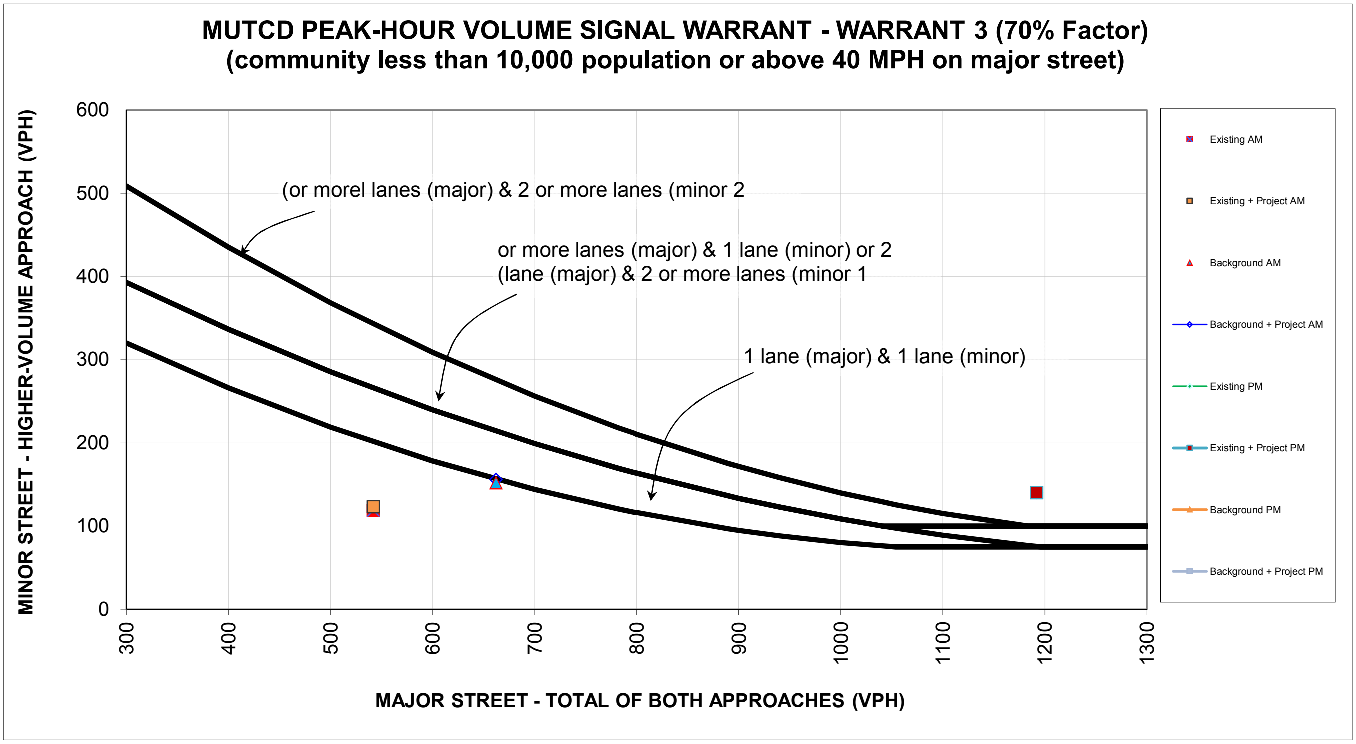
Network Summary

Network wide Queuing Penalty: 0

Appendix D
Peak-Hour Signal Warrant Checks

Sargent Ranch Quarry

1 . US 101 SB Ramps & SR 25



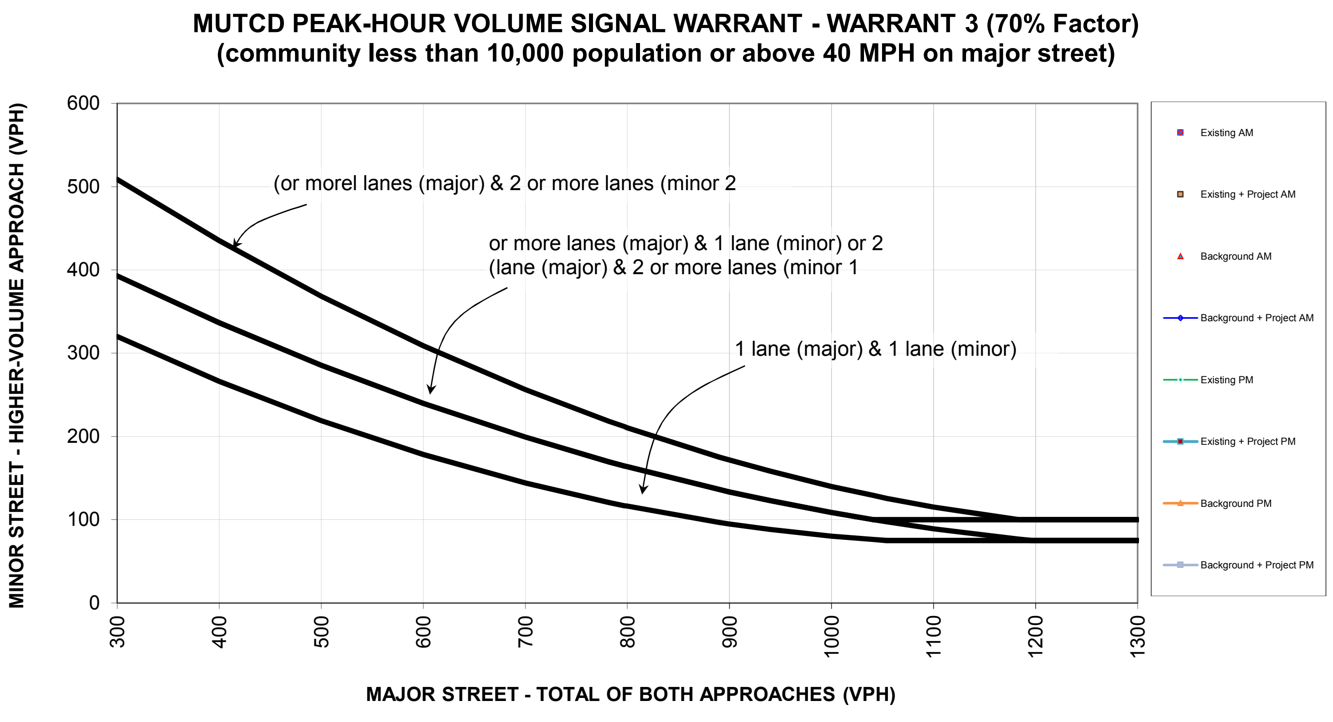
Source: Figure 4C-4 of the Manual on Unifrom Traffic Control and Devices (MUTCD) from California Department of Transportation (Caltrans).
* 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes
and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

		Approach Lanes		AM Peak Hour			
		One	2 or More	Existing AM	Existing + Project AM	Background AM	Background + Project AM
Major Street - Both Approaches	US 101 SB Ramps	X		542	542	662	662
Minor Street - Highest Approach	SR 25	X		119	123	152	156
		Warrant Met?		No	No	Yes	Yes

		Approach Lanes		PM Peak Hour			
		One	2 or More	Existing PM	Existing + Project PM	Background PM	Background + Project PM
Major Street - Both Approaches	US 101 SB Ramps	X		1192	1192	1530	1530
Minor Street - Highest Approach	SR 25	X		140	140	164	164
		Warrant Met?		Yes	Yes	Yes	Yes

Sargent Ranch Quarry

2 . US 101 NB Ramps & SR 25



Source: Figure 4C-4 of the Manual on Unifrom Traffic Control and Devices (MUTCD) from California Department of Transportation (Caltrans).
* 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes
and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

		Approach Lanes: One	Approach Lanes: 2 or More	AM Peak Hour: Existing AM	Existing + Project AM	Background AM	Background + Project AM
Major Street - Both Approaches	SR 25	X		1897	1899	2347	2349
Minor Street - Highest Approach	US 101 NB Ramps	X		81	85	94	98
		Warrant Met?		Yes	Yes	Yes	Yes

		Approach Lanes: One	Approach Lanes: 2 or More	PM Peak Hour: Existing PM	Existing + Project PM	Background PM	Background + Project PM
Major Street - Both Approaches	SR 25	X		2072	2072	2651	2651
Minor Street - Highest Approach	US 101 NB Ramps	X		132	135	170	173
		Warrant Met?		Yes	Yes	Yes	Yes

Appendix E
Highway Segment Level of Service Calculations

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing AM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	13	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	628	veh/h
Opposing direction volume, Vo	1508	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.987		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	636	pc/h	1508	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	37.3	mi/h
Percent Free Flow Speed, PFFS	68.2	%

```
_________________________Percent Time-Spent-Following_________________________

Direction                                     Analysis(d)        Opposing (o)
PCE for trucks, ET                                1.0                1.0
PCE for RVs, ER                                   1.0                1.0
Heavy-vehicle adjustment factor, fHV              1.000              1.000
Grade adjustment factor,(note-1) fg               1.00               1.00
Directional flow rate,(note-2) vi                 628    pc/h        1508    pc/h
Base percent time-spent-following,(note-4) BPTSFd  69.1   %
Adjustment for no-passing zones, fnp                       14.3
Percent time-spent-following, PTSFd                        73.3   %

________________Level of Service and Other Performance Measures_______________

Level of service, LOS                                      E
Volume to capacity ratio, v/c                              0.37
Peak 15-min vehicle-miles of travel, VMT15                 94      veh-mi
Peak-hour vehicle-miles of travel, VMT60                   377     veh-mi
Peak 15-min total travel time, TT15                        2.5     veh-h
Capacity from ATS, CdATS                                   1700    veh/h
Capacity from PTSF, CdPTSF                                 1700    veh/h
Directional Capacity                                       1700    veh/h

_____________________________Passing Lane Analysis____________________________

Total length of analysis segment, Lt                                0.6     mi
Length of two-lane highway upstream of the passing lane, Lu         -       mi
Length of passing lane including tapers, Lpl                        -       mi
Average travel speed, ATSd (from above)                             37.3    mi/h
Percent time-spent-following, PTSFd (from above)                    73.3
Level of service, LOSd (from above)                                 E

___________________Average Travel Speed  with Passing Lane____________________

Downstream length of two-lane highway within effective
    length of passing lane for average travel speed, Lde            -       mi
Length of two-lane highway downstream of effective
    length of the passing lane for average travel speed, Ld         -       mi
Adj. factor for the effect of passing lane
    on average speed, fpl                                           -
Average travel speed including passing lane, ATSpl                  -
Percent free flow speed including passing lane, PFFSpl              0.0     %

________________Percent Time-Spent-Following with Passing Lane________________

Downstream length of two-lane highway within effective length
    of passing lane for percent time-spent-following, Lde           -       mi
Length of two-lane highway downstream of effective length of
    the passing lane for percent time-spent-following, Ld           -       mi
Adj. factor for the effect of passing lane
    on percent time-spent-following, fpl                            -
Percent time-spent-following
    including passing lane, PTSFpl                                  -       %

______Level of Service and Other Performance Measures with Passing Lane ______

Level of service including passing lane, LOSpl             E
Peak 15-min total travel time, TT15                        -       veh-h

__________________________ Bicycle Level of Service __________________________
```

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	628.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	5.48
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing AM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1508	veh/h
Opposing direction volume, Vo	628	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1508	pc/h	631	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	36.3	mi/h
Percent Free Flow Speed, PFFS	66.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1508 pc/h	628 pc/h

Base percent time-spent-following,(note-4) BPTSFd	86.0	%
Adjustment for no-passing zones, fnp	14.3	
Percent time-spent-following, PTSFd	96.1	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.89	
Peak 15-min vehicle-miles of travel, VMT15	226	veh-mi
Peak-hour vehicle-miles of travel, VMT60	905	veh-mi
Peak 15-min total travel time, TT15	6.2	veh-h
Capacity from ATS, CdATS	1692	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1692	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.3	mi/h
Percent time-spent-following, PTSFd (from above)	96.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1508.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.84
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing Plus Project AM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	13	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	632	veh/h
Opposing direction volume, Vo	1512	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.987		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	640	pc/h	1512	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	37.3	mi/h
Percent Free Flow Speed, PFFS	68.1	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	632	pc/h	1512	pc/h

Base percent time-spent-following,(note-4) BPTSFd	69.3	%
Adjustment for no-passing zones, fnp	14.3	
Percent time-spent-following, PTSFd	73.5	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.38	
Peak 15-min vehicle-miles of travel, VMT15	95	veh-mi
Peak-hour vehicle-miles of travel, VMT60	379	veh-mi
Peak 15-min total travel time, TT15	2.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	37.3	mi/h
Percent time-spent-following, PTSFd (from above)	73.5	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	632.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	5.48
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing Plus Project AM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1512	veh/h
Opposing direction volume, Vo	632	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1512	pc/h	635	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	36.3	mi/h
Percent Free Flow Speed, PFFS	66.3	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1512	pc/h	632	pc/h
Base percent time-spent-following,(note-4) BPTSFd	85.8	%		
Adjustment for no-passing zones, fnp	14.3			
Percent time-spent-following, PTSFd	95.9	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.89	
Peak 15-min vehicle-miles of travel, VMT15	227	veh-mi
Peak-hour vehicle-miles of travel, VMT60	907	veh-mi
Peak 15-min total travel time, TT15	6.3	veh-h
Capacity from ATS, CdATS	1692	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1692	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.3	mi/h
Percent time-spent-following, PTSFd (from above)	95.9	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1512.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.84
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background AM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	13	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	761	veh/h
Opposing direction volume, Vo	1838	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.987		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	771	pc/h	1838	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	33.8	mi/h
Percent Free Flow Speed, PFFS	61.8	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	761	pc/h	1838	pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.4	%		
Adjustment for no-passing zones, fnp	14.2			
Percent time-spent-following, PTSFd	79.6	%		

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.45	
Peak 15-min vehicle-miles of travel, VMT15	114	veh-mi
Peak-hour vehicle-miles of travel, VMT60	457	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.8	mi/h
Percent time-spent-following, PTSFd (from above)	79.6	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	761.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	5.57
Bicycle LOS	F

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background AM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1838	veh/h
Opposing direction volume, Vo	761	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1838	pc/h	765	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	33.1	mi/h
Percent Free Flow Speed, PFFS	60.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1838	pc/h	761	pc/h
Base percent time-spent-following,(note-4) BPTSFd	90.7	%		
Adjustment for no-passing zones, fnp	14.2			
Percent time-spent-following, PTSFd	100.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	1.08	
Peak 15-min vehicle-miles of travel, VMT15	276	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1103	veh-mi
Peak 15-min total travel time, TT15	8.3	veh-h
Capacity from ATS, CdATS	1692	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1692	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.1	mi/h
Percent time-spent-following, PTSFd (from above)	100.0	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1838.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.94
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background Plus Project AM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	13	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd 765 veh/h
Opposing direction volume, Vo 1842 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.987		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	775	pc/h	1842	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	33.8	mi/h
Percent Free Flow Speed, PFFS	61.6	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	765	pc/h	1842	pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.5	%		
Adjustment for no-passing zones, fnp	14.3			
Percent time-spent-following, PTSFd	79.7	%		

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.46	
Peak 15-min vehicle-miles of travel, VMT15	115	veh-mi
Peak-hour vehicle-miles of travel, VMT60	459	veh-mi
Peak 15-min total travel time, TT15	3.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.8	mi/h
Percent time-spent-following, PTSFd (from above)	79.7	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	765.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	5.58
Bicycle LOS	F

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background+Project AM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1842	veh/h
Opposing direction volume, Vo	765	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.995	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1842	pc/h	769	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	33.0	mi/h
Percent Free Flow Speed, PFFS	60.3	%

```
_________________________Percent Time-Spent-Following_________________________

Direction                                     Analysis(d)        Opposing (o)
PCE for trucks, ET                                1.0                1.0
PCE for RVs, ER                                   1.0                1.0
Heavy-vehicle adjustment factor, fHV              1.000              1.000
Grade adjustment factor,(note-1) fg               1.00               1.00
Directional flow rate,(note-2) vi                 1842   pc/h        765      pc/h
Base percent time-spent-following,(note-4) BPTSFd  90.6   %
Adjustment for no-passing zones, fnp                   14.3
Percent time-spent-following, PTSFd                    100.0  %

________________Level of Service and Other Performance Measures_______________

Level of service, LOS                                  F
Volume to capacity ratio, v/c                          1.08
Peak 15-min vehicle-miles of travel, VMT15             276     veh-mi
Peak-hour vehicle-miles of travel, VMT60               1105    veh-mi
Peak 15-min total travel time, TT15                    8.4     veh-h
Capacity from ATS, CdATS                               1692    veh/h
Capacity from PTSF, CdPTSF                             1700    veh/h
Directional Capacity                                   1692    veh/h

_____________________________Passing Lane Analysis____________________________

Total length of analysis segment, Lt                             0.6     mi
Length of two-lane highway upstream of the passing lane, Lu      -       mi
Length of passing lane including tapers, Lpl                     -       mi
Average travel speed, ATSd (from above)                          33.0    mi/h
Percent time-spent-following, PTSFd (from above)                 100.0
Level of service, LOSd (from above)                              F

___________________Average Travel Speed  with Passing Lane____________________

Downstream length of two-lane highway within effective
    length of passing lane for average travel speed, Lde         -       mi
Length of two-lane highway downstream of effective
    length of the passing lane for average travel speed, Ld      -       mi
Adj. factor for the effect of passing lane
    on average speed, fpl                                        -
Average travel speed including passing lane, ATSpl               -
Percent free flow speed including passing lane, PFFSpl           0.0     %

________________Percent Time-Spent-Following with Passing Lane________________

Downstream length of two-lane highway within effective length
    of passing lane for percent time-spent-following, Lde        -       mi
Length of two-lane highway downstream of effective length of
    the passing lane for percent time-spent-following, Ld        -       mi
Adj. factor for the effect of passing lane
    on percent time-spent-following, fpl                         -
Percent time-spent-following
    including passing lane, PTSFpl                               -       %

______Level of Service and Other Performance Measures with Passing Lane ______

Level of service including passing lane, LOSpl         E
Peak 15-min total travel time, TT15                    -       veh-h

__________________________ Bicycle Level of Service __________________________
```

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1842.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.94
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative AM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	1086	vph	2797	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	272		700	
Trucks and buses	13	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.939		0.976	
Flow rate, vp	578	pcphpl	1433	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	578	pcphpl	1433	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	59.9	mph
Level of service, LOS	A		C	
Density, D	9.6	pc/mi/ln	23.9	pc/mi/ln

_________________________ Bicycle Level of Service _________________________

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	543.0	1398.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	6.44	3.84
Bicycle LOS	F	D

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative+Project AM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	1090	vph	2801	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	273		701	
Trucks and buses	13	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.939		0.976	
Flow rate, vp	580	pcphpl	1435	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	580	pcphpl	1435	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	59.9	mph
Level of service, LOS	A		C	
Density, D	9.7	pc/mi/ln	23.9	pc/mi/ln

_________________________ Bicycle Level of Service _________________________

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	545.0	1400.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	6.44	3.85
Bicycle LOS	F	D

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative PM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	2581	vph	1251	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	646		313	
Trucks and buses	4	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.980		0.976	
Flow rate, vp	1316	pcphpl	641	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1316	pcphpl	641	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	C		A	
Density, D	21.9	pc/mi/ln	10.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1290.5	625.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.44
Bicycle LOS	D	C

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	Huy
Agency/Co:	Hexagon
Date:	2/7/2017
Analysis Period:	Cumulative+Project AM
Highway:	SR 25
From/To:	from US 101 to Bloomfield Ave
Jurisdiction:	Caltrans
Analysis Year:	2017
Project ID:	Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	1090	vph	2801	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	273		701	
Trucks and buses	13	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.939		0.976	
Flow rate, vp	580	pcphpl	1435	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	580	pcphpl	1435	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	59.9	mph
Level of service, LOS	A		C	
Density, D	9.7	pc/mi/ln	23.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	545.0	1400.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	6.44	3.85
Bicycle LOS	F	D

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative+Project PM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	2584	vph	1251	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	646		313	
Trucks and buses	4	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.980		0.976	
Flow rate, vp	1317	pcphpl	641	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1317	pcphpl	641	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	C		A	
Density, D	22.0	pc/mi/ln	10.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1292.0	625.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.44
Bicycle LOS	D	C

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing PM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1448	veh/h
Opposing direction volume, Vo	948	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1448	pc/h	948	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	63.9	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1448	pc/h	948	pc/h
Base percent time-spent-following,(note-4) BPTSFd	86.7	%		
Adjustment for no-passing zones, fnp	12.7			
Percent time-spent-following, PTSFd	94.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.85	
Peak 15-min vehicle-miles of travel, VMT15	217	veh-mi
Peak-hour vehicle-miles of travel, VMT60	869	veh-mi
Peak 15-min total travel time, TT15	6.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	94.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1448.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.53
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing PM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	948	veh/h
Opposing direction volume, Vo	1448	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	948	pc/h	1448	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	35.3	mi/h
Percent Free Flow Speed, PFFS	64.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	948	pc/h	1448	pc/h
Base percent time-spent-following,(note-4) BPTSFd	80.4	%		
Adjustment for no-passing zones, fnp	12.7			
Percent time-spent-following, PTSFd	85.4	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.56	
Peak 15-min vehicle-miles of travel, VMT15	142	veh-mi
Peak-hour vehicle-miles of travel, VMT60	569	veh-mi
Peak 15-min total travel time, TT15	4.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.3	mi/h
Percent time-spent-following, PTSFd (from above)	85.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	948.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.61
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing Plus Project PM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1451	veh/h
Opposing direction volume, Vo	948	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1451	pc/h	948	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	35.0	mi/h
Percent Free Flow Speed, PFFS	63.8	%

```
________________________Percent Time-Spent-Following________________________

Direction                                      Analysis(d)         Opposing (o)
PCE for trucks, ET                                 1.0                 1.0
PCE for RVs, ER                                    1.0                 1.0
Heavy-vehicle adjustment factor, fHV               1.000               1.000
Grade adjustment factor,(note-1) fg                1.00                1.00
Directional flow rate,(note-2) vi                  1451   pc/h         948      pc/h
Base percent time-spent-following,(note-4) BPTSFd  86.7   %
Adjustment for no-passing zones, fnp               12.7
Percent time-spent-following, PTSFd                94.4   %

________________Level of Service and Other Performance Measures________________

Level of service, LOS                              E
Volume to capacity ratio, v/c                      0.85
Peak 15-min vehicle-miles of travel, VMT15         218     veh-mi
Peak-hour vehicle-miles of travel, VMT60           871     veh-mi
Peak 15-min total travel time, TT15                6.2     veh-h
Capacity from ATS, CdATS                           1700    veh/h
Capacity from PTSF, CdPTSF                         1700    veh/h
Directional Capacity                               1700    veh/h

____________________________Passing Lane Analysis____________________________

Total length of analysis segment, Lt                          0.6     mi
Length of two-lane highway upstream of the passing lane, Lu   -       mi
Length of passing lane including tapers, Lpl                  -       mi
Average travel speed, ATSd (from above)                       35.0    mi/h
Percent time-spent-following, PTSFd (from above)              94.4
Level of service, LOSd (from above)                           E

___________________Average Travel Speed  with Passing Lane___________________

Downstream length of two-lane highway within effective
    length of passing lane for average travel speed, Lde      -       mi
Length of two-lane highway downstream of effective
    length of the passing lane for average travel speed, Ld   -       mi
Adj. factor for the effect of passing lane
    on average speed, fpl                                     -
Average travel speed including passing lane, ATSpl            -
Percent free flow speed including passing lane, PFFSpl        0.0     %

________________Percent Time-Spent-Following with Passing Lane________________

Downstream length of two-lane highway within effective length
    of passing lane for percent time-spent-following, Lde     -       mi
Length of two-lane highway downstream of effective length of
    the passing lane for percent time-spent-following, Ld     -       mi
Adj. factor for the effect of passing lane
    on percent time-spent-following, fpl                      -
Percent time-spent-following
    including passing lane, PTSFpl                            -       %

______Level of Service and Other Performance Measures with Passing Lane ______

Level of service including passing lane, LOSpl     E
Peak 15-min total travel time, TT15                -       veh-h

__________________________ Bicycle Level of Service __________________________
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Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1451.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.53
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Existing Plus Project PM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	948	veh/h
Opposing direction volume, Vo	1451	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	948	pc/h	1451	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	35.3	mi/h
Percent Free Flow Speed, PFFS	64.5	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	948	pc/h	1451	pc/h

Base percent time-spent-following,(note-4) BPTSFd	80.4	%
Adjustment for no-passing zones, fnp	12.7	
Percent time-spent-following, PTSFd	85.4	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.56	
Peak 15-min vehicle-miles of travel, VMT15	142	veh-mi
Peak-hour vehicle-miles of travel, VMT60	569	veh-mi
Peak 15-min total travel time, TT15	4.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	35.3	mi/h
Percent time-spent-following, PTSFd (from above)	85.4	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	948.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.61
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

```
                        HCS 2010: Two-Lane Highways Release 6.50




Phone:                                  Fax:
E-Mail:

_________________Directional Two-Lane Highway Segment Analysis________________

Analyst                  Huy
Agency/Co.
Date Performed           01/31/2017
Analysis Time Period     Background PM
Highway                  SR 25
From/To                  from US 101 to Bloomfield Ave
Jurisdiction             Caltrans
Analysis Year            2017
Description  Sargent Ranch Quarry

__________________________________Input Data__________________________________

Highway class  Class 1             Peak hour factor, PHF    1.00
Shoulder width       8.0     ft    % Trucks and buses       4       %
Lane width           12.0    ft    % Trucks crawling        0.0     %
Segment length       0.6     mi    Truck crawl speed        0.0     mi/hr
Terrain type         Level         % Recreational vehicles  0       %
Grade:  Length       -       mi    % No-passing zones       100     %
        Up/down      -       %     Access point density     1       /mi

Analysis direction volume, Vd  1824    veh/h
Opposing direction volume, Vo  1189    veh/h

____________________________Average Travel Speed______________________________

Direction                                 Analysis(d)        Opposing (o)
PCE for trucks, ET                            1.0                1.0
PCE for RVs, ER                               1.0                1.0
Heavy-vehicle adj. factor,(note-5) fHV        1.000              1.000
Grade adj. factor,(note-1) fg                 1.00               1.00
Directional flow rate,(note-2) vi             1824    pc/h       1189    pc/h

Free-Flow Speed from Field Measurement:
Field measured speed,(note-3) S FM                -      mi/h
Observed total demand,(note-3) V                  -      veh/h
Estimated Free-Flow Speed:
Base free-flow speed,(note-3) BFFS               55.0    mi/h
Adj. for lane and shoulder width,(note-3) fLS    0.0     mi/h
Adj. for access point density,(note-3) fA        0.3     mi/h

Free-flow speed, FFSd                            54.8    mi/h

Adjustment for no-passing zones, fnp             1.0     mi/h
Average travel speed, ATSd                       30.4    mi/h
Percent Free Flow Speed, PFFS                    55.5    %
```

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1824	pc/h	1189	pc/h

Base percent time-spent-following,(note-4) BPTSFd	92.9	%
Adjustment for no-passing zones, fnp	10.4	
Percent time-spent-following, PTSFd	99.2	%

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	1.07	
Peak 15-min vehicle-miles of travel, VMT15	274	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1094	veh-mi
Peak 15-min total travel time, TT15	9.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.4	mi/h
Percent time-spent-following, PTSFd (from above)	99.2	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1824.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.65
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background PM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1189	veh/h
Opposing direction volume, Vo	1824	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1189	pc/h	1824	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	30.7	mi/h
Percent Free Flow Speed, PFFS	56.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1189	pc/h	1824	pc/h

Base percent time-spent-following,(note-4) BPTSFd	86.7	%
Adjustment for no-passing zones, fnp	10.4	
Percent time-spent-following, PTSFd	90.8	%

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.70	
Peak 15-min vehicle-miles of travel, VMT15	178	veh-mi
Peak-hour vehicle-miles of travel, VMT60	713	veh-mi
Peak 15-min total travel time, TT15	5.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.7	mi/h
Percent time-spent-following, PTSFd (from above)	90.8	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1189.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.72
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background Plus Project PM
Highway	SR 25
From/To	from US 101 to Bloomfield Ave
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd 1827 veh/h
Opposing direction volume, Vo 1189 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1827	pc/h	1189	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	30.3	mi/h
Percent Free Flow Speed, PFFS	55.4	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1827	pc/h	1189	pc/h
Base percent time-spent-following,(note-4) BPTSFd	92.9	%		
Adjustment for no-passing zones, fnp	10.4			
Percent time-spent-following, PTSFd	99.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	1.07	
Peak 15-min vehicle-miles of travel, VMT15	274	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1096	veh-mi
Peak 15-min total travel time, TT15	9.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.3	mi/h
Percent time-spent-following, PTSFd (from above)	99.2	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1827.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.65
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Huy
Agency/Co.	
Date Performed	01/31/2017
Analysis Time Period	Background+Project PM
Highway	SR 25
From/To	from Bloomfield Ave to US 101
Jurisdiction	Caltrans
Analysis Year	2017
Description	Sargent Ranch Quarry

Input Data

Highway class	Class 1		Peak hour factor, PHF	1.00	
Shoulder width	8.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	1	/mi

Analysis direction volume, Vd	1189	veh/h
Opposing direction volume, Vo	1827	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1189	pc/h	1827	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	0.3	mi/h
Free-flow speed, FFSd	54.8	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	30.7	mi/h
Percent Free Flow Speed, PFFS	56.0	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	1189	pc/h	1827	pc/h
Base percent time-spent-following,(note-4) BPTSFd	86.7	%		
Adjustment for no-passing zones, fnp	10.4			
Percent time-spent-following, PTSFd	90.8	%		

Level of Service and Other Performance Measures

Level of service, LOS	F	
Volume to capacity ratio, v/c	0.70	
Peak 15-min vehicle-miles of travel, VMT15	178	veh-mi
Peak-hour vehicle-miles of travel, VMT60	713	veh-mi
Peak 15-min total travel time, TT15	5.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.6	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.7	mi/h
Percent time-spent-following, PTSFd (from above)	90.8	
Level of service, LOSd (from above)	F	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1189.0
Effective width of outside lane, We	28.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.72
Bicycle LOS	C

Notes:
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative PM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	2581	vph	1251	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	646		313	
Trucks and buses	4	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.980		0.976	
Flow rate, vp	1316	pcphpl	641	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1316	pcphpl	641	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	C		A	
Density, D	21.9	pc/mi/ln	10.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1290.5	625.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.44
Bicycle LOS	D	C

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.50

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: Huy
Agency/Co: Hexagon
Date: 2/7/2017
Analysis Period: Cumulative+Project PM
Highway: SR 25
From/To: from US 101 to Bloomfield Ave
Jurisdiction: Caltrans
Analysis Year: 2017
Project ID: Sargent Ranch Quarry

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	1		1	
Median type	Undivided		Undivided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.3	mph
Free-flow speed	58.2	mph	58.2	mph

VOLUME

Direction	1		2	
Volume, V	2584	vph	1251	vph
Peak-hour factor, PHF	1.00		1.00	
Peak 15-minute volume, v15	646		313	
Trucks and buses	4	%	5	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.980		0.976	
Flow rate, vp	1317	pcphpl	641	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	1317	pcphpl	641	pcphpl
Free-flow speed, FFS	58.2	mph	58.2	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	C		A	
Density, D	22.0	pc/mi/ln	10.7	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	1292.0	625.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.44
Bicycle LOS	D	C

Overall results are not computed when free-flow speed is less than 45 mph.

Appendix K.2

Construction Traffic Evaluation

Memorandum

Date: March 15, 2021

To: Adrienne Graham

From: Gicela Del Rio, T.E.

Subject: Sargent Ranch Quarry Construction Traffic Impact Evaluation

This memo is being provided to provide an evaluation of potential construction traffic impacts associated with the implementation of the proposed Sargent Ranch Quarry, located south of the City of Gilroy, in unincorporated Santa Clara County, California. A traffic impact analysis (TIA) for the proposed project was completed by Hexagon and its findings were documented in a report dated February 24, 2017. The completed TIA did not include an evaluation of traffic conditions during the construction phase of the proposed project.

This evaluation of construction traffic impacts is being provided as a supplement to the completed TIA for the project.

Construction Traffic

Construction would primarily be accomplished using diesel-powered heavy equipment. A variety of project construction activities would include construction of the access road and conveyer belt within the project, construction of the free-span bridge over Tar Creek, construction of improvements along Old Monterey Road, including an acceleration lane at northbound US 101, as well as construction vehicle and employee travel. The estimated construction period is less than one year and will consist of six construction phases. All construction activity would take place Monday through Friday between the hours of 7:00 AM and 5:00 PM. The anticipated activities, duration, and number of employees and construction vehicles for each of the construction phases, as provided by the project applicant, are described below.

Construction Phase 1 – Processing Plant

- Duration: 4 weeks
- Crew Size: 15
- Supplier Deliveries:
  - total occurring during duration of construction phase: 50 deliveries
  - average per day: 2.5 deliveries per day
- Equipment Used: Crane, blade, bulldozer, excavator, trenching machine

Construction Phase 2 – Free-Span Bridge Over Tar Creek

- Duration: 3 weeks
- Crew Size: 10
- Supplier Deliveries:
  - total occurring during duration of construction phase: 35 deliveries
  - average per day: 2.3 deliveries per day
- Equipment Used: Crane, bulldozer, excavator

Construction Phase 3 – Access Road/Conveyer Belt

- Duration: 3 months = 12 weeks
- Crew Size: 15

- Supplier Deliveries:
  - total occurring during duration of construction phase: 200 deliveries
  - average per day: 3.3 deliveries per day
- Equipment Used: Bulldozer, blade, scraper, trenching machine

Construction Phase 4 –

- **Monterey Road Improvements**

  - Duration: 3 weeks
  - Crew Size: 15
  - Supplier Deliveries:
    - total occurring during duration of construction phase: 150 deliveries
    - average per day: 10 deliveries per day
  - Equipment Used: Bulldozer, blade, paving machine, 2 rollers, water truck

- **Northbound US 101 Acceleration Lane**

  - Duration: 2 weeks
  - Crew Size: 15
  - Supplier Deliveries:
    - total occurring during duration of construction phase: 150 deliveries
    - average per day: 15 deliveries per day
  - Equipment Used: Bulldozer, blade, paving machine, 2 rollers, water truck

Construction Phase 5 – Rail Spur

- Duration: 3 weeks
- Crew Size: 8
- Supplier Deliveries:
  - total occurring during duration of construction phase: 10 deliveries
  - average per day: 1 delivery per day
- Equipment Used: Crane, blade, field crew

Construction Phase 6 – Maintain Old Monterey Road

- Duration: Every 5 years, 1 week
- Crew Size: 15
- Supplier Deliveries:
  - total occurring during duration of construction phase: 25 deliveries
  - average per day: 5 deliveries per day
- Equipment Used: Paving Machine, 2 rollers, oil truck

Table 1 presents an estimate of daily and peak-hour trips associated with each construction phase based on the information above. Based on the anticipated construction schedule and activities, a maximum of 110 daily trips are estimated during Construction Phase 4, which would consist of the simultaneous construction of the Old Monterey Road improvements and the northbound US 101 acceleration lane. Out of the 110 daily trips associated with Phase 4, 60 daily trips are associated with workers and 50 trips with the deliveries/construction vehicles. All other construction phases are estimated to generate between 18 and 40 daily trips.

During the peak hours, Construction Phase 4 also is estimated to generate the most traffic with a total of 6 trips during the AM peak-hour and 33 trips during the PM peak-hour. The simultaneous construction of the Monterey Road improvements and the northbound US 101 acceleration lane under Phase 4 have an anticipated duration time of two weeks.

The additional daily trips due to construction activities would result in an increase in vehicle-miles-traveled (VMT) generated by the project site during the construction period. However, an estimation of construction related VMT is dependent on the anticipated origins and destinations of construction employees and trucks, which is not yet known, to determine travel distances for each construction vehicular/truck trip. Therefore, an estimation of construction related VMT cannot be provided at this time.

By comparison, the February 2017 TIA completed for the proposed project estimated that once operational, the project would generate a total of 346 daily trips, with 40 and 15 trips occurring during the AM and PM peak hours, respectively. The daily and AM peak-hour project traffic projections are 3 to 6 times larger than the estimated traffic during the construction phase of the project, while the construction traffic is estimated to be twice as much as the project traffic during the PM peak-hour (15 project trips compared to 33 construction traffic trips). Although the PM peak-hour construction traffic is estimated to be more than the PM peak-hour project traffic, a difference of 18 trips for a period of two weeks is not sufficient to significantly deteriorate traffic conditions in the vicinity of the project site nor require the implementation of measures beyond those identified in the TIA. Based on this comparison, it can be concluded that traffic conditions during the construction phase of the project are anticipated to be the same or better than those identified in the 2017 TIA.

Traffic from the various construction activities would be ongoing throughout the six construction phases of the project. Therefore, there is potential for temporary traffic-related impacts to occur from construction activities, as it was identified in the 2017 TIA. However, it should be noted that the planned construction activities and traffic are anticipated to occur over a time period of less than 7 months, with the most construction traffic being generated under Phase 4 for a period of two weeks only. Therefore, improvement of roadways to mitigate temporary construction impacts is not warranted.

Construction Traffic Effect on US 101

According to the project applicant, the only anticipated lane closure on US 101 would occur during the proposed construction of the northbound US 101 acceleration lane at the north/south roadway (Old Monterey Road extension) on-ramp, just north of Tar Creek. During this 2 to 4 day period, the northbound US 101 shoulder lane at the on-ramp would be closed for protection of the construction crew with the use of cones, arrow board, and the appropriate advance warning signs as required by Caltrans.

Additionally, it is anticipated that transportation of some of the plant equipment may require oversize load vehicles. This equipment would be transported to the site following Caltrans and California Highway Patrol guidelines and standards, including flagging, signage, and pilot cars. Oversize load vehicles on State roadways require a transportation permit issued by Caltrans.

As with any work that encroaches onto the State Right-of-Way (ROW), the project will require to obtain an encroachment permit issued by Caltrans. In addition, if it is determined that traffic restrictions and/or detours due to the construction of the project or proposed improvements may affect State highways, a Transportation Management Plan (TMP) must be submitted to and approved by Caltrans prior to the initiation of construction.

Potential Mitigation

To reduce the temporary impacts due to construction traffic, the project contractor should prepare a Construction Management Plan, which should include the following conditions and shall be subject to review and approval by both County and Caltrans staff. The plan should be implemented during construction to minimize impacts from construction-related traffic and could include the following measures:

- Restrict or limit heavy vehicle traffic to and from the project site during the peak commute hours (7:00-9:00 AM and 4:00-6:00 PM).
- Provide the appropriate traffic control measures, including warning signs, speed control devices, flaggers, and barricades.
- Implement truck routes for construction trucks deemed acceptable by the County/Caltrans.
- Store construction equipment on the project site during the construction phase of the project.

Table 1
Construction Traffic Daily and Peak Hour Trip Estimates

Construction Phase Number and Description		Phase Duration	Daily Crew Size	Average Deliveries Per Day [1]	Daily Trips: Workers	Daily Trips: Deliveries	Daily Trips: TOTAL	AM Peak-Hour Trips (7-9 AM): Workers [2] Inbound	AM Workers [2] Outbound	AM Deliveries [3] Inbound	AM Deliveries [3] Outbound	AM TOTAL	PM Peak-Hour Trips (4-6 PM): Workers [2] Inbound	PM Workers [2] Outbound	PM Deliveries [3] Inbound	PM Deliveries [3] Outbound	PM TOTAL
1	Processing Plant	4 weeks	15	3	30	6	36	0	0	0	0	0	0	15	0	0	15
2	Free-Span Bridge Over Tar Creek	3 weeks	10	3	20	6	26	0	0	0	0	0	0	10	0	0	10
3	Access Road/Conveyer Belt	12 weeks	15	4	30	8	38	0	0	1	1	2	0	15	0	0	15
4	Monterey Road Improvements	3 weeks	15	10	30	20	110	0	0	1	1	6	0	15	0	1	33
	Northbound 101 Acceleration Lane	2 weeks	15	15	30	30		0	0	2	2		0	15	0	2	
5	Rail Spur	3 weeks	8	1	16	2	18	0	0	0	0	0	0	8	0	0	8
6	Old Monterey Road Maintenance	1 week	15	5	30	10	40	0	0	1	1	2	0	15	0	0	15
	Total Duration of Construction:	25 weeks = 6.25 months															

Source: Based on construction activity table provided by Environmental Science Associates. Construction work is anticipated to occur during the week (Monday through Friday) from 7:00 AM to 5:00 PM.

[1] Information derived by evenly assigning the total number of deliveries for the entire construction phase over the duration of the phase. Values were rounded up and it is assumed that all deliveries represent heavy vehicle (truck) trips.

[2] All workers are anticipated to arrive to the site before the AM peak-hour (7:00 AM) and leave the site after 5:00 PM (during the PM peak-hour).

[3] The total number of daily deliveries were assigned to the site throughout the 10-hour workday. Average deliveries of 4 or more per day were conservatively assumed that at least one of those trips would occur during the peak hours.