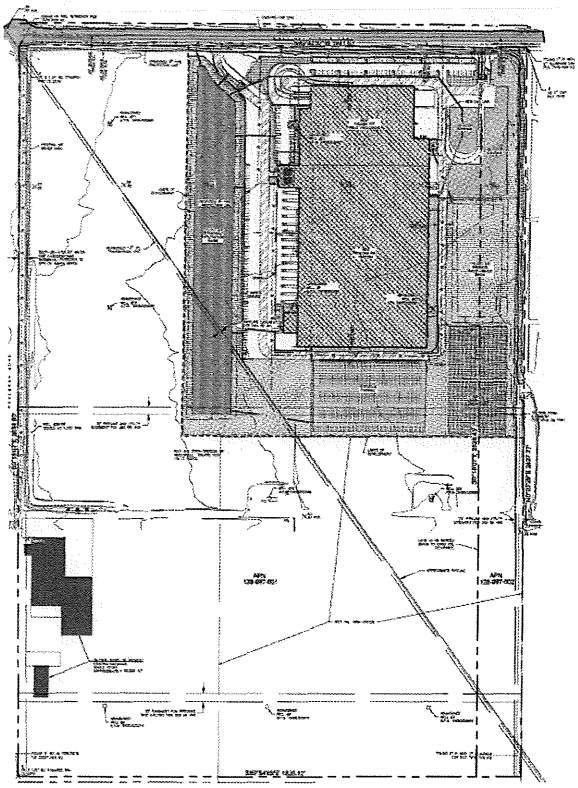
Appendix L

Traffic and VMT Studies

ARTIC COLD STORAGE & PACKING PROJECT
COUNTY OF SANTA BARBARA, CALIFORNIA

REVISED TRAFFIC AND CIRCULATION STUDY



July 21, 2020 **ATE Project #20014**

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REVISED TRAFFIC AND CIRCULATION STUDY FOR THE ARCTIC COLD STORAGE & PACKING PROJECT - COUNTY OF SANTA BARBARA, CA

Associated Transportation Engineers (ATE) is providing this revised traffic and circulation study for the Arctic Cold Storage & Packing Project proposed in the Santa Barbara County just east of the City of Santa Maria. The study evaluates the potential traffic and circulation impacts associated with the project and identifies improvements where required. This revised study addresses the comments provided by County staff on the original study.

Associated Transportation Engineers

Scott A. Schell
Principal Transportation Planner

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INTRODUCTION

The following report contains an analysis of the potential traffic and circulation impacts associated with the Arctic Cold Storage & Packing Project (the "Project"), located in Santa Barbara County. The report evaluates existing and future traffic operations within the Project study area and identifies potential impacts based on adopted thresholds. Mitigation measures are recommended where required. The roadways and intersections analyzed in the study were determined based on input provided by County staff. This revised study addresses the comments provided by County staff on the original study (ATE study dated March 25, 2020).

PROJECT DESCRIPTION

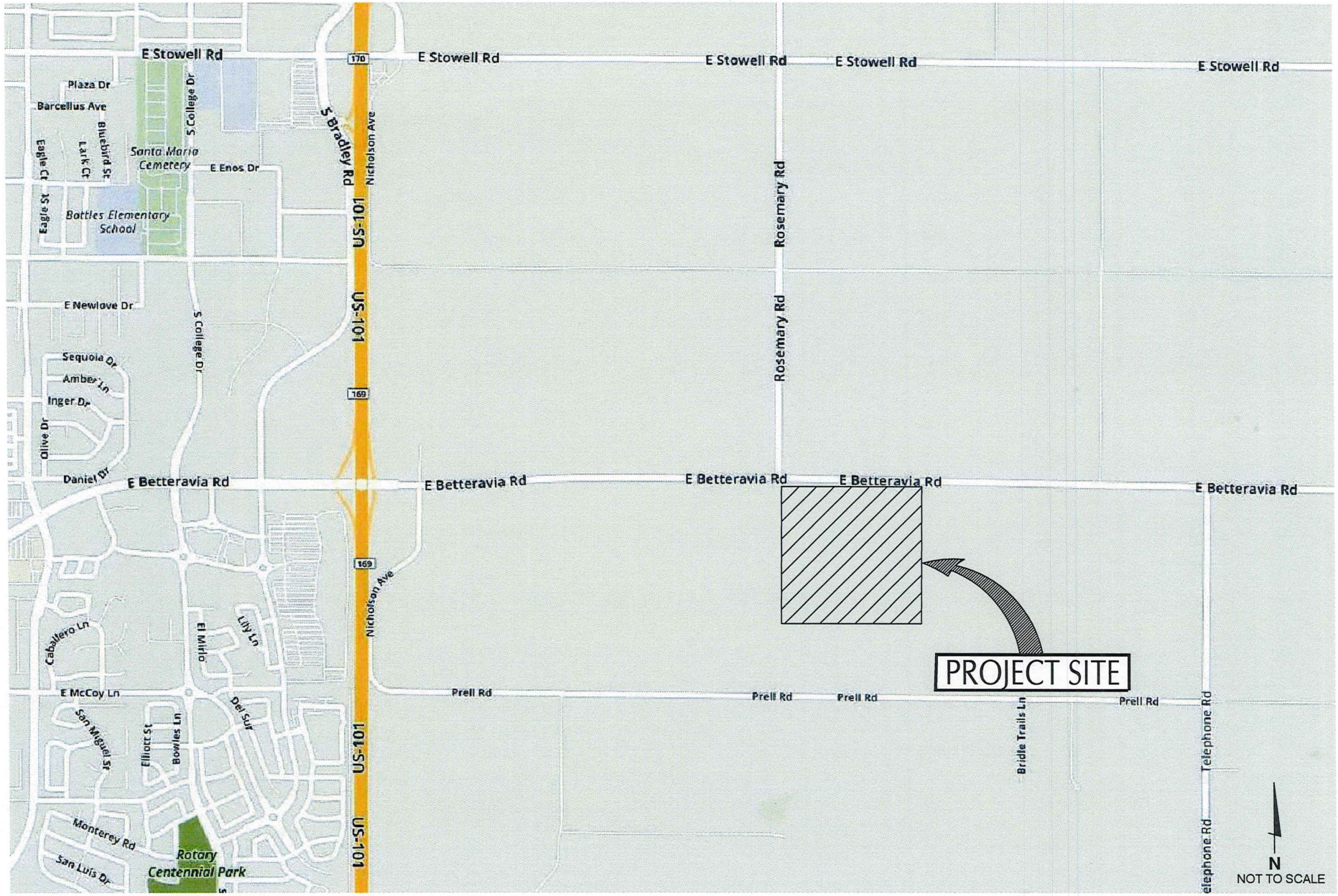
The Arctic Cold Storage & Packing Project is proposed on the southeast corner of the Betteravia Road/Rosemary Road intersection in the unincorporated Santa Barbara County area just east of the City of Santa Maria. Figure 1 shows the location of the Project site. The Project is proposing to develop a 436,647 SF food processing, cold storage and packaging facility. the facility includes a 120,098 SF food processor and a 316,549 SF freezer. The facility would process crops grown in the greater Santa Maria Valley area and from other regions throughout California and Baja. The plant would employ an estimated 153 employees during normal periods and 623 employees during peak harvest periods (in three shifts). Figure 2 presents the Project Site Plan. As shown, access to the Project site would be provided via two new driveways on Betteravia Road. The Project's frontage improvements include widening of Betteravia Road to provide a separate right-turn lane at both of the driveways. The driveway improvements have been planned pursuant to Santa Barbara County standards (see Site Access and Circulation section of the report).

EXISTING CONDITIONS

Street Network

As shown in Figure 3, the Project site is served by a network of highways, arterial roadways, and collector streets. The following text briefly describes the major components of the study-area street network.

US 101, located west of the Project site, is a multi-lane interstate freeway serving the Pacific Coast. US 101 is the principal route between the City of Santa Maria and the Five-Cities area, and San Luis Obispo to the north; and Orcutt, Buellton and Santa Barbara to the south. Access to US 101 from the Project site is provided via the US 101/Betteravia Road interchange.



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PROJECT SITE LOCATION

FIGURE 1

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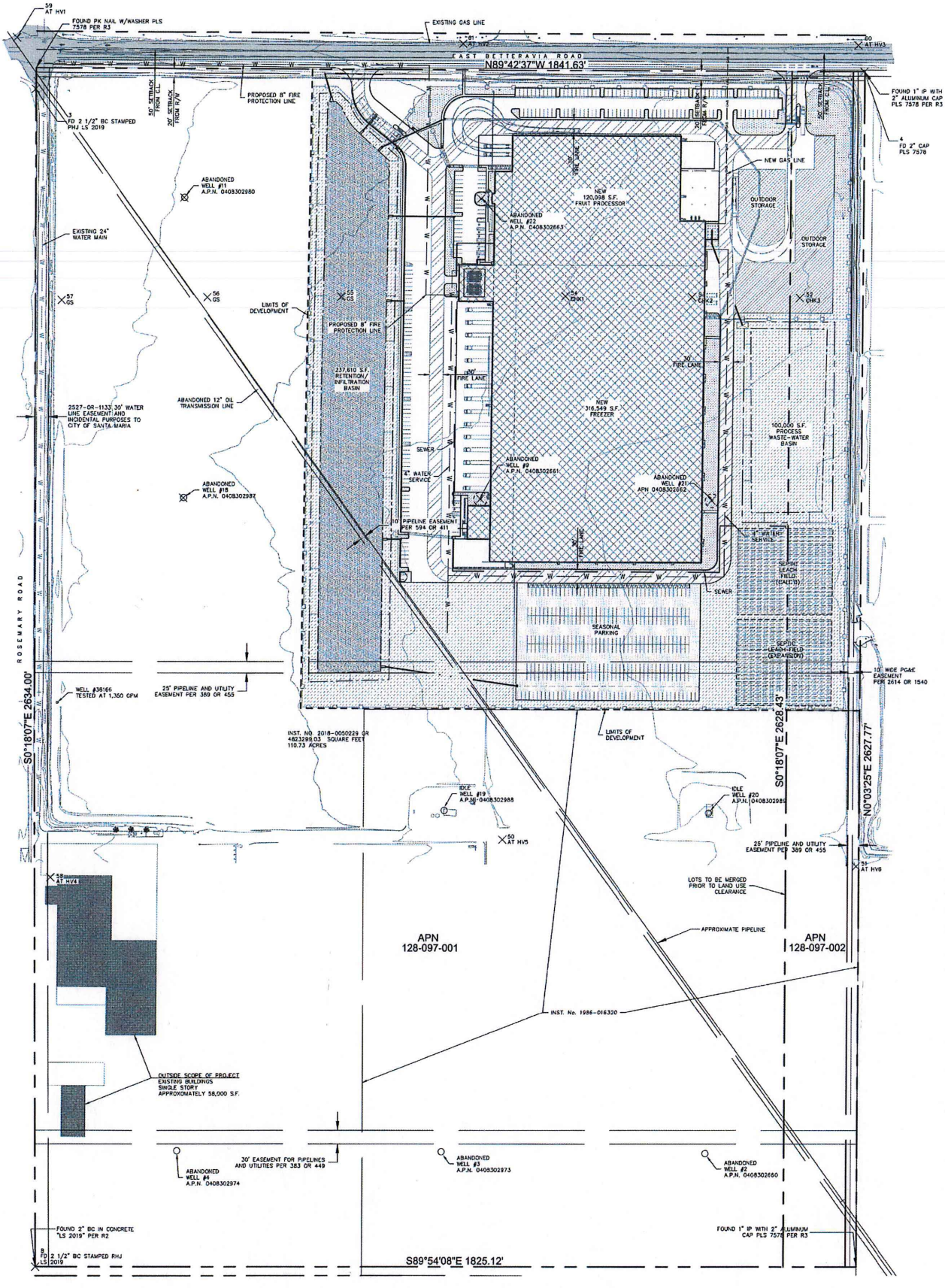

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PROJECT SITE PLAN

FIGURE 2

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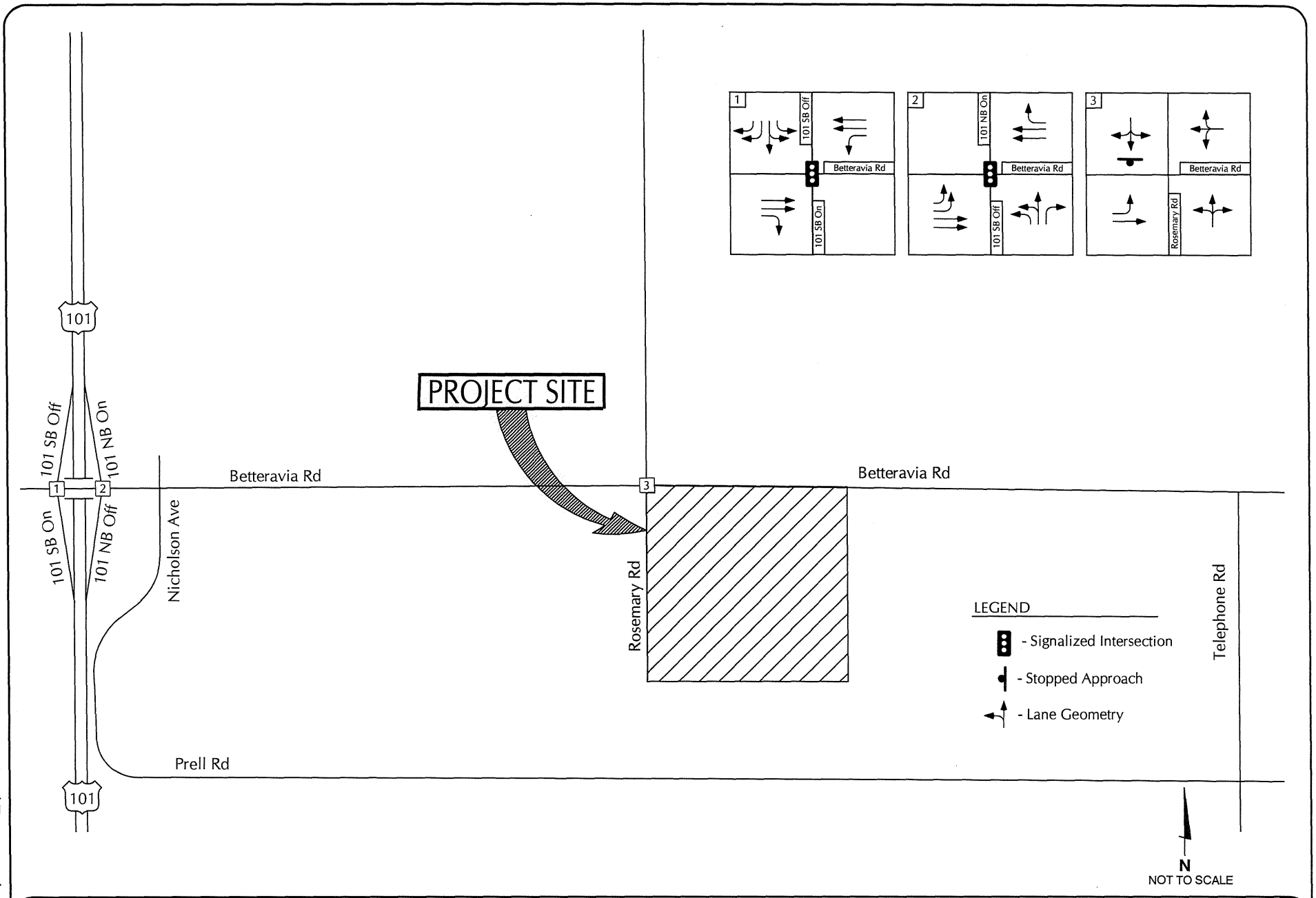

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EXISTING STREET NETWORK

FIGURE 3

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Betteravia Road is a 6-lane arterial road west of US 101, a 4-lane arterial road between US 101 and Nicholson Avenue just east of US 101, and a 2-lane arterial road between Nicholson Avenue and Rosemary Road. The 6-lane segment west of US 101 traverses the City of Santa Maria. The 4-lane segment east of US 101 serves a truck stop and service stations. The 2-lane segment between Nicholson Avenue and Rosemary Road serves mostly agricultural uses. Access to the Project site would be provided via two driveways on Betteravia Road.

Rosemary Road, located on the western boundary of the Project site, is s a 2-lane collector road that extends between Jones Street on the north to its terminus south of Betteravia Road. Rosemary Road serves mostly agricultural uses.

Existing Roadway Operations

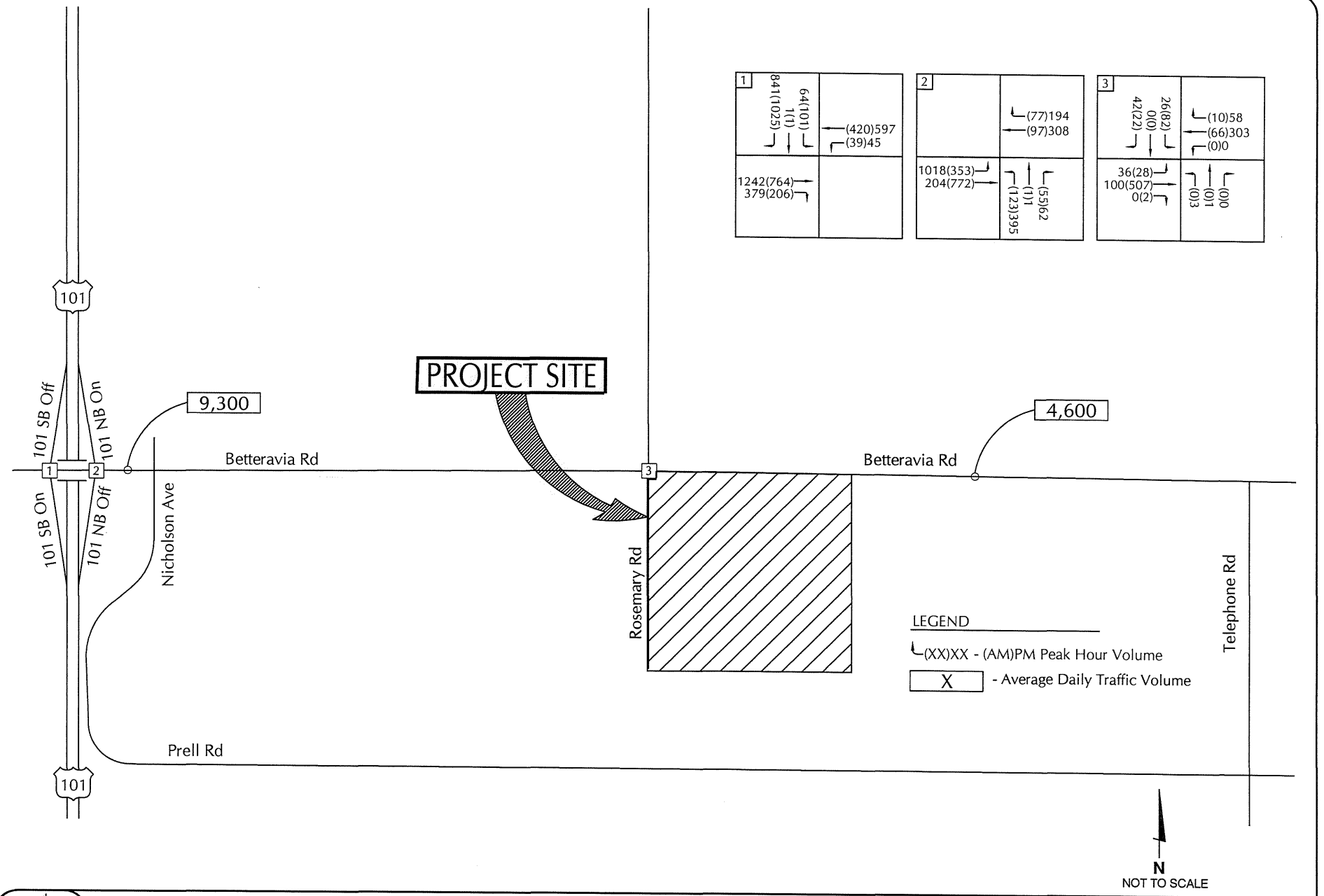
Existing average daily traffic (ADT) volumes for the study-area roadways were obtained from count data contained in the traffic and circulation study for the East Cat Canyon Oil Field Redevelopment Project.[1] The Existing ADT volumes are shown on Figure 4. The operational characteristics of the study-area roadways were analyzed based on the County's engineering roadway design capacities (roadway capacities are summarized in the Technical Appendix). Table 1 shows the Existing traffic volumes and levels of service (LOS) for the study-area roadways.

Table 1
Existing Roadway Operations

Roadway	Segment	Geometry	Existing ADT	LOS
Betteravia Road	e/o US 101	4 lanes	9,300	LOS A
	e/o Rosemary Road	2 lanes	4,600	LOS A

As shown, the study-area roadway segments currently operate in the LOS A range – which indicates good operations.

[1] Traffic and Circulation Study for the East Cat Canyon Oil Field Redevelopment Project, Associated Transportation Engineers, June 2019.



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EXISTING TRAFFIC VOLUMES

FIGURE 4

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Existing Intersection Operations

Traffic flow on street networks is generally most constrained at intersections, therefore detailed traffic flow analyses focus on the operating conditions of critical intersections during peak travel periods. "Levels of Service" (LOS) A through F are used to rate intersection operations, with LOS A indicating free flow operations and LOS F indicating congested operations (more complete definitions of levels of service are included in the Technical Appendix). The County of Santa Barbara and Caltrans consider LOS C as the minimum acceptable operating standard for intersections. The City of Santa Maria has established LOS D as the acceptable operating standard for intersections.

Figure 4 shows the existing AM and PM peak hour traffic volumes for the study-area intersections. Existing traffic volumes were collected at the study-area intersections in February of 2020 (see Technical Appendix for count data). Counts were conducted during the AM peak commuter period (6:00-9:00 AM) and PM peak commuter period (4:00-6:00 PM). The peak 1-hour volumes were then identified for the analysis.

Levels of service were calculated for the signalized intersections using the "Intersection Capacity Utilization" (ICU) methodology, which is a volume-to-capacity level of service method adopted by the County, the City and SBCAG. In addition, County staff requested that the levels of service for the US 101/Betteravia Road interchange be calculated using the methodology outlined in the Highway Capacity Manual[2] (HCM) since the interchange is also under Caltrans jurisdiction and the HCM method is preferred by Caltrans. The HCM levels of service are based on vehicles delays.

Levels of service for Betteravia Road/Rosemary Road intersection, which is controlled by Stop-signs, were calculated using the unsignalized methodology outlined in the HCM. Each movement required to stop or yield has a level of service rating and there is an overall level of service rating presented for the intersection. Pursuant to the HCM methods, levels of service were calculated and reported based on the average seconds of delay per vehicle for the stop and yield movements.

Table 2 lists the existing traffic controls and levels of service for the study-area intersections.

[2] Highway Capacity Manual, Transportation Research Board, 6th Edition, 2016.

Table 2
Existing Intersection Operations

Intersection	Control	AM Peak Hour		PM Peak Hour	
		ICU or Delay	LOS	ICU or Delay	LOS
Betteravia Road/US 101 SB Ramps(a)					
ICU Method	Signal	0.60	LOS A	0.65	LOS C
HCM Method		11.5 Sec.	LOS B	12.4 Sec.	LOS B
Betteravia Road/US 101 NB Ramps(a)					
ICU Method	Signal	0.38	LOS A	0.66	LOS B
HCM Method		12.3 Sec.	LOS B	35.1 Sec.	LOS C
Betteravia Road/Rosemary Road(b)	Stop Sign	11.1 Sec.	LOS B	8.7 Sec.	LOS A

(a) Intersection located within County, Caltrans, and City of Santa Maria jurisdictions.

(b) Intersection located within County jurisdiction.

The data presented in Table 2 show that the study-area intersections currently operate at LOS C or better during the AM and PM peak hours, which meet the adopted standards.

THRESHOLDS OF SIGNIFICANCE

The US 101/Betteravia Road interchange is located within the jurisdiction of the County, Caltrans, and the City of Santa Maria. The Betteravia Road/Rosemary Road intersection is located within the County's jurisdiction. The County, Caltrans, and City of Santa Maria traffic impact thresholds are outlined below.

Santa Barbara County Thresholds

A. The project will result in a significant impact on transportation and circulation if proposed project traffic increases the volume-to-capacity (V/C) ratio at local intersections by the values provided in the following table:

Significant Changes in Levels of Service	
Intersection Level of Service (Including Project)	Increase in V/C or Trips Greater Than
LOS A	0.20
LOS B	0.15
LOS C	0.10
LOS D	15 Trips
LOS E	10 Trips
LOS F	5 Trips

B. The project's access to a major road or arterial road would require access that would create an unsafe situation, a new traffic signal, or major revisions to an existing traffic signal.

C. The project would add traffic to a roadway that has design features (e.g., narrow width, road-side ditches, sharp curves, poor sight distance, inadequate pavement structure) that would become a potential safety problem with the addition of project traffic.

D. Project traffic would utilize a substantial portion of an intersection's capacity where the intersection is currently operating at acceptable levels of service, but with cumulative traffic would degrade to or approach LOS D (V/C 0.80) or lower. Substantial is defined as a minimum change of 0.03 for an intersection which would operate from 0.80 to 0.85, a change of 0.02 for an intersection which would operate from 0.86 to 0.90 and a change of 0.01 for an intersection which would operate greater than 0.90 (LOS E or worse).

The roadway impact threshold defines a significant roadway impact if a project would increase traffic volumes by more than 1.0 percent (either project-specific or project contribution to cumulative impacts) on a roadway that currently exceeds its Acceptable Capacity or is forecast to exceed its Acceptable Capacity under cumulative conditions.

City of Santa Maria

The City of Santa Maria considers LOS D acceptable for roadway and intersection operations, with mitigations required for LOS E and F.

Caltrans

The Caltrans minimum standard for traffic operations is the cusp of LOS C/D (LOS C or better is considered acceptable). An impact is considered significant if the Project adds traffic to facilities that operate at LOS D, E and F.

PROJECT-SPECIFIC ANALYSIS

Trip Generation – Operational Data

Trip generation estimates were calculated for the Project using operational data provided by the applicant. The operational data includes the number of employees per shift and the number of trucks making inbound and outbound deliveries. The data was developed for both average periods and the peak harvest period (May-August).

The plant would employ an estimated 153 employees during normal periods and 623 employees during peak harvest periods (in three shifts). The site serves as a regional processing facility. Trucks that transport product for the processor come from two sources: semis delivering produce from Monterey and San Luis Obispo Counties and local field trucks from farms in the east and west Santa Maria Valley. Of the total trucks delivering produce approximately 40% of the daily fruit deliveries will arrive via refrigerated semi-trucks from the northern counties and approximately 60% of the daily fruit will arrive via local farm field trucks form the Santa Maria Valley. The processed products are shipped from the warehouse via semi-trucks. The truck operations are reviewed further below.

Processing Semi-Trucks: During peak harvest periods, approximately 30 semi-trucks per day arrive the at the facility from the northern counties and are evenly distributed through the day with scheduled arrival times. The first semi-trucks arrive between 6-7 AM and the final truck departure is between 5-6 PM. All semi-trucks travel on US Highway 101 and access the site via the Betteravia Road interchange.

Processing Field Trucks: During peak harvest periods, approximately 46 local field trucks are used daily to ferry produce to the site. Trucks are located in the field to load up produce then deliver to the processing facility. Once emptied the field truck is loaded with empty crates and returns to the field. Each field truck is anticipated to make three round trips per day.

Warehouse Semi-Trucks: During peak harvest periods, approximately 30 semi-trucks per day deliver processed products from the warehouse facility. The trucks are evenly distributed through the day with scheduled arrival times. The first semi-trucks depart the site between 6-7 AM and the final truck departure is at 6 PM. All semi-trucks travel on US Highway 101 and access the site via the Betteravia Road interchange.

Tables 3A and 3B present the Project trip generation estimates for the average and peak harvest periods (worksheets showing the calculations are contained in the Technical Appendix).

Table 3A
Project Trip Generation – Average Periods

Employees						
Building Area & Use	**Shift**	**Employees(a)**	**Shift Schedules**	**ADT**	**AM Peak (7-8 AM)**	**PM Peak (5-6 pm)**
Warehouse	#1	18	6:00 AM-2:00 PM	36	0	0
	#2	7	2:30 PM-10:30 PM	14	0	0
Subtotal		25		50	0	0
Processing	#1	40	6:00 AM-4:00 PM	80	0	0
		20 Admin	8:00 AM-5:00 PM	40	20	20
	#2	40	5:30 PM-3:00 AM	80	0	40
		8 Admin	6:00 PM-3:00 AM	16	0	8
	#3	20	2:00 AM-5:00 AM	40	0	0
Subtotal		128		256	20	68
Total Employees		*153*		*306*	*20*	*68*
Trucks						
Building Area & Use	**Truck Type**	**Trucks Per Day**		**ADT**	**AM Peak (7-8 AM)**	**PM Peak (5-6 PM)**
Warehouse	Semi-Trucks(b)	30		60	3	4
Processing	Semis(c)	8		16	2	2
	Field Trucks(d)	12		72	7	7
Subtotal		20		88	9	9
Total Trucks		*50*		*148*	*12*	*13*
Project Totals Non-Harvest				**454**	**32**	**81**

(a) Trip generation assumes 100% drive alone (no carpools and no drop offs).

(b) ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times.

(c) Semi trucks from the north. ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times assuming 10% in peak hour.

(d) Field trucks from local areas. ADT assumes 3 inbound + 3 outbound trips per day. Peak hour trips based on operational data for arrival and departure times assuming 10% in peak hour.

Table 3A shows that the Project would generate 454 ADT during average periods, with 32 trips occurring during the AM peak hour and 81 trips occurring during the PM peak hour.

Table 3B
Project Trip Generation – Peak Harvest Season

Employees						
Building Area & Use	**Shift**	**Employees(a)**	**Shift Schedules**	**ADT**	**AM Peak (6-7 AM)**	**PM Peak (5-6 pm)**
Warehouse	#1	18	6:00 AM-2:00 PM	36	2	0
	#2	7	2:30 PM-10:30 PM	14	0	0
Subtotal		25		50	2	0
Processing	#1	275	6:00 AM-4:00 PM	550	28	0
		20 Admin	8:00 AM-5:00 PM	40	0	20
	#2	275	5:30 PM-3:00 AM	550	0	275
		8 Admin	6:00 PM-3:00 AM	16	0	8
	#3	20	2:00 AM-5:00 AM	40	0	0
Subtotal		598		1,196	28	303
Total Employees		*623*		*1,246*	*30*	*303*
Trucks						
Building Area & Use	**Truck Type**	**Trucks Per Day**		**ADT**	**AM Peak (6-7 AM)**	**PM Peak (5-6 PM)**
Warehouse	Semi-Trucks(b)	30		60	3	4
Processing	Semi-Trucks (c)	30		60	6	6
	Field Trucks(d)	46		276	28	28
Subtotal		76		336	34	34
Total Trucks		*106*		*396*	*37*	*38*
Project Totals Peak Harvest				**1,642**	**67**	**341**

(a) Trip generation assumes 100% drive alone (no carpools and no drop offs).

(b) ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times.

(c) Semi trucks from the north. ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times assuming 10% in the peak hour.

(d) Field trucks from local areas. ADT assumes 3 inbound + 3 outbound trips per day. Peak hour trips based on operational data for arrival and departure times assuming 10% in the peak hour.

Table 3B shows that the Project would generate 1,642 ADT during peak harvest periods, with 67 trips occurring during the AM peak hour and 341 trips occurring during the PM peak hour.

Trip Generation – ITE Rates

Project trip generation was also evaluated using the rates contained in the Institute of Transportation Engineers (ITE) Trip Generation manual.[3] Table 4 presents the trip Project trip generation estimates based on the ITE rates for Warehouse and Manufacturing uses with the number of peak harvest employees used as the independent variable.

Table 4
Project Trip Generation Peak Harvest Season – ITE Rates

Land Use	Size	ADT		AM Peak Hour		PM Peak Hour	
		Rate	Trips	Rate	Trips	Rate	Trips
Freezer(a)	25 Emps	5.05	126	0.61	26	0.66	17
Food Processing(b)	598 Emps	2.47	1,477	0.37	221	0.33	197
Totals			**1,603**		**247**		**214**

(a) Trip generation based on ITE rates for Warehouse (ITE #150).
(b) Trip generation based on ITE rates for Manufacturing (ITE #140).

Table 4 shows that the Project would generate 1,603 ADT, with 247 trips occurring during the AM peak hour and 214 trips occurring during the PM peak hour – which are similar to the trip trip generation estimates developed using the operational data.

As a reasonable worst-case analysis, Project impacts are evaluated assuming the traffic levels that would be generated during peak harvest period (1,642 ADT, 67 AM peak hour trips, 341 PM peak hour trips – see Table 3B).

Project Trip Distribution

The trips generated by the Project were distributed to the study-area street network based on the percentages shown in Table 5. As shown, separate trip distribution models were developed for the employees, semis bringing produce from northern counties, field trucks bringing products from the local fields, and warehouse trucks transporting products to market.

Approximately 19 of the field trucks (40%) service fields daily in the eastern Valley utilizing ranch roads and the following public roads; Dominion Road, Telephone Road, and Philbrick Road to access East Betteravia Road. Approximately 9 field trucks (20%) service fields daily in the Valley and access the facility via Main Street and Highway 101 south to East Betteravia Road. Approximately 12 of the field trucks (25%) service fields daily in the western Valley

[3] Trip Generation, Institute of Transportation Engineers, 10th Edition, 2017.

and utilize West Betteravia Road to access the facility. Approximately 6 of the field trucks (15%) service fields daily in the Valley via Clark Avenue and Highway 101 North to East Betteravia Road. All of the semi-trucks transporting product to the facility come from the north and use the Betteravia Road interchange. The semi-trucks transporting the processed product from the site are evenly split to the north (50% and the south (50%)

Table 5a
Project Trip Distribution - Employees

Employee Trip Distribution Percentages		
Origin/Destination	**Direction**	**Percentage**
US 101	North South	45% 20%
Betteravia Road	West	35%

Table 5b
Project Trip Distribution - Warehouse Trucks

Warehouse Truck Trip Distribution Percentages		
Origin/Destination	**Direction**	**Percentage**
US 101	North South	50% 50%

Table 5c
Project Trip Distribution – Processing Semi Trucks (40% = 30 trucks)

Processing Semi Truck Distribution Percentages		
US 101	North	100%

Table 5d
Project Trip Distribution – Processing Local Field Trucks (60% = 46 trucks)

Processing Local Field Truck Distribution Percentages		
US 101	North South	20% 15%
Betteravia Road	East West	40% 25%
Totals		100%

Figure 5 shows the assignment of Project traffic onto the study-area street network. It is noted that the impact analysis accounts larger trucks. Since trucks are larger and accelerate more slowly than passenger cars (and thus have a greater effect on traffic flow than passenger cars), the truck trips were converted to "Passenger Car Equivalents" (PCEs). As recommended in the Highway Capacity Manual, each truck trip was converted to 2 PCEs since the study-area roads are located in flat terrain.

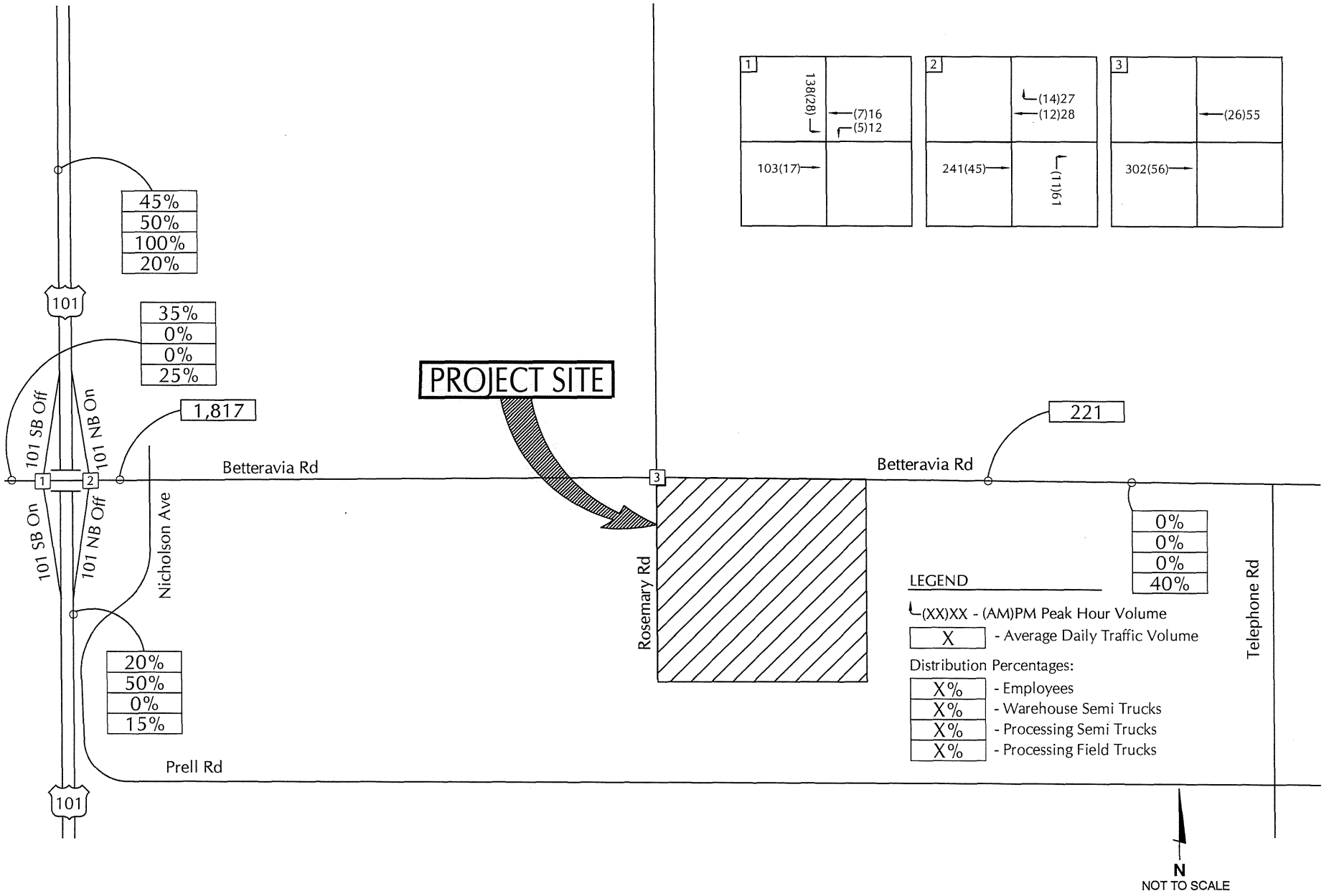
Existing + Project Roadway Operations

The Existing + Project roadway volumes are shown on Figure 6. Table 6 compares the Existing and Existing + Project roadway operations and identifies impacts based on the County's roadway capacity standards.

Table 6
Existing + Project Roadway Operations

Roadway	Segment	Existing ADT	Existing + Project ADT	LOS
Betteravia Road	e/o US 101	9,300	11,117	LOS A
	e/o Rosemary Road	4,600	4,821	LOS A

The data presented in Table 6 show that the study-area roadways are forecast to continue to operate at LOS A under Existing + Project conditions. The Project would not significantly impact the study-area roadway segments based on adopted thresholds.



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PROJECT TRIP DISTRIBUTION AND ASSIGNMENT - PEAK HARVEST SEASON

FIGURE 5

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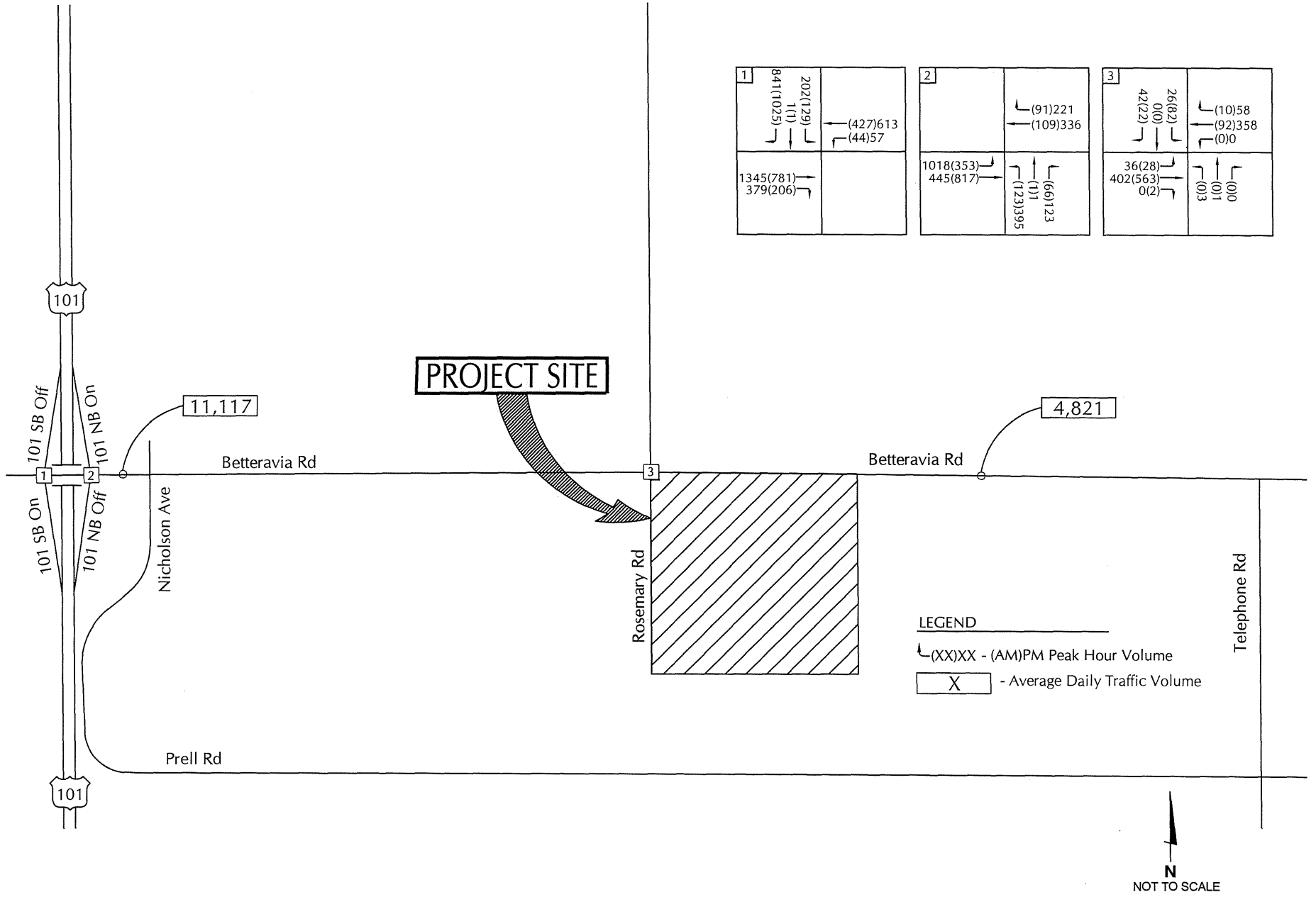

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EXISTING + PROJECT TRAFFIC VOLUMES - PEAK HARVEST SEASON

FIGURE 6

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Existing + Project Intersection Operations

Levels of service were calculated for the study-area intersections assuming the Existing + Project traffic volumes shown on Figure 6. Tables 7 and 8 compare the Existing and Existing + Project levels of service and identify project-specific impacts based on adopted thresholds.

Table 7
Existing + Project Levels of Service – AM Peak Hour

Intersection	ICU or Delay/LOS		Project-Added	
	Existing	Existing + Project	Trips(a)	Impact?
Betteravia Road/US 101 SB Ramps ICU Method HCM Method	0.60/LOS A 11.5 Sec./LOS B	0.61/LOS B 11.8 Sec./LOS B	57	No
Betteravia Road/US 101 NB Ramps ICU Method HCM Method	0.38/LOS A 12.3 Sec./LOS B	0.39/LOS A 13.9 Sec./LOS B	82	No
Betteravia Road/Rosemary Road	11.1 Sec./LOS B	12.0 Sec./LOS B	82	No

Project Added Trips = PCEs (1 PCE for passenger vehicles and 2 PCEs for trucks).

Table 8
Existing + Project Levels of Service – PM Peak Hour

Intersection	ICU or Delay/LOS		Project-Added	
	Existing	Existing + Project	Trips(a)	Impact?
Betteravia Road/US 101 SB Ramps ICU Method HCM Method	0.65/LOS B 12.4 Sec./LOS B	0.67/LOS B 14.5 Sec./LOS B	269	No
Betteravia Road/US 101 NB Ramps ICU Method HCM Method	0.66/LOS B 31.5 Sec./LOS C	0.68/LOS B 30.1 Sec./LOS C	357	No
Betteravia Road/Rosemary Road	8.7 Sec./LOS A	11.1 Sec./LOS B	357	No

Project Added Trips = PCEs (1 PCE for passenger vehicles and 2 PCEs for trucks).

The data presented in Tables 7 and 8 show that the study-area intersections are forecast to operate at LOS C or better during the AM and PM peak hour periods with Existing + Project traffic. Thus, the Project would not significantly impact the study-area intersections based on adopted thresholds.

CUMULATIVE ANALYSIS

Traffic Forecasts

Cumulative conditions were forecast assuming the addition of traffic generated by the approved and pending development projects located in the Project study-area. The Santa Maria Traffic Model was used to forecast the Cumulative traffic increases for the City area west of US 101 and a list of County projects was used to forecast traffic increases for approved and pending development projects in the County area east of US 101 (cumulative project list contained in Technical Appendix for reference). The Cumulative traffic forecasts are shown in Figure 7 and Cumulative + Project forecasts are shown in Figure 8.

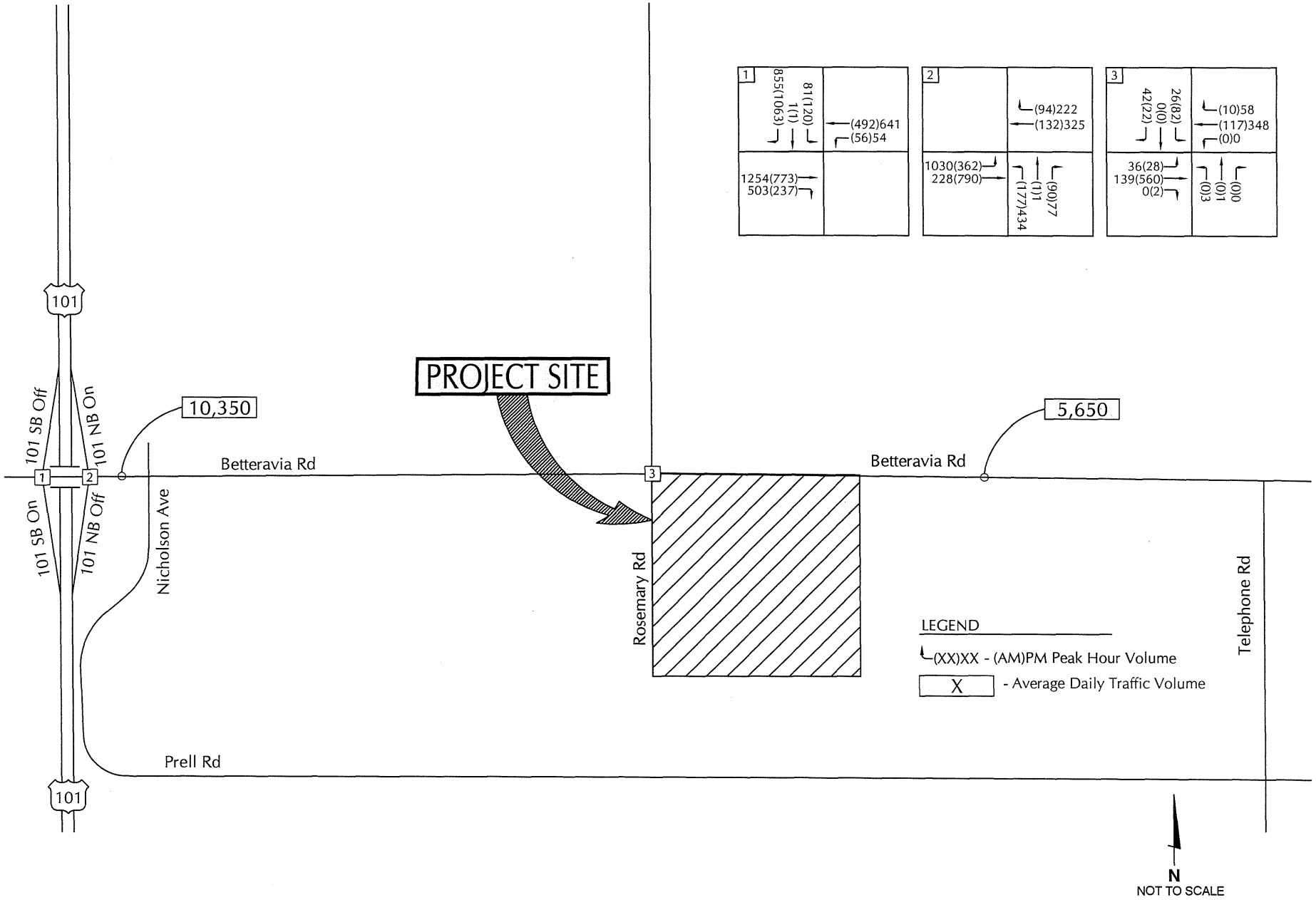
Cumulative + Project Roadway Operations

Cumulative + Project roadway volumes are shown on Figure 8. Table 9 compares the Cumulative and Cumulative+ Project roadway volumes and identifies cumulative impacts based on the County's roadway capacity standards.

Table 9
Cumulative + Project Roadway Operations

Roadway	Segment	Cumulative ADT	Cumulative + Project ADT	LOS
Betteravia Road	e/o US 101	10,350	12,617	LOS A
	e/o Rosemary Road	5,650	5,871	LOS A

As shown in Table 9, the study-area roadways are forecast to operate at LOS A with Cumulative and Cumulative + Project traffic. The Project would therefore not contribute to significant cumulative roadway impacts based on adopted thresholds.



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CUMULATIVE TRAFFIC VOLUMES

FIGURE 7

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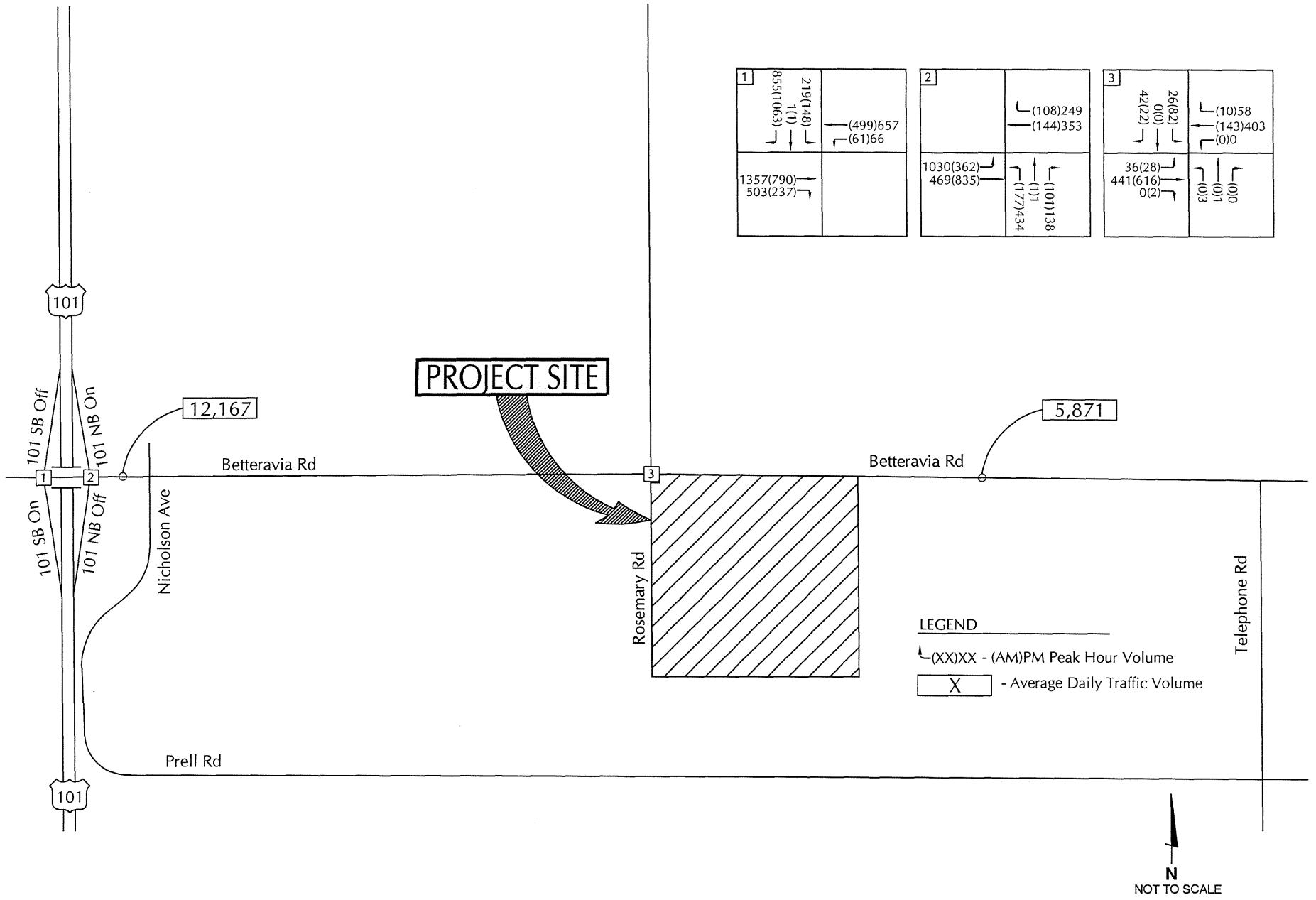

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CUMULATIVE + PROJECT TRAFFIC VOLUMES - PEAK HARVEST SEASON

FIGURE 8

JH - ATE#20014

Cumulative Intersection Operations

Tables 10 and 11 compare the Cumulative and Cumulative + Project levels of service for the study-area intersections and identify the significance of cumulative impacts based on adopted thresholds.

Table 10
Cumulative + Project Levels of Service – AM Peak Hour

Intersection	ICU or Delay/LOS		Project Added	
	Cumulative	Cumulative + Project	Trips(a)	Impact?
Betteravia Road/US 101 SB Ramps ICU Method HCM Method	0.63/LOS B 12.5 Sec./LOS B	0.63/LOS B 12.9 Sec./LOS B	57	No
Betteravia Road/US 101 NB Ramps ICU Method HCM Method	0.40/LOS A 22.3 Sec./LOS C	0.42/LOS A 22.4 Sec./LOS C	82	No
Betteravia Road/Rosemary Road	12.3 Sec./LOS B	13.1 Sec./LOS B	82	No

Project Added Trips = PCEs (1 PCE for passenger vehicles and 2 PCEs for trucks).

Table 11
Cumulative + Project Levels of Service – PM Peak Hour

Intersection	ICU or Delay/LOS		Project Added	
	Cumulative	Cumulative + Project	Trips(a)	Impact?
Betteravia Road/US 101 SB Ramps ICU Method HCM Method	0.66/LOS B 12.9 Sec./LOS B	0.68/LOS B 15.1 Sec./LOS B	269	No
Betteravia Road/US 101 NB Ramps ICU Method HCM Method	0.70/LOS B 31.8 Sec./LOS C	0.71/LOS C 30.7 Sec./LOS C	357	No
Betteravia Road/Rosemary Road	9.1 Sec./LOS A	12.1 Sec./LOS B	357	No

Project Added Trips = PCEs (1 PCE for passenger vehicles and 2 PCEs for trucks).

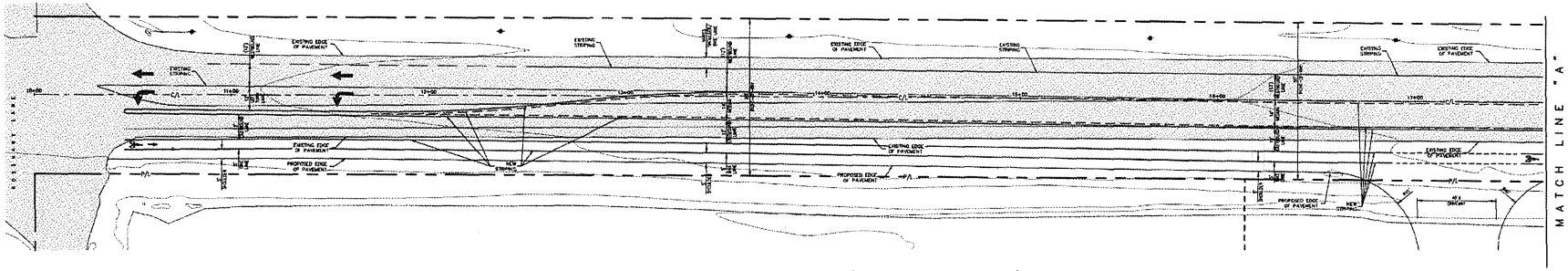
As shown in Tables 10 and 11, the study-area intersections are forecast to operate at LOS C or better Cumulative and Cumulative + Project traffic, which meet the adopted standards. The Project would therefore not contribute to significant cumulative impacts based on adopted thresholds.

SITE ACCESS AND CIRCULATION

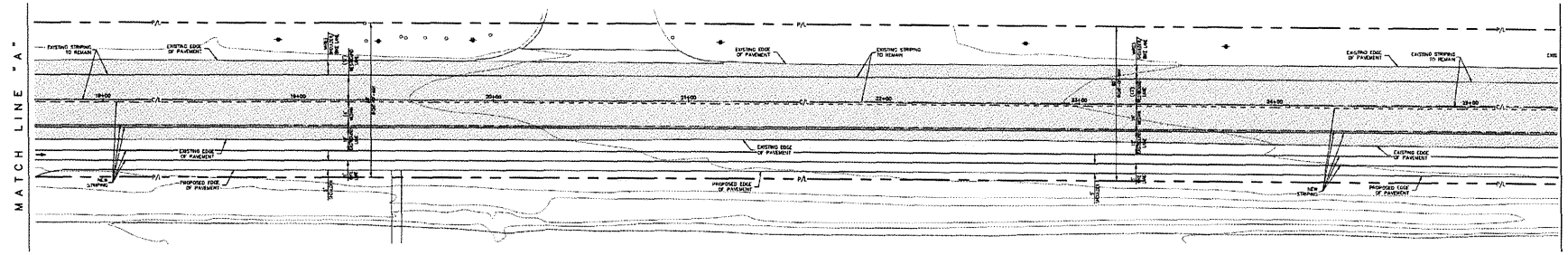
As shown on the Project site plan (see Figure 2), vehicular access to the Project site is proposed via two driveways on Betteravia Road. The design of the driveways was developed based on input provided by County staff. Based on the direction provided, Betteravia Road will be widened and restriped to provide a 14-foot center left-turn lane along the entire site frontage to accommodate westbound left-turns into the site (as well eastbound left-turns into the parcels on the north side of Betteravia Road). Eastbound Betteravia Road will be widened and restriped to provide a 5-foot bike lane and a 5-foot shoulder (10-foot total) along the site frontage to accommodate eastbound right-turns into the Project site. The proposed Betteravia Road frontage improvements are illustrated on Figure 9.

The need for turn lanes on Betteravia Road were evaluated using Santa Barbara County criteria and standards (worksheets are contained in the Technical Appendix). The results of the left-turn lane analysis show that a separate left-turn lanes are not warranted on Betteravia Road for turning into the Project driveways. The Project is forecast to generate 11 left-turns during the peak hour period as the only vehicles travelling westbound and turning left into the site would be field trucks originating from the east. The results of the right-turn lane analysis found that right-turn lanes are warranted on Betteravia Road at both driveways.

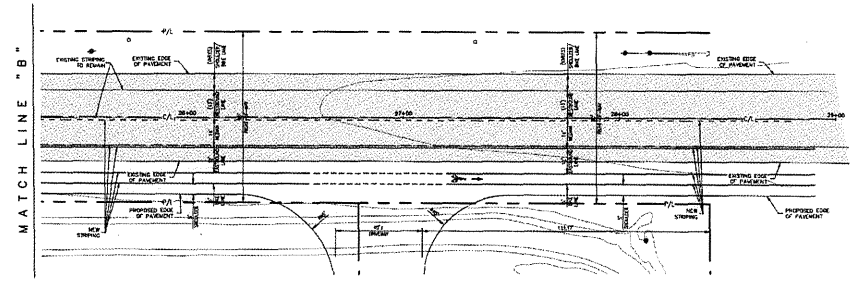
The following text reviews operations at the two driveways during the AM and PM peak hours assuming Cumulative + Project conditions. PM peak hour levels of service are forecasted for two peak periods: 1) the PM peak hour when employees are arriving at the site and 2) the PM peak hour when employees are leaving the site.



BETTERAVIA ROAD IMPROVEMENTS (STA. 10+00 – 17+60)



BETTERAVIA ROAD IMPROVEMENTS (STA. 17+60 – 25+44)



BETTERAVIA ROAD IMPROVEMENTS (STA. 25+44 – 29+00)

N
NOT TO SCALE

ARCTIC COLD COLD STORAGE & PACKAGING
1750 EAST BETTERAVIA ROAD – SANTA MARIA, CA.
APN'S 128-097-001 & 128-097-002
COUNTY OF SANTA BARBARA, CALIFORNIA

BETHEL engineering

FIGURE 9

JH - ATE#20014

Western Driveway. The western driveway proposed on Betteravia Road would serve employee parking areas and trucks transporting products to market. Traffic operations were forecast for the driveway assuming Cumulative + Project peak hour traffic conditions (driveway traffic volumes and level of service worksheets are contained in the Technical Appendix). Table 12 lists the delays and levels of service for turning to/from the driveway.

Table 12
Cumulative + Project Levels of Service – Western Driveway

Intersection / Movement	Delay/LOS		
	AM Peak Hour	PM Peak Hour (Start)	PM Peak Hour (End)
Betteravia/Western Driveway:			
Inbound Right Turns	0.0 Sec./LOS A	0.0 Sec./LOS A	0.0 Sec./LOS A
Inbound Left Turns	9.2 Sec./LOS A	8.4 Sec./LOS A	7.6 Sec./LOS A
Outbound Left+Right Turns	17.1 Sec./LOS C	17.7 Sec./LOS C	22.4 Sec./LOS C

As shown in Table 12, delays for turning to/from the western driveway equate to LOS C or better – indicating acceptable operations. The western driveway is located on a segment of Betteravia Road that is relatively flat and straight. Thus, good sight distances are available for turning to/from the driveway. The evaluation found no operational issues with the western driveway.

The western driveway has been relocated further to the west from the original design that was submitted to the County to provide the minimum 300-foot driveway spacing required in the County's design manual from the existing driveway located on the north side of Betteravia Road.

Eastern Driveway. The eastern driveway proposed on Betteravia Road would serve employee parking areas and trucks bringing products in from the fields. Traffic operations were forecast for the driveway assuming Cumulative + Project peak hour traffic conditions (level of service worksheet contained in the Technical Appendix show the traffic forecasts). Table 13 lists the delays and levels of service for turning to/from the driveway.

Table 13
Cumulative + Project Levels of Service – Eastern Driveway

Intersection / Movement	Delay/LOS		
	AM Peak Hour	PM Peak Hour (Start)	PM Peak Hour (End)
Betteravia/Eastern Driveway:			
Inbound Right Turns	0.0 Sec./LOS A	0.0 Sec./LOS A	0.0 Sec./LOS A
Inbound Left Turns	9.1 Sec./LOS A	8.1 Sec./LOS A	7.8 Sec./LOS A
Outbound Left+Right Turns	16.0 Sec./LOS C	15.0 Sec./LOS C	24.3 Sec./LOS C

As shown in Table 13, delays for turning to/from the eastern driveway equate to LOS C or better – indicating acceptable operations. The eastern driveway is located on a segment of Betteravia Road that is relatively flat and straight. Thus, good sight distances are available for turning to/from the driveway. The evaluation found no operational issues with the eastern driveway.

TRAFFIC ADDTIONS TO CITY OF SANTA MARIA INTERSECTIONS

The Project is forecast to add 24 AM peak hour trips and 119 PM peak hour trips to the Betteravia Road corridor west of US 101, which lies within the City of Santa Maria. Cumulative + Project levels of service for the key intersections within the Betteravia Road corridor were derived from the traffic study prepared for the Enos Ranchos Specific Plan to evaluate potential impacts of the proposed Project. The Enos Ranch Specific Plan, which encompasses a large area located just west of the US 101/Betteravia Road interchange – generally bounded by Battles Road on the north, Betteravia Road on the south, US 101 on the east, and College Drive on the west. The Specific Plan area is currently being developed with commercial retail, auto dealerships, housing, and a school. Table 14 lists the Cumulative + Project levels of service for the key intersections within the Betteravia Road corridor assuming buildout of the Enos Rancho Specific Plan.

Table 14
Cumulative + Project Levels of Service – Betteravia Road Corridor

Intersection	ICU/LOS(a)	
	AM Peak Hour	PM Peak Hour
Betteravia Road/Bradley Road	0.56/LOS A	0.86/LOS D
Betteravia Road/College Drive	0.59/LOS A	0.76/LOS C
Betteravia Road/Miller Street	0.48/LOS A	0.75/LOS C
Betteravia Road/Broadway	0.67/LOS B	0.77/LOS C

(a) LOS assumed Enos Ranch SP planned improvements.

As shown, the key intersections within the Betteravia Road corridor are forecasts to operate at LOS A-B during the AM peak hour and LOS C-D during the PM peak hour assuming full development of the Enos Ranchos Specific Plan (as well as all other approved/pending development projects located in the City of Satna Maria) – which meets the City's LOS D standard. The key intersections are forecast to operate at LOS D or better with the additional traffic generated by the proposed Project. Thus, the Project would not significantly impact the Betteravia Road corridor based on City of Santa Maria standards.

MITIGATION MEASURES

Transportation Impact Mitigation Fees

The Project will be required to pay transportation impact mitigation fees to Santa Barbara County based on the number of PM peak hour trips generated (see Tables 3 and 4). The fees are used to implement the transportation improvements in the County required to accommodate future development.

Frontage Improvements

The Project will be required to implement frontage improvements along Betteravia Road pursuant to County standards. The frontage improvement requirements will be determined by County staff as part of the application review process.

■ ■ ■

REFERENCES AND PERSONS CONTACTED

Associated Transportation Engineers

Scott A. Schell, Principal Transportation Planner
Dan Dawson, Supervising Transportation Planner
Jiho Ha, Transportation Engineer I

References

Trip Generation, Institute of Transportation Engineers, 10th Edition, 2018.

Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 6th Edition, 2018.

Persons Contacted

Robertson, William – County of Santa Barbara
Shull, Robert – Eco Resource Management Systems

TECHNICAL APPENDIX

CONTENTS:

TRAFFIC COUNT DATA

Prepared by National Data & Surveying Services

Rosemary Rd & Betteravia Rd

Peak Hour Turning Movement Count

ID: 20-02007-003
City: Santa Maria

Day: Thursday
Date: 02/27/2020

PEAK HOURS

AM: 06:00 AM - 07:00 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Rosemary Rd — SOUTHBOUND

AM	22	0	82	0	38	AM
NOON	0	0	0	0	0	NOON
PM	42	0	25	1	95	PM

Betteravia Rd — EASTBOUND

AM	NOON	PM	
88	0	349	⇦
0	0	1	↶ 0
28	0	35	↱ 0
507	0	100	→ 0
2	0	0	↴ 0

CONTROL

1-Way Stop (SB)

	AM	NOON	PM
TEV	717	0	569
PHF	0.89		0.92

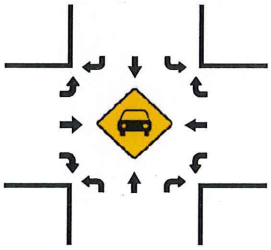
Betteravia Rd — WESTBOUND

PM	NOON	AM	
58	0	10	0 ↰
303	0	66	0 ←
0	0	0	0 ↙
0	0	0	0 ↳
125	0	589	⇨

Rosemary Rd — NORTHBOUND

PM	0	0	3	1	0	PM
NOON	0	0	0	0	0	NOON
AM	2	0	0	0	0	AM

Total Vehicles (AM)



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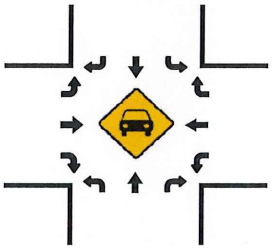
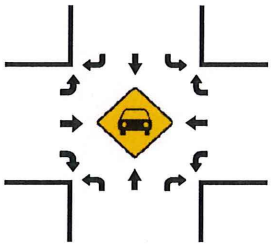


Total Vehicles (Noon)



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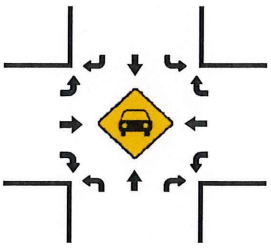

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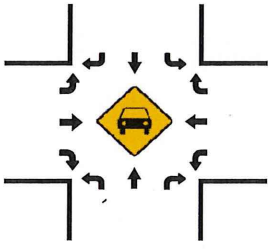

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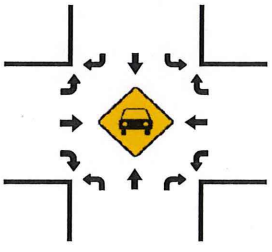
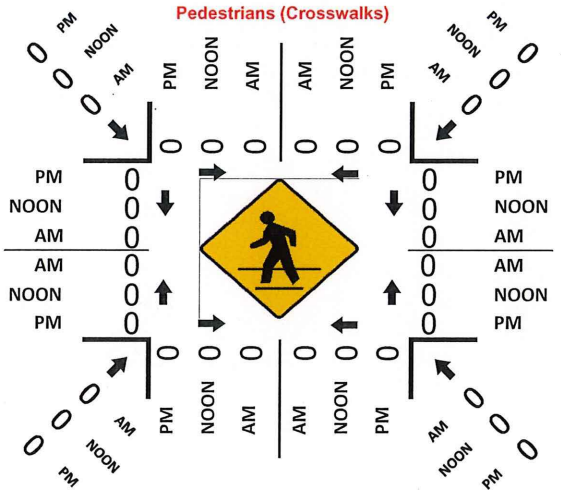


Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

US 101 NB Ramps & Betteravia Rd

Peak Hour Turning Movement Count

ID: 20-02007-001
City: Santa Maria

Day: Thursday
Date: 02/27/2020

PEAK HOURS

AM: 06:00 AM - 07:00 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 06:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

US 101 NB Ramps — SOUTHBOUND

AM	0	0	0	0	430	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	1212	PM

Betteravia Rd — EASTBOUND

AM	NOON	PM	
220	0	703	⇦
0	0	0	↶ 0
353	0	1018	↱ 0
772	0	204	→ 0
0	0	0	↳ 0
AM	NOON	PM	

Betteravia Rd — WESTBOUND

PM	NOON	AM	
194	0	77	↰ 0
308	0	97	← 0
0	0	0	↶ 0
0	0	0	↳ 0
266	0	827	⇨
PM	NOON	AM	

CONTROL: Signalized

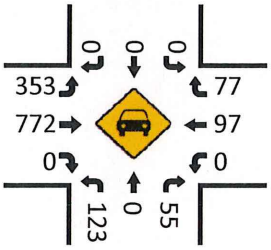
TEV	1477 AM	0 NOON	2181 PM
PHF	0.89		0.95

US 101 NB Ramps — NORTHBOUND

PM	0	0	395	0	62	PM
NOON	0	0	0	0	0	NOON
AM	0	0	123	0	55	AM

US 101 NB Ramps

Total Vehicles (AM)



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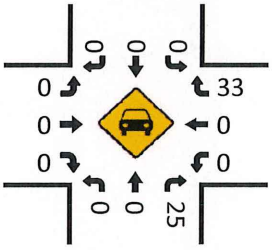
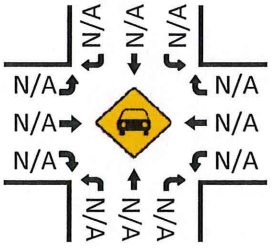


Total Vehicles (Noon)



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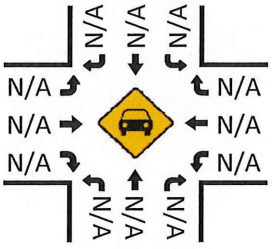
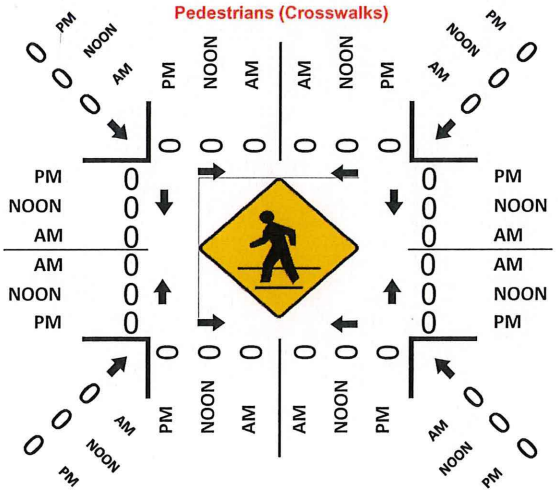


Pedestrians (Crosswalks)



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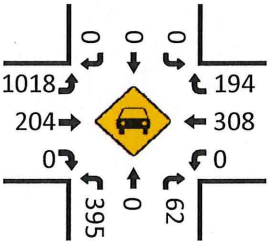

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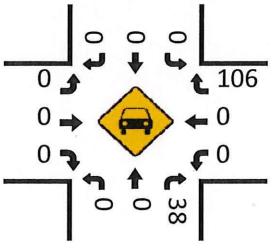


Prepared by National Data & Surveying Services

US 101 SB Ramps & Betteravia Rd

Peak Hour Turning Movement Count

ID: 20-02007-002
City: Santa Maria

Day: Thursday
Date: 02/27/2020

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	06:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

US 101 SB Ramps — SOUTHBOUND

AM	1025	1	101	0	0	AM
NOON	0	0	0	0	0	NOON
PM	841	1	64	0	0	PM

Betteravia Rd — EASTBOUND

AM	NOON	PM	
1445	0	1438	⇦
0	0	0	↶ 0
0	0	0	↱ 0
764	0	1242	→ 0
206	0	379	↴ 0

CONTROL

Signalized

	AM	NOON	PM
TEV	2556	0	3169
PHF	0.96		0.93

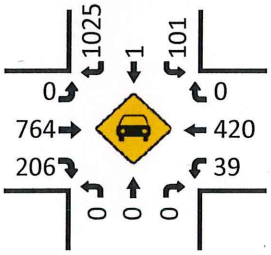
WESTBOUND — Betteravia Rd

PM	NOON	AM	
0	0	0	↰ 0
597	0	420	← 0
45	0	39	↰ 0
0	0	0	↰ 0
1306	0	865	⇨

NORTHBOUND — US 101 SB Ramps

PM	425	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	246	0	0	0	0	AM

Total Vehicles (AM)



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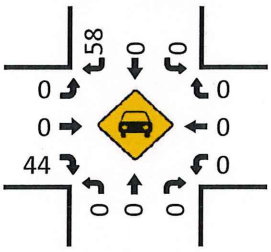
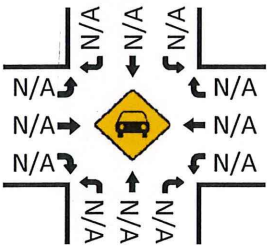


Total Vehicles (Noon)



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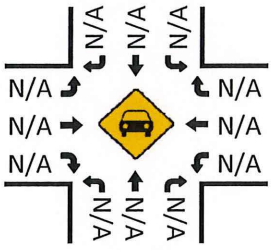
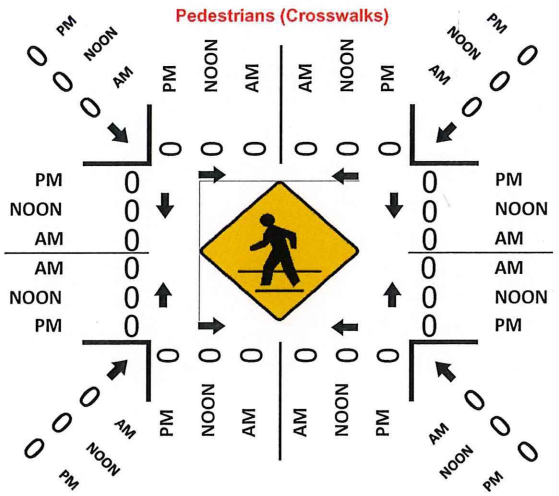
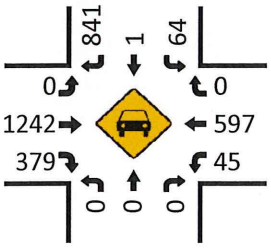


Pedestrians (Crosswalks)



Total Vehicles (PM)



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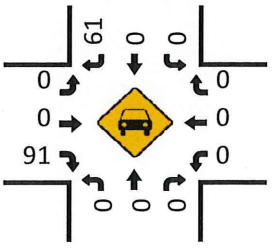


SANTA BARBARA COUNTY ROADWAY DESIGN CAPACITIES

SANTA BARBARA COUNTY PUBLIC WORKS DEPARTMENT
ROADWAY DESIGN CAPACITIES

TYPE OF ROADWAY	# OF LANES	LOS A		LOS B		LOS C		LOS D		LOS E	
		Low	High	Low	High	Low	High	Low	High	Low	High
Arterial	2 Lanes	8,100	12,000	9,400	14,000	10,800	16,000	12,100	18,000	13,500	20,000
Arterial	4 Lanes	16,100	23,900	18,900	27,900	21,600	31,900	24,300	35,900	27,000	39,900
Major	2 Lanes	6,500	9,600	7,500	11,200	8,600	12,800	9,700	14,400	10,800	16,000
Major	4 Lanes	12,900	19,200	15,100	22,300	17,200	25,500	19,400	28,700	21,600	31,900
Collector	- -	4,600	7,100	5,400	8,200	6,200	9,400	6,900	10,600	7,700	11,800

The roadway capacities listed above are "rule of thumb" figures only. Some factors which affect these capacities are intersections (numbers and configuration), degrees of access control, roadway grades, design geometrics (horizontal and vertical alignment standards), sight distance, level of truck and bus traffic and level of pedestrian and bicycle traffic.

ASSOCIATED TRANSPORTATION ENGINEERS
100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418

LEVEL OF SERVICE DEFINITIONS

Intersection Level of Service Definition

LOS **A** is the highest level of service that can be achieved. Intersection approaches are open, turns are easily made, and nearly all drivers find freedom of operation. Average **delays are less than 10 seconds.**

LOS **B** represents stable operation. At signalized intersections average **delays are 10 to 20 seconds**. At unsignalized (stop signs) intersections, **average delays are 10 to 15 seconds**.

LOS **C** still represents stable operation, but periodic backups of a few vehicles may develop. Most drivers begin to feel restricted. At signalized intersections, average **delays are 20 to 35 seconds**. At unsignalized intersections, average **delays are 15 to 25 seconds**.

LOS **D** represents increasing traffic restrictions. Delays may be substantial during short peaks but no excessive backups. At signalized intersections, average **delays are 35 to 55 seconds**. At unsignalized intersections, average **delays are 25 to 35 seconds**.

LOS **E** represents the highest operating capacity of the intersection. At signalized intersections, average **delays are 55 to 80 seconds**. At unsignalized intersections, average **delays are 35 to 50 seconds**.

LOS **F** represents jammed conditions, the intersection is over capacity and safe gaps in the traffic flow are minimal. At signalized intersections, **average delays exceed 80 seconds**. At unsignalized intersections, **average delays exceed 50 seconds**.

Signalized Intersection Level of Service Definitions

LOS	Delay (a)	V/C Ratio	Definition
A	< 10.0	< 0.60	Progression is extremely favorable. Most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	10.1 - 20.0	0.61 - 0.70	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20.1 - 35.0	0.71 - 0.80	Only fair progression, longer cycle lengths, or both, result in higher cycle lengths. Cycle lengths may fail to serve queued vehicles, and overflow occurs. Number of vehicles stopped is significant, though many still pass through intersection without stopping.
D	35.1 - 55.0	0.81 - 0.90	Congestion becomes more noticeable. Unfavorable progression, long cycle lengths and high v/c ratios result in longer delays. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1 - 80.0	0.91 - 1.00	High delay values indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent
F	> 80.0	> 1.00	Considered unacceptable for most drivers, this level occurs when arrival flow rates exceed the capacity of lane groups, resulting in many individual cycle failures. Poor progression and long cycle lengths may also contribute to high delay levels.

(a) Average control delay per vehicle in seconds.

Unsignalized Intersection Level of Service Definitions

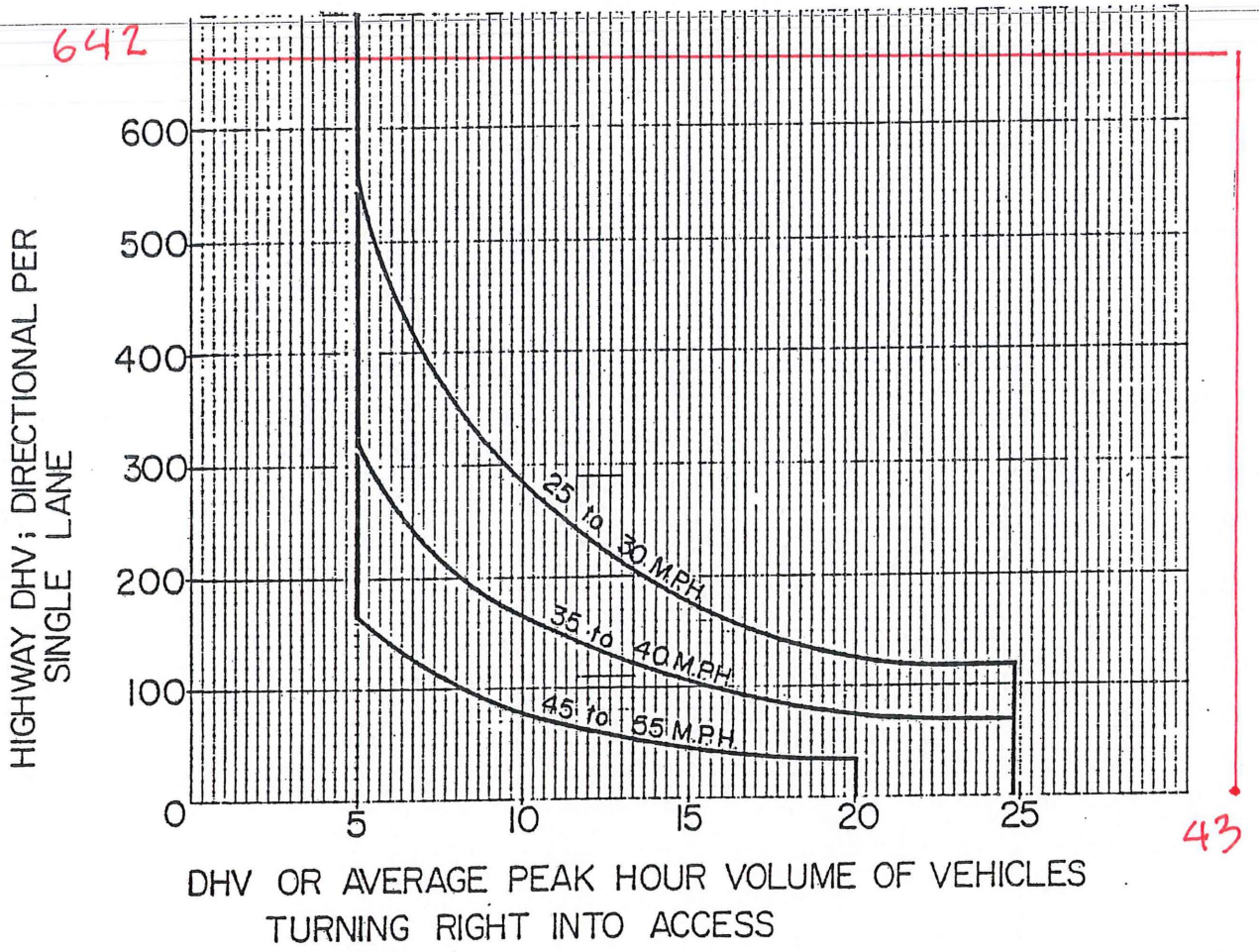
The HCM[1] uses *control delay* to determine the level of service at unsignalized intersections. Control delay is the difference between the travel time actually experienced at the control device and the travel time that would occur in the absence of the traffic control device. Control delay includes deceleration from free flow speed, queue move-up time, stopped delay and acceleration back to free flow speed.

LOS	Control Delay Seconds per Vehicle
A	< 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	> 50.0

[1] Highway Capacity Manual, National Research Board, 2016.

ASSOCIATED TRANSPORTATION ENGINEERS
100 North Hope Avenue, Suite 4, Santa Barbara, CA 93110-1686 • (805) 687-4418 • FAX (805) 682-8509

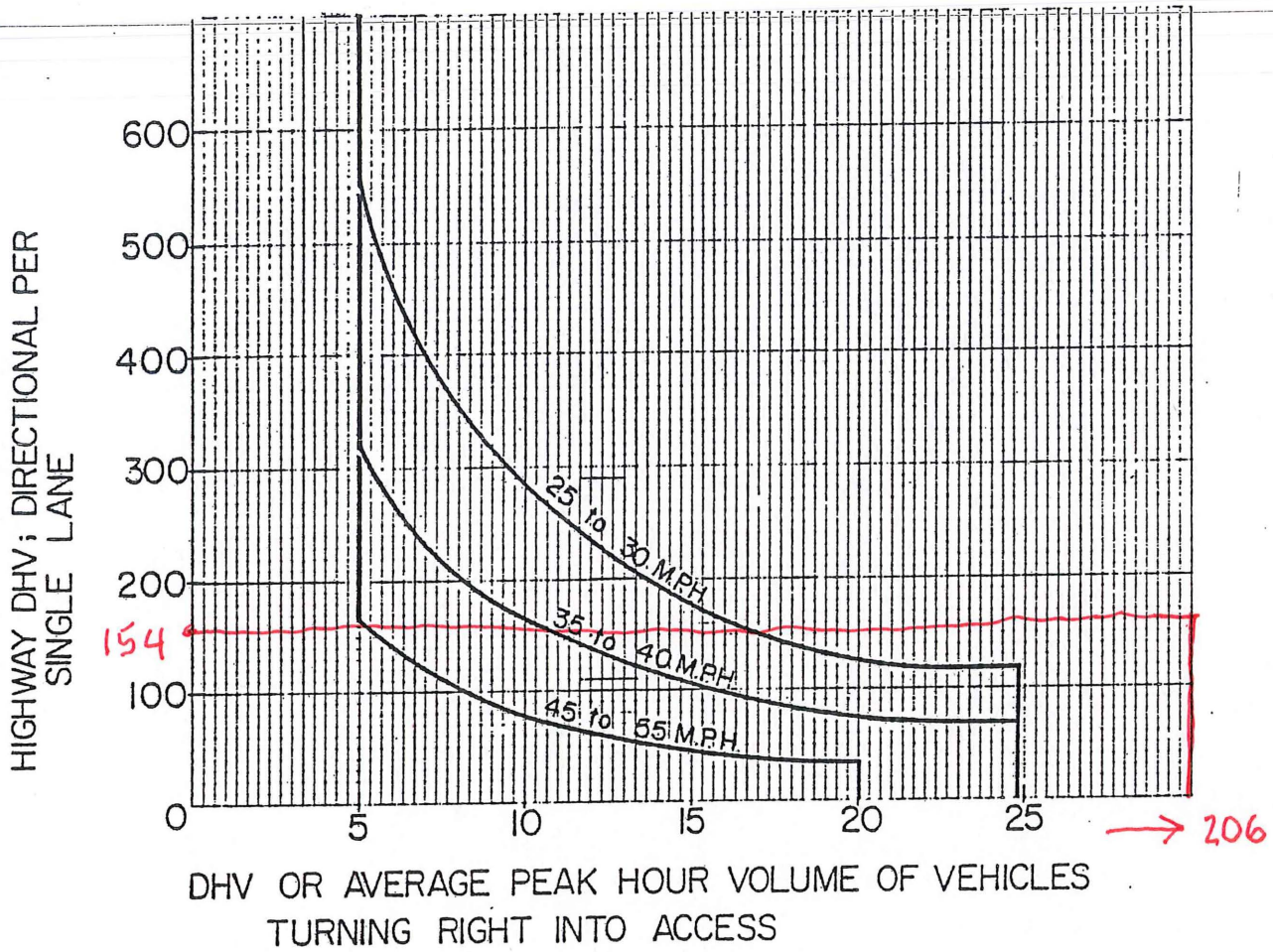
SANTA BARBARA COUNTY TURN LANE WARRANTS



AM PEAK HOUR

SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
ROAD DIVISION

	VOLUME WARRANTS FOR RIGHT-TURN DECELERATION LANES	FIGURE 1

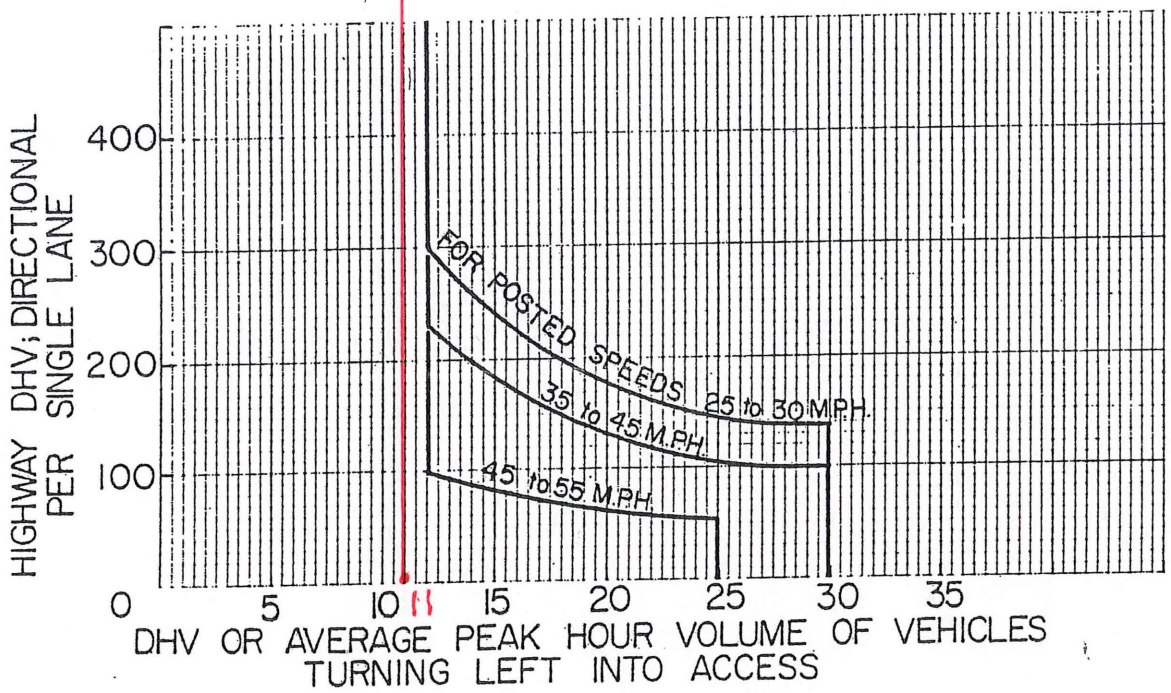


PM PEAK HOUR

SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
ROAD DIVISION

	VOLUME WARRANTS FOR RIGHT-TURN DECELERATION LANES	FIGURE 1

642

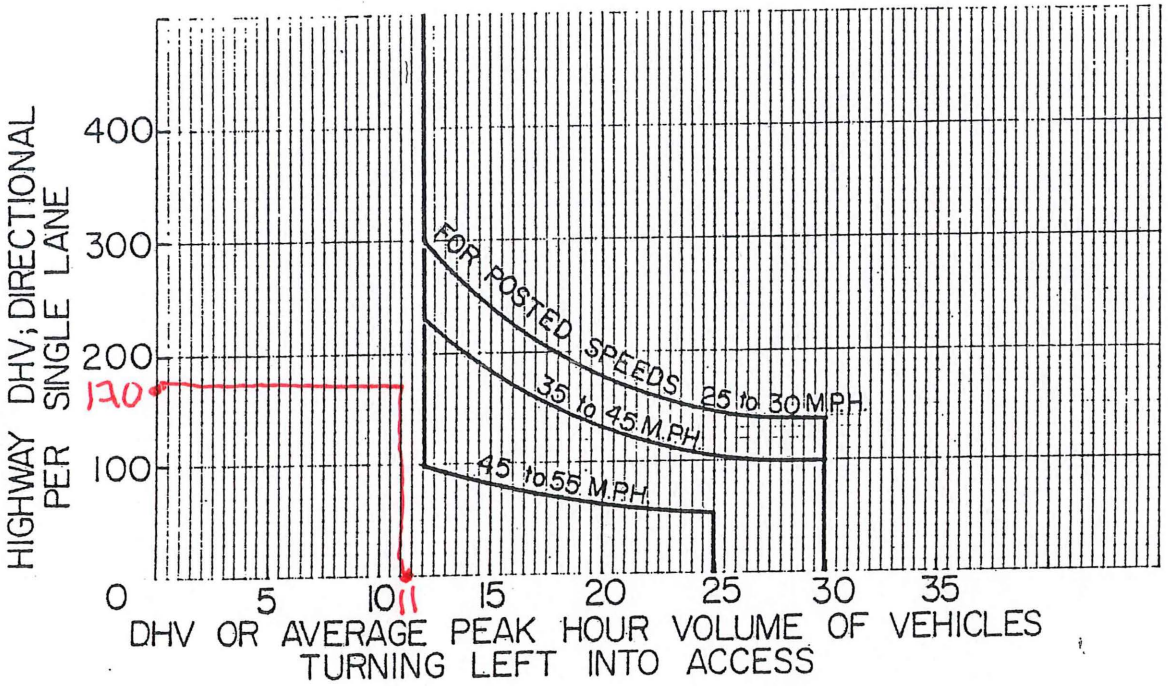


AM PEAK HOUR

SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
ROAD DIVISION

VOLUME WARRANTS FOR LEFT-TURN DECELERATION LANES

FIGURE 3



PM PEAK HOUR

SANTA BARBARA COUNTY
DEPARTMENT OF PUBLIC WORKS
ROAD DIVISION

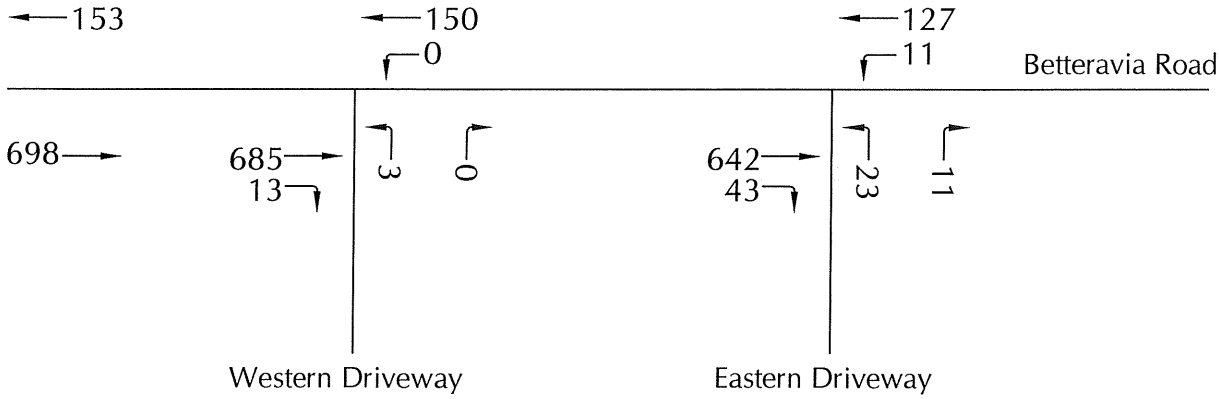
VOLUME WARRANTS FOR
LEFT-TURN DECELERATION LANES

FIGURE
3

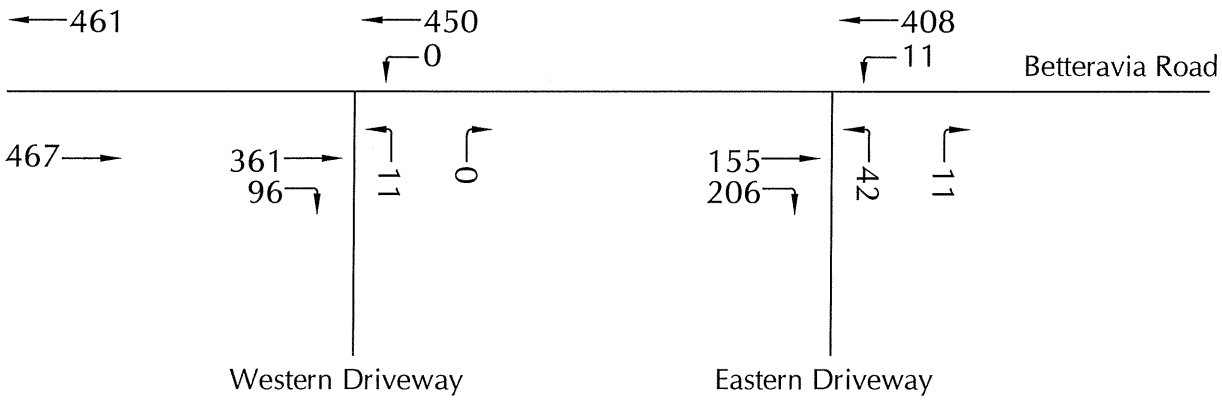
PROJECT DRIVEWAY VOLUMES

07/20/2020

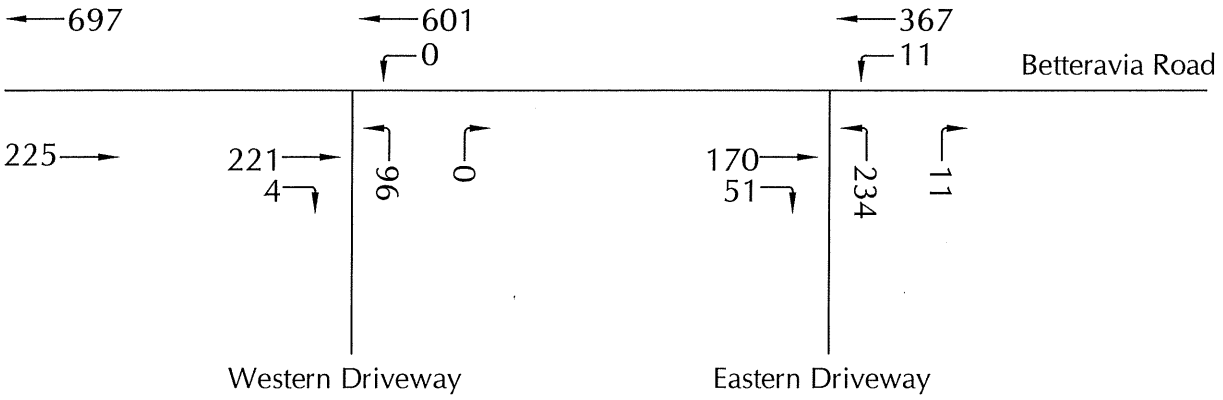
AM Peak Hour (6:00 AM - 7:00 AM)



PM Shift Start (5:30 PM)



PM Shift End (4:00 PM)



PROJECT TRIP GENERATION CALCULATIONS

ARTIC COLD STORAGE PROJECT

TRIP GENERATION FORECASTS - NON HARVEST SEASON

Project Component	Number/Day	Shift	ADT	AM Peak (7-8)		PM Peak (5-6)	
				In	Out	In	Out
EMPLOYEE FORECASTS							
WAREHOUSE							
Shift #1 (a)	18	6:00 AM - 2:00 PM	36	0	0	0	0
Shift #2 (a)	7	2:30 PM - 10:30 PM	14	0	0	0	0
Subtotals:	25		50	0	0	0	0
PROCESSING							
Shift #1 (a)	40	6:00 AM - 4:00 PM	80	0	0	0	0
Shift #1 Admin(a)	20	8:00 AM - 5:00 PM	40	20	0	0	20
Shift #2 (a)	40	5:30 PM - 3:00 AM	80	0	0	40	0
Shift #2 Admin(a)	8	6:00 PM -3:00 AM	16	0	0	0	8
Shift #3 (a)	20	2:00 AM - 5:00 AM	40	0	0	0	0
Subtotals:	128		256	20	0	40	28
Total Employees	**153**		**306**	**20**	**0**	**40**	**28**
TRUCK FORECASTS							
WAREHOUSE SEMI-TRUCKS (b)	30	NA	60	2	1	2	2
PROCESSING VANS (b)	8	NA	16	1	1	1	1
PROCESSING FIELD TRUCKS (c)	12	NA	72	3	4	3	4
Total Trucks	**50**		**148**	**6**	**6**	**6**	**7**
TOTAL PROJECT			**454**	**26**	**6**	**46**	**35**

(a) Trip generation assumes no carpools for employees.
(b) ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times.
(c) ADT assumes 3 inbound + 3 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times.

ARTIC COLD STORAGE PROJECT

TRIP GENERATION FORECASTS - PEAK HARVEST SEASON

Project Component	Number/Day	Shift	ADT	AM Peak (6-7)		PM Peak (5-6)	
				In	Out	In	Out
EMPLOYEE FORECASTS							
WAREHOUSE							
Shift #1 (a)	18	6:00 AM - 2:00 PM	36	2	0	0	0
Shift #2 (a)	7	2:30 PM - 10:30 PM	14	0	0	0	0
Subtotals:	25		50	2	0	0	0
PROCESSING							
Shift #1 (a)	275	6:00 AM - 4:00 PM	550	28	0	0	0
Shift #1 Admin(a)	20	8:00 AM - 5:00 PM	40	0	0	0	20
Shift #2 (a)	275	5:30 PM - 3:00 AM	550	0	0	275	0
Shift #2 Admin(a)	8	6:00 PM -3:00 AM	16	0	0	0	8
Shift #3 (a)	20	2:00 AM - 5:00 AM	40	0	0	0	0
Subtotals:	598		1,196	28	0	275	28
Total Employees	**623**		**1,246**	**30**	**0**	**275**	**28**
TRUCK FORECASTS							
WAREHOUSE SEMI-TRUCKS (b)	30	NA	60	2	1	2	2
PROCESSING SEMI TRUCKS (b)	30	NA	60	3	3	3	3
PROCESSING FIELD TRUCKS (c)	46	NA	276	14	14	14	14
Total Trucks	**106**		**396**	**19**	**18**	**19**	**19**
TOTAL PROJECT			**1,642**	**49**	**18**	**294**	**47**

(a) Trip generation assumes no carpools for employees.
(b) ADT assumes 1 inbound + 1 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times..
(c) ADT assumes 3 inbound + 3 outbound trip per truck. Peak hour trips based on operational data for arrival and departure times.

CUMULATIVE PROJECT LIST

Santa Maria Valley

continued ...

Not within a Community/Specific Plan Area

continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Oil and Gas	12DVP-00000-00005 E. Briggs	ERG OIL & GAS PIPELINE DEVELOPMENT PLAN 129-080-006 129-080-007 129-090-016 129-090-021 129-090-032 129-090-033 129-090-037 129-090-038 129-100-014 129-100-015 129-100-025 129-100-034 129-100-035 129-100-036 129-180-007 129-180-008 129-180-013 129-180-015	In Process					2.9 Mile Oil Pipeline
Ag Development (excluding wineries)	15CUP-00000-00011 N. Campbell	CURLETTI FARM EMPLOYE HOUSING 113-240-009	Approved				50,000	
Oil and Gas	15PPP-00000-00001 K. Lehr	EAST CAT CANYON OIL FIELD REDEVELOPMENT 101-040-005	Proposed					

Note: To appear on this report, a CAP must have a primary parcel designated.
For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

Santa Maria Valley

continued ...

Not within a Community/Specific Plan Area

continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Oil and Gas	15PPP-00000-00002 J. Dargel	UCCB PRODUCTION PLAN 101-030-011 101-040-026 129-180-018 129-180-037 129-180-038	Proposed					
Oil and Gas	15TRM-00000-00003 K. Lehr	EAST CAT CANYON OIL FIELD REDEVELOPMENT (TRM 14,813) 101-040-005	Proposed					
Oil and Gas	16AMD-00000-00010 K. Lehr	NORTH GAREY OIL & GAS DRILLING PRODUCTION PLAN 129-180-007	Approved	0	0	0	0	56 wells
Oil and Gas	18EIR-00000-00002 K. Lehr	EAST CAT CANYON OIL FIELD REDEVELOPMENT (TRM 14,813) 101-040-005	Proposed					

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Santa Maria Valley

continued ...

Not within a Community/Specific Plan Area

continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Oil and Gas	18ZCI-00000-00163 N. Minick	ERG OIL & GAS PIPELINE 129-040-010 129-040-015 129-080-006 129-080-007 129-090-016 129-090-021 129-090-032 129-090-033 129-090-037 129-090-038 129-100-015 129-100-025 129-100-036 129-180-007 129-180-008 129-180-015 129-180-039 129-180-040	In Process					2.9 Mile Oil Pipeline

Not within a Community/Specific Plan Area Cumulative Status Summaries:

Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.
Proposed				
In Process				
Approved	0	0	0	287,636
Under Construction				
Built				
Totals	***0***	***0***	***0***	***287,636***

Old Town Orcutt & OCPlan

Note: To appear on this report, a CAP must have a primary parcel designated.

For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

Santa Maria Valley

continued ...

Old Town Orcutt & OCPlan

continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Commercial	16AMD-00000-00005 D. Eady	ORCUTT UNION PLAZA PHASE II AMENDMENT 105-121-006	Approved	19	16,880	0	0	0

Old Town Orcutt & OCPlan Cumulative Status Summaries:

Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.
Proposed				
In Process				
Approved	19	16,880	0	0
Under Construction				
Built				
Totals	***19***	***16,880***	***0***	***0***

Orcutt Community Plan

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Residential	02TRM-00000-00010 K. Probert	ADDAMO WINERY/DIAMANTE [TM 14,616] 129-151-042	Under Construction	5	0	0	0	0
Residential	03DVP-00000-00009 J. Zorovich	RICE RANCH DEVELOPMENT PLAN 101-010-013 101-020-004 105-140-016	Under Construction	725	0	0	0	
Commercial	09DVP-00000-00029 J. Gerber	CLARK AVENUE COMMERCIAL 103-750-038	Approved	0	12,875	0	0	0
Residential	10DVP-00000-00002 D. Eady	KEY SITE 30 DEVELOPMENT PLAN 107-250-008	Approved	69	0	0	0	0

Note: To appear on this report, a CAP must have a primary parcel designated.

For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

Santa Maria Valley
continued ...
Orcutt Community Plan
continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Residential	10TRM-00000-00003 D. Eady	TERRACE VILLAS TRACT MAP 14,770 129-300-001 129-300-002 129-300-003 129-300-004 129-300-005 129-300-006 129-300-007 129-300-008 129-300-009 129-300-010 129-300-011 129-300-012 129-300-013 129-300-014 129-300-015 129-300-016 129-300-017 129-300-018 129-300-019 129-300-020	Approved	16	0	0	0	0
Residential	13DVP-00000-00010 D. Eady	KEY SITE 3 DEVELOPMENT PLANS 129-151-026	In Process	0	0	0	0	
Commercial	14GPA-00000-00020 N. Campbell	Oasis General Plan Amendment 105-020-063 105-020-064			15,333			
Commercial	15DVP-00000-00009 D. Eady	ORCUTT PUBLIC MARKETPLACE 129-120-024	Proposed	252	211,264			

Note: To appear on this report, a CAP must have a primary parcel designated.
For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

Santa Maria Valley

continued ...

Orcutt Community Plan

continued ...

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Residential	15ZCI-00000-00031 D. Eady	KEY SITE 30 MR-O APARTMENTS AND FINE GRADING 107-250-008	Under Construction	214				
Commercial	16DVP-00000-00009 D. Eady	ORCUTT GATEWAY RETAIL CENTER (KEY SITE 2) 129-280-001	In Process		49,921			
Residential	16SPP-00000-00001 D. Eady	THE NEIGHBORHOODS OF WILLOW CREEK & HIDDEN CANYON SPECIFIC PLAN 113-250-015 113-250-016 113-250-017	Proposed	146				
Residential	16ZCI-00000-00002 D. Eady	KEY SITE 3 NEW MULTI-FAMILY RESIDENTIAL PROJECT 129-151-026	In Process	160				

Orcutt Community Plan Cumulative Status Summaries:

Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.
Proposed	398	211,264		
In Process	160	49,921	0	0
Approved	85	12,875	0	0
Under Construction	944	0	0	0
Built				
Totals	***1,587***	***289,393***	***0***	***0***

Note: To appear on this report, a CAP must have a primary parcel designated.
For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

Cumulative Projects List
For the Entire County

Printed on December 27, 2018 at 10:21 am

Santa Maria Valley Cumulative Status Summaries:

Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.
Proposed	398	211,264		
In Process	160	49,921	0	0
Approved	104	29,755	0	287,636
Under Construction	944	0	0	0
Built				
Totals	***1,606***	***306,273***	***0***	***287,636***

Santa Ynez Valley

Not within a Community/Specific Plan Area

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Commercial	15DVP-00000-00012 J. Ritterbeck	NOJOQUI RANCH TIER II WINERY 081-020-024	Under Construction		12,500			

Not within a Community/Specific Plan Area Cumulative Status Summaries:

Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.
Proposed				
In Process				
Approved				
Under Construction		12,500		
Built				
Totals		***12,500***		

Santa Ynez Valley Plan Area

Use Type	Case Number/ Assigned Staff	Project Name/ APN(s)	Status	# Res. Units/Lots	Commr. Sq. Ft.	Industr. Sq. Ft.	Ag Dev. Sq. Ft.	Misc
Mines	03CUP-00001-00024 J. Dargel	GRANITE GARDNER RANCH MINING REVISIONS PROJECT 137-270-015 137-270-032	In Process	0	0	0	0	250,000 tons/yr

Note: To appear on this report, a CAP must have a primary parcel designated.
For specific information regarding each of these cases
(e.g. project description, location, etc.), please visit the Citizens Access site at: https://aca.sbcountyplanning.org/CitizenAccess/

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

Reference 1 – Betteravia Road/US 101 SB Ramps
Reference 2 – Betteravia Road/US 101 SB Ramps
Reference 3 – Betteravia Road/Rosemary Road
Betteravia Road/Western Driveway
Betteravia Road/Eastern Driveway

HCS7 Two-Way Stop-Control Report

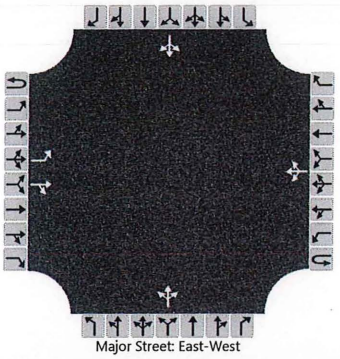
General Information

Analyst	SAS
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	EXISTING CONDITIONS

Site Information

Intersection	BETTERAVIA/ROSEMARY
Jurisdiction	SANTA BARBARA COUNTY
East/West Street	BETTERAVIA ROAD
North/South Street	ROSEMARY ROAD
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		28	507	2		0	66	10		0	0	0		82	0	22
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		6.5	6.5	6.5
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		6.00	6.60	5.00
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.5
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.00	4.09	3.00

Delay, Queue Length, and Level of Service

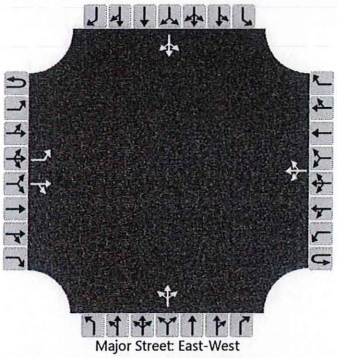
Flow Rate, v (veh/h)		30				0					0				113	
Capacity, c (veh/h)		1465				978									623	
v/c Ratio		0.02				0.00									0.18	
95% Queue Length, Q_{95} (veh)		0.1				0.0									0.7	
Control Delay (s/veh)		7.5				8.7									12.0	
Level of Service (LOS)		A				A									B	
Approach Delay (s/veh)	0.4				0.0								12.0			
Approach LOS													B			

AWD = 11.1 SEC = LOS B

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SAS	Intersection	BETTERAVIA/ROSEMARY
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	5/12/2020	East/West Street	BETTERAVIA ROAD
Analysis Year		North/South Street	ROSEMARY ROAD
Time Analyzed	AM PEAK HOUR	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	EXISTING + PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		28	563	2		0	92	10		0	0	0		82	0	22
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		6.5	6.5	6.5
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		6.00	6.60	5.00
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.5
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.00	4.09	3.00

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		30				0					0				113	
Capacity, c (veh/h)		1431				928									555	
v/c Ratio		0.02				0.00									0.20	
95% Queue Length, Q_{95} (veh)		0.1				0.0									0.8	
Control Delay (s/veh)		7.6				8.9									13.1	
Level of Service (LOS)		A				A									B	
Approach Delay (s/veh)	0.4				0.0								13.1			
Approach LOS													B			

AWD = 11.95

HCS7 Two-Way Stop-Control Report

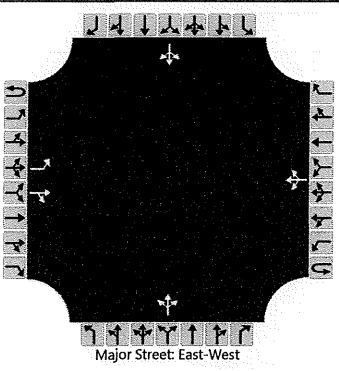
General Information

Analyst	SAS
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	CUMULATIVE

Site Information

Intersection	BETTERAVIA/ROSEMARY
Jurisdiction	SANTA BARBARA COUNTY
East/West Street	BETTERAVIA ROAD
North/South Street	ROSEMARY ROAD
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		28	560	2		0	117	10		0	0	0		82	0	22
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		6.5	6.5	6.5
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		6.00	6.60	5.00
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.5
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.00	4.09	3.00

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		30				0					0				113	
Capacity, c (veh/h)		1398				930									538	
v/c Ratio		0.02				0.00									0.21	
95% Queue Length, Q_{95} (veh)		0.1				0.0									0.8	
Control Delay (s/veh)		7.6				8.9									13.5	
Level of Service (LOS)		A				A									B	
Approach Delay (s/veh)	0.4				0.0								13.5			
Approach LOS													B			

AWTD = 12.3 SEC = LOS B

HCS7 Two-Way Stop-Control Report

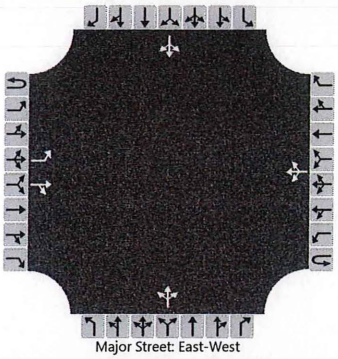
General Information

Analyst	SAS
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	AM PEAK HOUR
Intersection Orientation	East-West
Project Description	CUMULATIVE + PROJECT

Site Information

Intersection	BETTERAVIA/ROSEMARY
Jurisdiction	SANTA BARBARA COUNTY
East/West Street	BETTERAVIA ROAD
North/South Street	ROSEMARY ROAD
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		28	616	2		0	143	10		0	0	0		82	0	22
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		6.5	6.5	6.5
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		6.00	6.60	5.00
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.5
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.00	4.09	3.00

Delay, Queue Length, and Level of Service

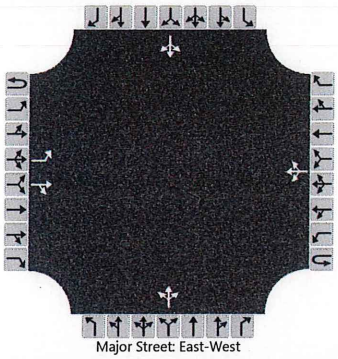
Flow Rate, v (veh/h)		30				0					0				113	
Capacity, c (veh/h)		1364				882									479	
v/c Ratio		0.02				0.00									0.24	
95% Queue Length, Q_{95} (veh)		0.1				0.0									0.9	
Control Delay (s/veh)		7.7				9.1									14.8	
Level of Service (LOS)		A				A									B	
Approach Delay (s/veh)		0.3				0.0								14.8		
Approach LOS														B		

AWD = 13.31

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SAS	Intersection	BETTERAVIA/ROSEMARY
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	5/12/2020	East/West Street	BETTERAVIA ROAD
Analysis Year	EX	North/South Street	ROSEMARY ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	EXISTING CONDITIONS		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		36	100	0		0	303	58		3	1	0		26	0	42
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.3
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		7.20	6.60	6.30
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		39				0					4				74	
Capacity, c (veh/h)		1124				1433					386				1078	
v/c Ratio		0.03				0.00					0.01				0.07	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.2	
Control Delay (s/veh)		8.3				7.5					14.4				8.6	
Level of Service (LOS)		A				A					B				A	
Approach Delay (s/veh)	2.2				0.0				14.4				8.6			
Approach LOS									B				A			

HCS™ TWSC Version 7.8
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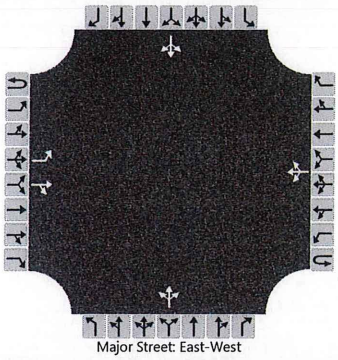
AWD = 8.7 SEC = LOS A

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	SAS	Intersection	BETTERAVIA/ROSEMARY
Agency/Co.	ATE	Jurisdiction	SANTA BARBARA COUNTY
Date Performed	5/12/2020	East/West Street	BETTERAVIA ROAD
Analysis Year	EX	North/South Street	ROSEMARY ROAD
Time Analyzed	PM PEAK HOUR	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	EXISTING + PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		36	401	0		0	358	58		3	1	0		26	0	42
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.3
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		7.20	6.60	6.30
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		39				0					4				74	
Capacity, c (veh/h)		1067				1083					213				602	
v/c Ratio		0.04				0.00					0.02				0.12	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.1				0.4	
Control Delay (s/veh)		8.5				8.3					22.2				11.8	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.7				0.0				22.2				11.8			
Approach LOS									C				B			

AWD = 11,06

HCS7 Two-Way Stop-Control Report

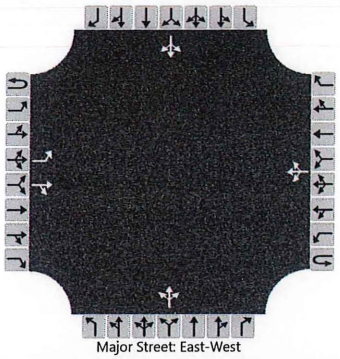
General Information

Analyst	SAS
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	EX
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	CUMULATIVE

Site Information

Intersection	BETTERAVIA/ROSEMARY
Jurisdiction	SANTA BARBARA COUNTY
East/West Street	BETTERAVIA ROAD
North/South Street	ROSEMARY ROAD
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		36	139	0		0	348	58		3	1	0		26	0	42
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.3
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		7.20	6.60	6.30
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		39				0					4				74	
Capacity, c (veh/h)		1077				1382					335				957	
v/c Ratio		0.04				0.00					0.01				0.08	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.3	
Control Delay (s/veh)		8.5				7.6					15.9				9.1	
Level of Service (LOS)		A				A					C				A	
Approach Delay (s/veh)	1.7				0.0				15.9				9.1			
Approach LOS									C				A			

AWD = 9.1 SEC = LOS A

HCS7 Two-Way Stop-Control Report

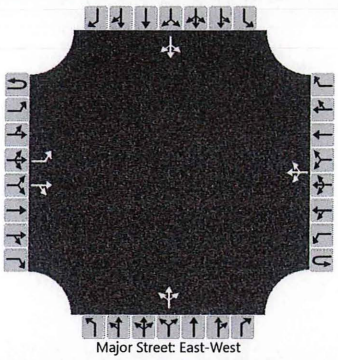
General Information

Analyst	SAS
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	EX
Time Analyzed	PM PEAK HOUR
Intersection Orientation	East-West
Project Description	CUMULATIVE + PROJECT

Site Information

Intersection	BETTERAVIA/ROSEMARY
Jurisdiction	SANTA BARBARA COUNTY
East/West Street	BETTERAVIA ROAD
North/South Street	ROSEMARY ROAD
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	1	0		0	1	0
Configuration		L		TR			LTR				LTR				LTR	
Volume (veh/h)		36	440	0		0	403	58		3	1	0		26	0	42
Percent Heavy Vehicles (%)		10				10				10	10	10		10	10	10
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.3
Critical Headway (sec)		4.20				4.20				7.20	6.60	6.30		7.20	6.60	6.30
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.29				2.29				3.59	4.09	3.39		3.59	4.09	3.39

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		39				0					4				74	
Capacity, c (veh/h)		1023				1044					184				520	
v/c Ratio		0.04				0.00					0.02				0.14	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.1				0.5	
Control Delay (s/veh)		8.7				8.4					25.0				13.1	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)	0.7				0.0				25.0				13.1			
Approach LOS									C				B			

AWD = 12.04

2: US 101 SB & Betteravia
EXISTING AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	764	206	39	420	0	0	0	0	101	1	1025
Future Volume (veh/h)	0	764	206	39	420	0	0	0	0	101	1	1025
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	796	215	41	438	0				106	0	1068
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	1086	3725	1178	51	576	0				265	0	2168
Arrive On Green	0.00	1.00	1.00	0.03	0.17	0.00				0.08	0.00	0.08
Sat Flow, veh/h	1739	4893	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	796	215	41	438	0				106	0	1068
Grp Sat Flow(s),veh/h/ln	1739	1223	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	0.0	0.0	2.1	10.8	0.0				2.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	2.1	10.8	0.0				2.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	1086	3725	1178	51	576	0				265	0	2168
V/C Ratio(X)	0.00	0.21	0.18	0.80	0.76	0.00				0.40	0.00	0.49
Avail Cap(c_a), veh/h	1086	3725	1178	155	1002	0				348	0	2242
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	43.4	35.8	0.0				39.6	0.0	6.2
Incr Delay (d2), s/veh	0.0	0.1	0.3	24.3	2.1	0.0				1.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.2	4.5	0.0				1.1	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.3	67.7	37.9	0.0				40.6	0.0	6.3
LnGrp LOS	A	A	A	E	D	A				D	A	A
Approach Vol, veh/h		1011			479						1174	
Approach Delay, s/veh		0.2			40.5						9.4	
Approach LOS		A			D						A	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		6.6	72.5		10.9	60.2	19.0					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		8.0	61.0		9.0	43.0	26.0					
Max Q Clear Time (g_c+I1), s		4.1	2.0		4.6	0.0	12.8					
Green Ext Time (p_c), s		0.0	6.9		2.2	0.0	2.1					

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
EXISTING + PROJECT AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	781	206	44	427	0	0	0	0	129	1	1025
Future Volume (veh/h)	0	781	206	44	427	0	0	0	0	129	1	1025
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	814	215	46	445	0				135	0	1068
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	1060	3638	1150	58	581	0				313	0	2164
Arrive On Green	0.00	1.00	1.00	0.03	0.17	0.00				0.09	0.00	0.09
Sat Flow, veh/h	1739	4893	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	814	215	46	445	0				135	0	1068
Grp Sat Flow(s),veh/h/ln	1739	1223	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	0.0	0.0	2.4	11.0	0.0				3.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	2.4	11.0	0.0				3.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	1060	3638	1150	58	581	0				313	0	2164
V/C Ratio(X)	0.00	0.22	0.19	0.80	0.77	0.00				0.43	0.00	0.49
Avail Cap(c_a), veh/h	1060	3638	1150	155	964	0				425	0	2264
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	43.2	35.8	0.0				38.8	0.0	6.2
Incr Delay (d2), s/veh	0.0	0.1	0.3	21.0	2.1	0.0				0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.3	4.6	0.0				1.4	0.0	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.3	64.2	37.9	0.0				39.7	0.0	6.4
LnGrp LOS	A	A	A	E	D	A				D	A	A
Approach Vol, veh/h		1029			491						1203	
Approach Delay, s/veh		0.2			40.4						10.1	
Approach LOS		A			D						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		7.0	70.9		12.1	58.8	19.1					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		8.0	59.0		11.0	42.0	25.0					
Max Q Clear Time (g_c+I1), s		4.4	2.0		5.3	0.0	13.0					
Green Ext Time (p_c), s		0.0	7.0		2.8	0.0	2.0					

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
CUMULATIVE AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	773	237	56	492	0	0	0	0	120	1	1063
Future Volume (veh/h)	0	773	237	56	492	0	0	0	0	120	1	1063
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	805	247	58	512	0				126	0	1107
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	1024	3597	1137	74	655	0				310	0	2098
Arrive On Green	0.00	1.00	1.00	0.04	0.19	0.00				0.09	0.00	0.09
Sat Flow, veh/h	1739	4893	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	805	247	58	512	0				126	0	1107
Grp Sat Flow(s),veh/h/ln	1739	1223	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	0.0	0.0	3.0	12.6	0.0				3.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.0	12.6	0.0				3.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	1024	3597	1137	74	655	0				310	0	2098
V/C Ratio(X)	0.00	0.22	0.22	0.78	0.78	0.00				0.41	0.00	0.53
Avail Cap(c_a), veh/h	1024	3597	1137	174	1002	0				425	0	2201
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	42.7	34.7	0.0				38.7	0.0	7.3
Incr Delay (d2), s/veh	0.0	0.1	0.4	16.2	2.2	0.0				0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.6	5.2	0.0				1.3	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.4	58.9	37.0	0.0				39.6	0.0	7.5
LnGrp LOS	A	A	A	E	D	A				D	A	A
Approach Vol, veh/h		1052			570						1233	
Approach Delay, s/veh		0.2			39.2						10.8	
Approach LOS		A			D						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		7.8	70.1		12.0	57.0	21.0					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		9.0	58.0		11.0	41.0	26.0					
Max Q Clear Time (g_c+I1), s		5.0	2.0		5.1	0.0	14.6					
Green Ext Time (p_c), s		0.0	7.1		2.9	0.0	2.3					

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
CUMULATIVE + PROJECT AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	790	237	61	499	0	0	0	0	148	1	1063
Future Volume (veh/h)	0	790	237	61	499	0	0	0	0	148	1	1063
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	823	247	64	520	0				155	0	1107
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96				0.96	0.96	0.96
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	1003	3527	1115	82	663	0				343	0	2091
Arrive On Green	0.00	1.00	1.00	0.05	0.19	0.00				0.10	0.00	0.10
Sat Flow, veh/h	1739	4893	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	823	247	64	520	0				155	0	1107
Grp Sat Flow(s),veh/h/ln	1739	1223	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	0.0	0.0	3.3	12.8	0.0				3.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.3	12.8	0.0				3.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	1003	3527	1115	82	663	0				343	0	2091
V/C Ratio(X)	0.00	0.23	0.22	0.78	0.78	0.00				0.45	0.00	0.53
Avail Cap(c_a), veh/h	1003	3527	1115	213	1002	0				464	0	2198
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	42.4	34.6	0.0				38.3	0.0	7.4
Incr Delay (d2), s/veh	0.0	0.1	0.4	14.5	2.3	0.0				0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.7	5.3	0.0				1.6	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.4	56.9	37.0	0.0				39.2	0.0	7.6
LnGrp LOS	A	A	A	E	D	A				D	A	A
Approach Vol, veh/h		1070			584						1262	
Approach Delay, s/veh		0.2			39.2						11.5	
Approach LOS		A			D						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		8.2	68.9		12.9	55.9	21.2					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		11.0	55.0		12.0	40.0	26.0					
Max Q Clear Time (g_c+I1), s		5.3	2.0		5.8	0.0	14.8					
Green Ext Time (p_c), s		0.0	7.3		3.1	0.0	2.4					

Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

#20014 - ARCTIC STORAGE PROJECT **REF:** 01_AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: ***02/27/2020***

TIME PERIOD: ***A.M. PEAK HOUR***

N/S STREET: ***US 101 SB RAMPS***

E/W STREET: ***BETTERAVIA ROAD***

CONTROL TYPE: ***SIGNAL***

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	0	0	0	101	1	1025	0	764	206	39	420	0
(B) PROJECT-ADDED:	0	0	0	28	0	0	0	17	0	5	7	0
(C) CUMULATIVE:	0	0	0	120	1	1063	0	773	237	56	492	0

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
		L LT RR	TT R	L TT

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES(A+B)
SCENARIO 3 = SHORT-TERM CUMULATIVE (C)
SCENARIO 4 = SHORT-TERM CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVEMENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0	-	-	-	-
NBT	0	0	0	0	0	0	-	-	-	-
NBR	0	0	0	0	0	0	-	-	-	-
SBL	0	0	101	129	120	148	-	-	-	-
SBT	2	3200	1	1	1	1	0.032	0.041	0.038	0.047
SBR *(a)*	2	3200	769	769	797	797	0.240 *	0.240 *	0.249 *	0.249 *
EBL	0	0	0	0	0	0	-	-	-	-
EBT	2	3200	764	781	773	790	0.239 *	0.244 *	0.242 *	0.247 *
EBR *(b)*	1	1600	144	144	166	166	0.090	0.090	0.104	0.104
WBL	1	1600	39	44	56	61	0.024 *	0.028 *	0.035 *	0.038 *
WBT	2	3200	420	427	492	499	0.131	0.133	0.154	0.156
WBR	0	0	0	0	0	0	-	-	-	-
					LOST TIME:		0.100 *	0.100 *	0.100 *	0.100 *
					TOTAL INTERSECTION CAPACITY UTILIZATION:		**0.603**	**0.612**	**0.626**	**0.634**
					SCENARIO LEVEL OF SERVICE:		**A**	**B**	**B**	**B**

NOTES:

RTOR: (a) 6% + Overlap with eastbound through phase (211)
(b) 30%

Printed: 07/21/20

2: US 101 SB & Betteravia
EXISTING PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1242	379	45	597	0	0	0	0	64	1	841
Future Volume (veh/h)	0	1242	379	45	597	0	0	0	0	64	1	841
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	1335	408	48	642	0				70	0	904
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	993	3262	1191	61	812	0				215	0	1958
Arrive On Green	0.00	0.77	0.77	0.03	0.23	0.00				0.06	0.00	0.06
Sat Flow, veh/h	1739	4236	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	1335	408	48	642	0				70	0	904
Grp Sat Flow(s),veh/h/ln	1739	1059	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	9.5	7.4	2.5	15.7	0.0				1.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	9.5	7.4	2.5	15.7	0.0				1.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	993	3262	1191	61	812	0				215	0	1958
V/C Ratio(X)	0.00	0.41	0.34	0.79	0.79	0.00				0.33	0.00	0.46
Avail Cap(c_a), veh/h	993	3262	1191	174	1233	0				309	0	2042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.62	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.5	3.2	43.1	32.4	0.0				40.4	0.0	8.6
Incr Delay (d2), s/veh	0.0	0.2	0.5	18.0	1.8	0.0				0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	1.4	1.3	6.3	0.0				0.8	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.7	3.7	61.1	34.2	0.0				41.3	0.0	8.7
LnGrp LOS	A	A	A	E	C	A				D	A	A
Approach Vol, veh/h		1743			690						974	
Approach Delay, s/veh		3.7			36.1						11.1	
Approach LOS		A			D						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		7.1	73.3		9.6	55.4	25.1					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		9.0	61.0		8.0	38.0	32.0					
Max Q Clear Time (g_c+I1), s		4.5	11.5		3.7	0.0	17.7					
Green Ext Time (p_c), s		0.0	15.1		1.8	0.0	3.4					

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
EXISTING + PROJECT PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1345	379	57	613	0	0	0	0	202	1	841
Future Volume (veh/h)	0	1345	379	57	613	0	0	0	0	202	1	841
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	1446	408	61	659	0				218	0	904
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	888	2989	1092	78	833	0				404	0	1939
Arrive On Green	0.00	0.71	0.71	0.04	0.24	0.00				0.12	0.00	0.12
Sat Flow, veh/h	1739	4236	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	1446	408	61	659	0				218	0	904
Grp Sat Flow(s),veh/h/ln	1739	1059	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	13.7	9.5	3.1	16.0	0.0				5.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	13.7	9.5	3.1	16.0	0.0				5.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	888	2989	1092	78	833	0				404	0	1939
V/C Ratio(X)	0.00	0.48	0.37	0.78	0.79	0.00				0.54	0.00	0.47
Avail Cap(c_a), veh/h	888	2989	1092	193	1272	0				580	0	2095
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.62	0.87	0.87	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.9	5.3	42.5	32.1	0.0				37.5	0.0	8.9
Incr Delay (d2), s/veh	0.0	0.3	0.6	13.6	1.7	0.0				1.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	2.3	1.6	6.5	0.0				2.3	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.3	5.9	56.2	33.8	0.0				38.6	0.0	9.0
LnGrp LOS	A	A	A	E	C	A				D	A	A
Approach Vol, veh/h		1854			720						1122	
Approach Delay, s/veh		6.2			35.7						14.8	
Approach LOS		A			D						B	

Timer - Assigned Phs	3	4	6	7	8
Phs Duration (G+Y+Rc), s	8.0	67.5	14.5	49.9	25.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	10.0	53.0	15.0	30.0	33.0
Max Q Clear Time (g_c+I1), s	5.1	15.7	7.3	0.0	18.0
Green Ext Time (p_c), s	0.0	15.5	3.1	0.0	3.6

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
CUMULATIVE PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1254	503	54	641	0	0	0	0	81	1	855
Future Volume (veh/h)	0	1254	503	54	641	0	0	0	0	81	1	855
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	1348	541	58	689	0				88	0	919
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	951	3197	1168	74	868	0				242	0	1908
Arrive On Green	0.00	0.75	0.75	0.04	0.25	0.00				0.07	0.00	0.07
Sat Flow, veh/h	1739	4236	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	1348	541	58	689	0				88	0	919
Grp Sat Flow(s),veh/h/ln	1739	1059	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	10.3	11.9	3.0	16.7	0.0				2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	10.3	11.9	3.0	16.7	0.0				2.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	951	3197	1168	74	868	0				242	0	1908
V/C Ratio(X)	0.00	0.42	0.46	0.78	0.79	0.00				0.36	0.00	0.48
Avail Cap(c_a), veh/h	951	3197	1168	174	1311	0				348	0	2003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.62	0.86	0.86	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.0	4.2	42.7	31.6	0.0				40.0	0.0	9.4
Incr Delay (d2), s/veh	0.0	0.3	0.8	14.3	1.7	0.0				0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.3	2.4	1.5	6.7	0.0				1.0	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	4.2	5.0	57.0	33.3	0.0				40.9	0.0	9.6
LnGrp LOS	A	A	A	E	C	A				D	A	A
Approach Vol, veh/h		1889			747						1007	
Approach Delay, s/veh		4.4			35.1						12.3	
Approach LOS		A			D						B	

Timer - Assigned Phs	3	4	6	7	8
Phs Duration (G+Y+Rc), s	7.8	71.9	10.3	53.2	26.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	60.0	9.0	35.0	34.0
Max Q Clear Time (g_c+I1), s	5.0	13.9	4.2	0.0	18.7
Green Ext Time (p_c), s	0.0	16.4	2.1	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

2: US 101 SB & Betteravia
CUMULATIVE + PROJECT PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1357	503	66	657	0	0	0	0	219	1	855
Future Volume (veh/h)	0	1357	503	66	657	0	0	0	0	219	1	855
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1826	1826	0				1826	1826	1826
Adj Flow Rate, veh/h	0	1459	541	71	706	0				236	0	919
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93				0.93	0.93	0.93
Percent Heavy Veh, %	5	5	5	5	5	0				5	5	5
Cap, veh/h	853	2938	1073	91	886	0				420	0	1892
Arrive On Green	0.00	0.69	0.69	0.05	0.26	0.00				0.12	0.00	0.12
Sat Flow, veh/h	1739	4236	1547	1739	3561	0				3478	0	3095
Grp Volume(v), veh/h	0	1459	541	71	706	0				236	0	919
Grp Sat Flow(s),veh/h/ln	1739	1059	1547	1739	1735	0				1739	0	1547
Q Serve(g_s), s	0.0	14.5	14.8	3.6	17.1	0.0				5.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	14.5	14.8	3.6	17.1	0.0				5.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	853	2938	1073	91	886	0				420	0	1892
V/C Ratio(X)	0.00	0.50	0.50	0.78	0.80	0.00				0.56	0.00	0.49
Avail Cap(c_a), veh/h	853	2938	1073	213	1311	0				580	0	2034
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.62	0.62	0.85	0.85	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.4	6.5	42.1	31.3	0.0				37.3	0.0	9.7
Incr Delay (d2), s/veh	0.0	0.4	1.1	11.5	1.8	0.0				1.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.3	3.7	1.8	6.9	0.0				2.5	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.8	7.6	53.6	33.2	0.0				38.5	0.0	9.9
LnGrp LOS	A	A	A	D	C	A				D	A	A
Approach Vol, veh/h		2000			777						1155	
Approach Delay, s/veh		7.0			35.0						15.7	
Approach LOS		A			D						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		8.7	66.4		14.9	48.2	27.0					
Change Period (Y+Rc), s		4.0	4.0		4.0	4.0	4.0					
Max Green Setting (Gmax), s		11.0	52.0		15.0	29.0	34.0					
Max Q Clear Time (g_c+I1), s		5.6	16.8		7.8	0.0	19.1					
Green Ext Time (p_c), s		0.1	16.4		3.1	0.0	3.8					

Intersection Summary	
HCM 6th Ctrl Delay	15.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

#20014 - ARCTIC STORAGE PROJECT **REF:** 01_PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: ***02/27/2020***

TIME PERIOD: ***P.M. PEAK HOUR***

N/S STREET: ***US 101 SB RAMPS***

E/W STREET: ***BETTERAVIA ROAD***

CONTROL TYPE: ***SIGNAL***

TRAFFIC VOLUME SUMMARY

VOLUMES	NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A) EXISTING:	**0**	**0**	**0**	**64**	**1**	**841**	**0**	**1242**	**379**	**45**	**597**	**0**
(B) PROJECT-ADDED:	**0**	**0**	**0**	**138**	**0**	**0**	**0**	**103**	**0**	**12**	**16**	**0**
(C) CUMULATIVE:	**0**	**0**	**0**	**81**	**1**	**855**	**0**	**1254**	**503**	**54**	**641**	**0**

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND	SOUTH BOUND	EAST BOUND	WEST BOUND
		L LT RR	TT R	L TT

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES(A+B)
SCENARIO 3 = SHORT-TERM CUMULATIVE (C)
SCENARIO 4 = SHORT-TERM CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVEMENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	0	0	0	0	0	0	-	-	-	-
NBT	0	0	0	0	0	0	-	-	-	-
NBR	0	0	0	0	0	0	-	-	-	-
SBL	0	0	64	202	81	219	-	-	-	-
SBT	2	3200	1	1	1	1	0.020	0.063	0.026	0.069
SBR *(a)*	2	3200	421	370	428	376	0.132 *	0.116 *	0.134 *	0.118 *
EBL	0	0	0	0	0	0	-	-	-	-
EBT	2	3200	1242	1345	1254	1357	0.388 *	0.420 *	0.392 *	0.424 *
EBR *(b)*	1	1600	265	265	352	352	0.166	0.166	0.220	0.220
WBL	1	1600	45	57	54	66	0.028 *	0.036 *	0.034 *	0.041 *
WBT	2	3200	597	613	641	657	0.187	0.192	0.200	0.205
WBR	0	0	0	0	0	0	-	-	-	-
					LOST TIME:		0.100 *	0.100 *	0.100 *	0.100 *
					TOTAL INTERSECTION CAPACITY UTILIZATION:		**0.648**	**0.672**	**0.660**	**0.683**
					SCENARIO LEVEL OF SERVICE:		**B**	**B**	**B**	**B**

NOTES:

RTOR: (a) 6% + Overlap with eastbound through phase
(b) 24%

Printed: 07/21/20

3: US 101 NB & Betteravia
EXISTING AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	772	0	0	97	77	123	0	55	0	0	0
Future Volume (veh/h)	353	772	0	0	97	77	123	0	55	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	397	867	0	0	109	87	138	0	62			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	946	2930	0	0	1803	804	232	0	103			
Arrive On Green	0.37	1.00	0.00	0.00	0.52	0.52	0.07	0.00	0.07			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	397	867	0	0	109	87	138	0	62			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	7.9	0.0	0.0	0.0	1.4	2.6	3.5	0.0	3.5			
Cycle Q Clear(g_c), s	7.9	0.0	0.0	0.0	1.4	2.6	3.5	0.0	3.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	946	2930	0	0	1803	804	232	0	103			
V/C Ratio(X)	0.42	0.30	0.00	0.00	0.06	0.11	0.60	0.00	0.60			
Avail Cap(c_a), veh/h	1349	2930	0	0	1803	804	773	0	344			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	22.8	0.0	0.0	0.0	10.7	11.0	40.8	0.0	40.8			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	0.1	2.4	0.0	5.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.8	0.1	0.0	0.0	0.5	0.8	1.5	0.0	1.5			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.1	0.3	0.0	0.0	10.7	11.1	43.3	0.0	46.4			
LnGrp LOS	C	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		1264			196			200				
Approach Delay, s/veh		7.4			10.9			44.2				
Approach LOS		A			B			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	10.0	80.0	29.2	50.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	20.0	62.0	36.0	22.0
Max Q Clear Time (g_c+I1), s	5.5	2.0	9.9	4.6
Green Ext Time (p_c), s	0.5	6.7	1.4	0.7

Intersection Summary	
HCM 6th Ctrl Delay	12.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
EXISTING + PROJECT AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	817	0	0	109	91	123	0	66	0	0	0
Future Volume (veh/h)	353	817	0	0	109	91	123	0	66	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	397	918	0	0	122	102	138	0	74			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	914	2903	0	0	1808	807	258	0	115			
Arrive On Green	0.27	0.84	0.00	0.00	0.52	0.52	0.07	0.00	0.07			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	397	918	0	0	122	102	138	0	74			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	8.8	5.3	0.0	0.0	1.6	3.0	3.4	0.0	4.2			
Cycle Q Clear(g_c), s	8.8	5.3	0.0	0.0	1.6	3.0	3.4	0.0	4.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	914	2903	0	0	1808	807	258	0	115			
V/C Ratio(X)	0.43	0.32	0.00	0.00	0.07	0.13	0.53	0.00	0.64			
Avail Cap(c_a), veh/h	1274	2903	0	0	1808	807	734	0	327			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.1	1.6	0.0	0.0	10.7	11.0	40.2	0.0	40.5			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	0.1	1.7	0.0	5.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.3	0.4	0.0	0.0	0.5	0.9	1.5	0.0	1.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	1.9	0.0	0.0	10.7	11.1	41.9	0.0	46.4			
LnGrp LOS	C	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		1315			224			212				
Approach Delay, s/veh		9.6			10.9			43.4				
Approach LOS		A			B			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	10.7	79.3	28.4	50.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	19.0	63.0	34.0	25.0
Max Q Clear Time (g_c+I1), s	6.2	7.3	10.8	5.0
Green Ext Time (p_c), s	0.5	7.2	1.3	0.9

Intersection Summary	
HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
CUMULATIVE AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	362	790	0	0	132	94	177	0	90	0	0	0
Future Volume (veh/h)	362	790	0	0	132	94	177	0	90	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	407	888	0	0	148	106	199	0	101			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	978	2832	0	0	1673	746	329	0	147			
Arrive On Green	0.10	0.27	0.00	0.00	0.48	0.48	0.09	0.00	0.09			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	407	888	0	0	148	106	199	0	101			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	10.2	18.4	0.0	0.0	2.1	3.4	4.9	0.0	5.7			
Cycle Q Clear(g_c), s	10.2	18.4	0.0	0.0	2.1	3.4	4.9	0.0	5.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	978	2832	0	0	1673	746	329	0	147			
V/C Ratio(X)	0.42	0.31	0.00	0.00	0.09	0.14	0.60	0.00	0.69			
Avail Cap(c_a), veh/h	1349	2832	0	0	1673	746	812	0	361			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.5	12.8	0.0	0.0	12.6	13.0	39.1	0.0	39.5			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	0.1	1.8	0.0	5.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.4	8.4	0.0	0.0	0.7	1.1	2.2	0.0	2.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	13.0	0.0	0.0	12.6	13.0	40.9	0.0	45.1			
LnGrp LOS	C	B	A	A	B	B	D	A	D			
Approach Vol, veh/h		1295			254			300				
Approach Delay, s/veh		19.6			12.8			42.3				
Approach LOS		B			B			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	12.5	77.5	30.1	47.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	21.0	61.0	36.0	21.0
Max Q Clear Time (g_c+I1), s	7.7	20.4	12.2	5.4
Green Ext Time (p_c), s	0.8	6.7	1.4	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
CUMULATIVE + PROJECT AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	362	835	0	0	144	108	177	0	101	0	0	0
Future Volume (veh/h)	362	835	0	0	144	108	177	0	101	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	407	938	0	0	162	121	199	0	113			
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	951	2806	0	0	1673	746	356	0	158			
Arrive On Green	0.09	0.27	0.00	0.00	0.48	0.48	0.10	0.00	0.10			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	407	938	0	0	162	121	199	0	113			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	10.3	19.6	0.0	0.0	2.3	4.0	4.9	0.0	6.4			
Cycle Q Clear(g_c), s	10.3	19.6	0.0	0.0	2.3	4.0	4.9	0.0	6.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	951	2806	0	0	1673	746	356	0	158			
V/C Ratio(X)	0.43	0.33	0.00	0.00	0.10	0.16	0.56	0.00	0.71			
Avail Cap(c_a), veh/h	1237	2806	0	0	1673	746	812	0	361			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.0	13.5	0.0	0.0	12.7	13.1	38.5	0.0	39.1			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	0.0	0.1	1.4	0.0	5.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.4	9.0	0.0	0.0	0.8	1.3	2.1	0.0	2.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.3	13.8	0.0	0.0	12.7	13.2	39.8	0.0	44.9			
LnGrp LOS	C	B	A	A	B	B	D	A	D			
Approach Vol, veh/h		1345			283			312				
Approach Delay, s/veh		20.0			12.9			41.7				
Approach LOS		B			B			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	13.2	76.8	29.4	47.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	21.0	61.0	33.0	24.0
Max Q Clear Time (g_c+I1), s	8.4	21.6	12.3	6.0
Green Ext Time (p_c), s	0.9	7.2	1.3	1.1

Intersection Summary	
HCM 6th Ctrl Delay	22.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

#20014 - ARCTIC COLD STORAGE PROJECT **REF:** 02_AM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *02/27/2020*

TIME PERIOD: *A.M. PEAK HOUR*

N/S STREET: *US 101 NB RAMPS*

E/W STREET: *BETTERAVIA ROAD*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES		NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A)	EXISTING:	123	1	55	0	0	0	353	772	0	0	97	77
(B)	PROJECT-ADDED:	0	0	11	0	0	0	0	45	0	0	12	14
(C)	CUMULATIVE:	177	1	90	0	0	0	362	790	0	0	132	94

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND L LT R	SOUTH BOUND	EAST BOUND LL TT	WEST BOUND TT R

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES(A+B)
SCENARIO 3 = SHORT-TERM CUMULATIVE (C)
SCENARIO 4 = SHORT-TERM CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	2	3200	123	123	177	177	0.038 *	0.038 *	0.055 *	0.055 *
NBT	0	0	1	1	1	1	-	-	-	-
NBR (a)	1	1600	30	36	50	56	0.019	0.023	0.031	0.035
SBL	0	0	0	0	0	0	-	-	-	-
SBT	0	0	0	0	0	0	-	-	-	-
SBR	0	0	0	0	0	0	-	-	-	-
EBL	2	3200	353	353	362	362	0.110	0.110	0.113	0.113
EBT	2	3200	772	817	790	835	0.241 *	0.255 *	0.247 *	0.261 *
EBR	0	0	0	0	0	0	-	-	-	-
WBL	0	0	0	0	0	0	-	-	-	-
WBT	2	3200	97	109	132	144	0.030	0.034	0.041	0.045
WBR (b)	1	1600	77	91	94	108	0.048	0.057	0.059	0.068
					LOST TIME:		0.100 *	0.100 *	0.100 *	0.100 *
					TOTAL INTERSECTION CAPACITY UTILIZATION:		**0.379**	**0.393**	**0.402**	**0.416**
					SCENARIO LEVEL OF SERVICE:		A	A	A	A

NOTES:

RTOR: (a) 45%
(b) 58%

Printed: 07/21/20

3: US 101 NB & Betteravia
EXISTING PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1018	204	0	0	308	194	395	0	62	0	0	0
Future Volume (veh/h)	1018	204	0	0	308	194	395	0	62	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	1072	215	0	0	324	204	416	0	65			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	1485	2640	0	0	959	428	522	0	232			
Arrive On Green	0.15	0.25	0.00	0.00	0.28	0.28	0.15	0.00	0.15			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	1072	215	0	0	324	204	416	0	65			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	27.3	4.3	0.0	0.0	6.7	9.9	10.4	0.0	3.4			
Cycle Q Clear(g_c), s	27.3	4.3	0.0	0.0	6.7	9.9	10.4	0.0	3.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1485	2640	0	0	959	428	522	0	232			
V/C Ratio(X)	0.72	0.08	0.00	0.00	0.34	0.48	0.80	0.00	0.28			
Avail Cap(c_a), veh/h	1649	2640	0	0	959	428	773	0	344			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.93	0.93	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.2	9.7	0.0	0.0	26.0	27.1	36.9	0.0	33.9			
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.0	0.2	0.8	3.6	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.4	1.0	0.0	0.0	2.6	3.5	4.6	0.0	1.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	9.7	0.0	0.0	26.2	28.0	40.5	0.0	34.6			
LnGrp LOS	C	A	A	A	C	C	D	A	C			
Approach Vol, veh/h		1287			528			481				
Approach Delay, s/veh		30.4			26.9			39.7				
Approach LOS		C			C			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	17.5	72.5	43.6	28.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	20.0	62.0	44.0	14.0
Max Q Clear Time (g_c+I1), s	12.4	6.3	29.3	11.9
Green Ext Time (p_c), s	1.1	1.3	3.8	0.6

Intersection Summary	
HCM 6th Ctrl Delay	31.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
EXISTING + PROJECT PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1018	445	0	0	336	221	395	0	123	0	0	0
Future Volume (veh/h)	1018	445	0	0	336	221	395	0	123	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	1072	468	0	0	354	233	416	0	129			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	1476	2634	0	0	962	429	528	0	235			
Arrive On Green	0.14	0.25	0.00	0.00	0.28	0.28	0.15	0.00	0.15			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	1072	468	0	0	354	233	416	0	129			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	27.3	9.5	0.0	0.0	7.4	11.5	10.4	0.0	6.9			
Cycle Q Clear(g_c), s	27.3	9.5	0.0	0.0	7.4	11.5	10.4	0.0	6.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1476	2634	0	0	962	429	528	0	235			
V/C Ratio(X)	0.73	0.18	0.00	0.00	0.37	0.54	0.79	0.00	0.55			
Avail Cap(c_a), veh/h	1612	2634	0	0	962	429	773	0	344			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.86	0.86	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.3	11.7	0.0	0.0	26.2	27.7	36.8	0.0	35.3			
Incr Delay (d2), s/veh	1.3	0.1	0.0	0.0	0.2	1.4	3.4	0.0	2.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.4	3.1	0.0	0.0	2.9	4.1	4.6	0.0	2.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	11.8	0.0	0.0	26.4	29.1	40.1	0.0	37.3			
LnGrp LOS	C	B	A	A	C	C	D	A	D			
Approach Vol, veh/h		1540			587			545				
Approach Delay, s/veh		27.7			27.5			39.5				
Approach LOS		C			C			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	17.7	72.3	43.4	28.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	20.0	62.0	43.0	15.0
Max Q Clear Time (g_c+I1), s	12.4	11.5	29.3	13.5
Green Ext Time (p_c), s	1.3	3.1	3.7	0.5

Intersection Summary	
HCM 6th Ctrl Delay	30.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
CUMULATIVE PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1030	228	0	0	325	222	434	0	77	0	0	0
Future Volume (veh/h)	1030	228	0	0	325	222	434	0	77	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	1084	240	0	0	342	234	457	0	81			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	1510	2592	0	0	884	395	570	0	254			
Arrive On Green	0.15	0.25	0.00	0.00	0.25	0.25	0.16	0.00	0.16			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	1084	240	0	0	342	234	457	0	81			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	27.6	4.8	0.0	0.0	7.3	11.9	11.4	0.0	4.2			
Cycle Q Clear(g_c), s	27.6	4.8	0.0	0.0	7.3	11.9	11.4	0.0	4.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1510	2592	0	0	884	395	570	0	254			
V/C Ratio(X)	0.72	0.09	0.00	0.00	0.39	0.59	0.80	0.00	0.32			
Avail Cap(c_a), veh/h	1537	2592	0	0	884	395	850	0	378			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	32.9	10.4	0.0	0.0	27.7	29.4	36.2	0.0	33.2			
Incr Delay (d2), s/veh	1.5	0.1	0.0	0.0	0.3	2.4	3.4	0.0	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	1.3	0.0	0.0	2.9	4.4	5.0	0.0	1.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	10.4	0.0	0.0	28.0	31.8	39.6	0.0	33.9			
LnGrp LOS	C	B	A	A	C	C	D	A	C			
Approach Vol, veh/h		1324			576			538				
Approach Delay, s/veh		30.1			29.5			38.7				
Approach LOS		C			C			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	18.8	71.2	44.3	26.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	60.0	41.0	15.0
Max Q Clear Time (g_c+I1), s	13.4	6.8	29.6	13.9
Green Ext Time (p_c), s	1.4	1.5	3.5	0.3

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

3: US 101 NB & Betteravia
CUMULATIVE + PROJECT PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1030	469	0	0	353	249	434	0	138	0	0	0
Future Volume (veh/h)	1030	469	0	0	353	249	434	0	138	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1826	1826	0	0	1826	1826	1826	1826	1826			
Adj Flow Rate, veh/h	1084	494	0	0	372	262	457	0	145			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	5	5	0	0	5	5	5	5	5			
Cap, veh/h	1505	2586	0	0	884	394	576	0	256			
Arrive On Green	0.15	0.25	0.00	0.00	0.25	0.25	0.17	0.00	0.17			
Sat Flow, veh/h	3374	3561	0	0	3561	1547	3478	0	1547			
Grp Volume(v), veh/h	1084	494	0	0	372	262	457	0	145			
Grp Sat Flow(s),veh/h/ln	1687	1735	0	0	1735	1547	1739	0	1547			
Q Serve(g_s), s	27.6	10.1	0.0	0.0	8.1	13.7	11.4	0.0	7.8			
Cycle Q Clear(g_c), s	27.6	10.1	0.0	0.0	8.1	13.7	11.4	0.0	7.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1505	2586	0	0	884	394	576	0	256			
V/C Ratio(X)	0.72	0.19	0.00	0.00	0.42	0.66	0.79	0.00	0.57			
Avail Cap(c_a), veh/h	1537	2586	0	0	884	394	850	0	378			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.85	0.85	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.0	12.5	0.0	0.0	28.0	30.1	36.1	0.0	34.6			
Incr Delay (d2), s/veh	1.4	0.1	0.0	0.0	0.3	4.2	3.2	0.0	2.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	3.6	0.0	0.0	3.2	5.2	5.0	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	12.6	0.0	0.0	28.3	34.3	39.2	0.0	36.5			
LnGrp LOS	C	B	A	A	C	C	D	A	D			
Approach Vol, veh/h		1578			634			602				
Approach Delay, s/veh		27.6			30.8			38.6				
Approach LOS		C			C			D				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	18.9	71.1	44.2	26.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	60.0	41.0	15.0
Max Q Clear Time (g_c+I1), s	13.4	12.1	29.6	15.7
Green Ext Time (p_c), s	1.6	3.3	3.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

#20014 ARCTIC COLD STORAGE PROJECT **REF:** 02_PM

INTERSECTION CAPACITY UTILIZATION WORKSHEET

COUNT DATE: *02/27/2020*

TIME PERIOD: *P.M. PEAK HOUR*

N/S STREET: *US 101 NB RAMPS*

E/W STREET: *BETTERAVIA ROAD*

CONTROL TYPE: *SIGNAL*

TRAFFIC VOLUME SUMMARY

VOLUMES		NORTH BOUND L	T	R	SOUTH BOUND L	T	R	EAST BOUND L	T	R	WEST BOUND L	T	R
(A)	EXISTING:	**395**	**1**	**62**	**0**	**0**	**0**	**1018**	**204**	**0**	**0**	**308**	**194**
(B)	PROJECT-ADDED:	**0**	**0**	**61**	**0**	**0**	**0**	**0**	**241**	**0**	**0**	**28**	**27**
(C)	CUMULATIVE:	**434**	**1**	**77**	**0**	**0**	**0**	**1030**	**228**	**0**	**0**	**325**	**222**

GEOMETRICS

LANE GEOMETRICS	NORTH BOUND L LT R	SOUTH BOUND	EAST BOUND LL TT	WEST BOUND TT R

TRAFFIC SCENARIOS

SCENARIO 1 = EXISTING VOLUMES (A)
SCENARIO 2 = EXISTING + PROJECT VOLUMES(A+B)
SCENARIO 3 = SHORT-TERM CUMULATIVE (C)
SCENARIO 4 = SHORT-TERM CUMULATIVE + PROJECT VOLUMES (B+C)

LEVEL OF SERVICE CALCULATIONS

MOVE-MENTS	# OF LANES	CAPACITY	SCENARIO VOLUMES 1	2	3	4	SCENARIO V/C RATIOS 1	2	3	4
NBL	2	3200	395	395	434	434	0.123 *	0.123 *	0.136 *	0.136 *
NBT	0	0	1	1	1	1	-	-	-	-
NBR *(a)*	1	1600	35	70	44	79	0.022	0.044	0.028	0.049
SBL	0	0	0	0	0	0	-	-	-	-
SBT	0	0	0	0	0	0	-	-	-	-
SBR	0	0	0	0	0	0	-	-	-	-
EBL	2	3200	1018	1018	1030	1030	0.318 *	0.318 *	0.322 *	0.322 *
EBT	2	3200	204	445	228	469	0.064	0.139	0.071	0.147
EBR	0	0	0	0	0	0	-	-	-	-
WBL	0	0	0	0	0	0	-	-	-	-
WBT	2	3200	308	336	325	353	0.096	0.105	0.102	0.110
WBR *(b)*	1	1600	194	221	222	249	0.121 *	0.138 *	0.139 *	0.156 *
					LOST TIME:		0.100 *	0.100 *	0.100 *	0.100 *
					TOTAL INTERSECTION CAPACITY UTILIZATION:		**0.662**	**0.679**	**0.697**	**0.714**
					SCENARIO LEVEL OF SERVICE:		**B**	**B**	**B**	**C**

NOTES:

RTOR: (a) 43%
(b) 55%

Printed: 07/21/20

HCS7 Two-Way Stop-Control Report

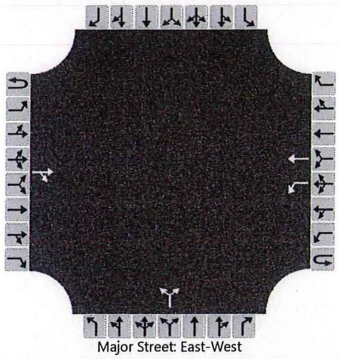
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	CUM + PROJECT - AM PEAK
Intersection Orientation	East-West
Project Description	BETTERAVIA/WESTERN DRIVEWAY

Site Information

Intersection	BETTERAVIA/WESTERN DWY
Jurisdiction	SB COUNTY
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			685	13		0	150			3		0				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					3					
Capacity, c (veh/h)						848					302					
v/c Ratio						0.00					0.01					
95% Queue Length, Q_{95} (veh)						0.0					0.0					
Control Delay (s/veh)						9.2					17.1					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.0				17.1							
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

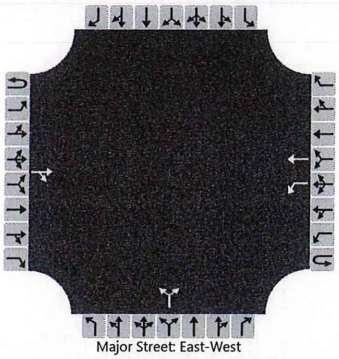
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	CUM + PROJECT - PM PEAK
Intersection Orientation	East-West
Project Description	BETTERAVIA/WESTERN DRIVEWAY

Site Information

Intersection	BETTERAVIA/WESTERN DWY
Jurisdiction	SB COUNTY
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			361	96		0	450			11		0				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					12					
Capacity, c (veh/h)						1062					294					
v/c Ratio						0.00					0.04					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						8.4					17.8					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.0				17.8							
Approach LOS									C							

HCS7 Two-Way Stop-Control Report

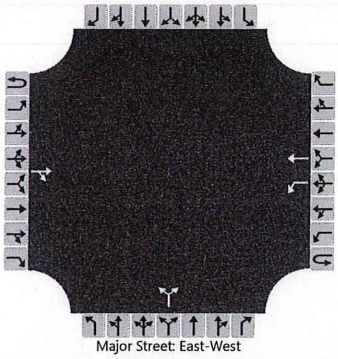
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	CUM + PROJ - 4 PM PEAK
Intersection Orientation	East-West
Project Description	BETTERAVIA/WESTERN DRIVEWAY

Site Information

Intersection	BETTERAVIA/WESTERN DWY
Jurisdiction	SB COUNTY
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			221	4		0	601			96		0				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

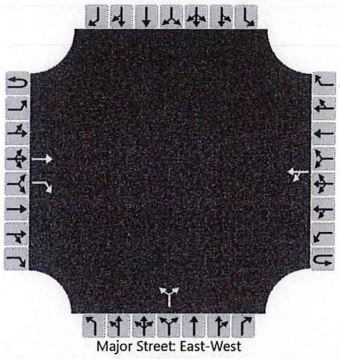
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						0					104					
Capacity, c (veh/h)						1316					310					
v/c Ratio						0.00					0.34					
95% Queue Length, Q_{95} (veh)						0.0					1.4					
Control Delay (s/veh)						7.7					22.4					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.0				22.4							
Approach LOS									C							

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DLD	Intersection	BETTERAVIA/EASTERN DWY
Agency/Co.	ATE	Jurisdiction	SB COUNTY
Date Performed	5/12/2020	East/West Street	
Analysis Year		North/South Street	
Time Analyzed	CUM + PROJECT - AM PEAK	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	BETTERAVIA/EASTERN DRIVEWAY		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	0	0
Configuration			T	R		LT					LR					
Volume (veh/h)			642	30		1	127			11		1				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No													
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1					13					
Capacity, c (veh/h)						869					341					
v/c Ratio						0.00					0.04					
95% Queue Length, Q_{95} (veh)						0.0					0.1					
Control Delay (s/veh)						9.1					16.0					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)						0.1				16.0						
Approach LOS										C						

HCS7 Two-Way Stop-Control Report

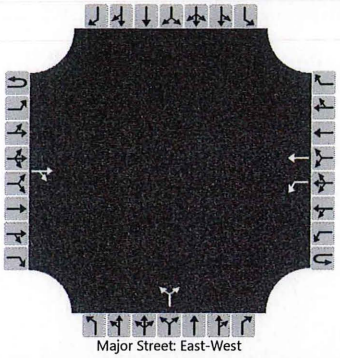
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	CUM + PROJECT - PM PEAK
Intersection Orientation	East-West
Project Description	BETTERAVIA/EASTERN DRIVEWAY

Site Information

Intersection	BETTERAVIA/EASTERN DWY
Jurisdiction	SB COUNTY
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			155	206		11	408			42		11				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12					58					
Capacity, c (veh/h)						1161					419					
v/c Ratio						0.01					0.14					
95% Queue Length, Q_{95} (veh)						0.0					0.5					
Control Delay (s/veh)						8.1					15.0					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.2				15.0							
Approach LOS									B							

HCS7 Two-Way Stop-Control Report

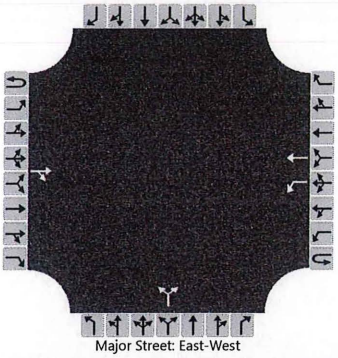
General Information

Analyst	DLD
Agency/Co.	ATE
Date Performed	5/12/2020
Analysis Year	
Time Analyzed	CUM + PROJ 4 PM PEAK
Intersection Orientation	East-West
Project Description	BETTERAVIA/EASTERN DRIVEWAY

Site Information

Intersection	BETTERAVIA/EASTERN DWY
Jurisdiction	SB COUNTY
East/West Street	
North/South Street	
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			170	51		11	367			234		11				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.13				6.43		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.23				3.53		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						12					266					
Capacity, c (veh/h)						1321					446					
v/c Ratio						0.01					0.60					
95% Queue Length, Q_{95} (veh)						0.0					3.8					
Control Delay (s/veh)						7.8					24.3					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					0.2				24.3							
Approach LOS									C							

ASSOCIATED TRANSPORTATION ENGINEERS

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Since 1978

Richard L. Pool, P.E.
Scott A. Schell

August 10, 2020 20014L03

Clayton Dragoo
Fischer Construction Group
625 Fisher Lane
Burlington WA, 98233

UPDATED VMT ANALYSIS FOR THE ARTIC COLD STORAGE & PACKING PROJECT – COUNTY OF SANTA BARBARA

Associated Transportation Engineers (ATE) has prepared the following updated Vehicles Miles Travelled (VMT) study for Arctic Cold Storage & Packing Project (the "Project") proposed in the Santa Barbara County area east of the City of Santa Maria. The updated study incorporates the VMT threshold information presented in the draft Transportation Analysis Updates in Santa Barbara County published by the Planning and Development Department and Fehr & Peers (July 2020). It is our understanding that this analysis will be submitted to the County as part of the Project's application package to assist County staff in reviewing the development.

PROJECT DESCRIPTION

The Arctic Cold Storage & Packing Project site located east of the Betteravia Road/Rosemary Road intersection in the unincorporated Santa Barbara County area just east of the City of Santa Maria. The Project is proposing to develop a 449,248 SF food processing, cold storage and packaging facility. The facility includes a 127,546 SF food processor and a 321,702 SF freezer. The plant would employ an estimated 153 employees during normal periods and 623 employees during peak harvest periods.

VMT ANALYSIS

The County of Santa Barbara's adopted Traffic Impact Thresholds were previously used to evaluate whether a project has a significant traffic impact under the California Environmental Quality Act (CEQA). Recent legislation, Senate Bill 743, is moving away from the Level of Service (LOS) metric to a Vehicle Miles Traveled (VMT) metric to evaluate whether a project results in a significant traffic impact. Cities and Counties were required to implement Senate Bill 743 by July 1, 2020. It is anticipated that LOS will still remain as a policy consistency issue, though not as an impact metric under CEQA environmental review.

Per the State's Natural Resource Agency Updated Guidelines for the Implementation of the CEQA adopted in 2018, VMT has been designated as the most appropriate measure of transportation impacts. "Vehicle miles traveled" refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. For land use projects, vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Santa Barbara County has not adopted VMT thresholds of significance or analysis methodologies at this time.

As noted, Santa Barbara County has recently published a draft "Transportation Analysis Updates in Santa Barbara County" document that contains recommendations for VMT thresholds of significance and screening maps. The County's recommended thresholds generally follow the new State guidelines, which are reviewed below

CEQA Guidelines. The California Governor's Office of Planning and Research (OPR) published a technical advisory that includes recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures.[1] The recommended VMT impact threshold for employment centers such as offices and manufacturing facilities is as follows:

> "Recommended threshold for office projects: A proposed project exceeding a level of 15 percent below existing regional VMT per employee may indicate a significant transportation impact.
>
> Office projects that would generate vehicle travel exceeding 15 percent below existing VMT per employee for the region may indicate a significant transportation impact. In cases where the region is substantially larger than the geography over which most workers would be expected to live, it might be appropriate to refer to a smaller geography, such as the county, that includes the area over which nearly all workers would be expected to live. Office VMT screening maps can be developed using tour-based data, considering either total employee VMT or employee work tour

1 Technical Advisory on Evaluating Transportation Impacts in CEQA, Governor's Office of Planning and Research, December 2018.

> VMT. Similarly, tour-based analysis of office project VMT could consider either total employee VMT or employee work tour VMT. Where tour-based information is unavailable for threshold determination, project assessment, or assessment of mitigation, home-based work trip VMT should be used throughout all steps of the analysis to maintain an "apples-to-apples" comparison."

The County's draft guidelines recommend that VMT impact threshold of significance for new employment developments be 15% lower than the County-wide home-based work VMT per employee.

VMT Calculations. The County has not released a VMT calculator tool at this time. The Project's home-based work VMT per employee was therefore calculated using anticipated employee residence locations data as well as the CalEEMod air quality model, as reviewed below.

It is anticipated that the majority of the employees working at the Project site would reside in the City of Santa Maria and the adjacent community of Orcutt, as these areas contain a significant percentage of the County's housing for employees in the agricultural industry. The average home-to-work travel distances from the Project site to the primary housing areas in Santa Maria and Orcutt range from 4 to 6 miles. The CalEEMod air quality model trip length factor for the Project's employees is 6.6 miles. Based on this data, the Project would be expected to generate between 10.0 and 13.2 home-based work VMT/employee assuming all employees drove in single occupant vehicles. This would equate to total of 1,530 to 2,020 VMT during normal periods and 6,230 to 8,224 VMT during peak harvest periods.

As noted, the County's draft guidelines indicate that a project's VMT generation would be less than significant if it does not exceed a level of 15% below existing regional VMT/employee. The draft guidelines indicate that the current County-wide average is 15.9 VMT per employee. The Project's estimated VMT of 10.0 to 13.2 VMT/employee is 17% to 37% less than the County average. Based on this analysis, the Project's VMT generation would be less than significant as it does not exceed a level of 15 percent below existing regional VMT per employee. Table 1 summarizes the VMT data.

Table 1
Project VMT Comparison to County Average

Project VMT Estimate	County Average VMT	Percent Less Than Average
10.0–13.2 VMT/ Employee	15.9 VMT/Employee	17%-37%

VMT REDUCTION STRATEGIES

The VMT analysis completed for the Project assumed that all employees would drive single occupant vehicles to the Project site. Based on observations conducted at similar agricultural production facilities in the Santa Maria region, it is anticipated that a significant portion of the Project's employees would carpool to the site or would share rides with other workers in the area. It is estimated that 25% of the site employees would carpool to the site and 10% would share rides with other workers in the area. This would reduce the estimated Project VMT to 6.5-8.6 VMT/employee which would be well below the County average of 15.9 VMT/employee.

Associated Transportation Engineers,

Scott A. Schell
Principal Transportation Planner

FEHR PEERS

Technical Memorandum

Date: February 22, 2021

To: Fisher Construction Group, Inc.

From: Ethan Yue Sun & Sarah Brandenberg

Subject: Arctic Cold VMT Analysis

LA21-3259

This technical memorandum documents the Vehicle Miles Traveled (VMT) analysis for the Arctic Cold project located in unincorporated Santa Barbara County at 1750 East Betteravia Road approximately one mile east of the City of Santa Maria. The property is bound by Rosemary Road on the west, East Betteravia Road on the north, and Prell Road on the south. The project is located in a rural area of the County that is zoned for agricultural uses. The project would develop a 449,248 square-foot (sf) gross floor area agricultural processor and freezer facility.

On September 27, 2013, Governor Jerry Brown signed Senate Bill (SB) 743 into law, which initiated a process to change transportation impact analyses completed in support of CEQA documentation. SB 743 eliminates level of service (LOS) as a basis for determining significant transportation impacts under CEQA and provides a new performance metric, VMT. As a result, the State is shifting from measuring a project's impact to drivers (LOS) to measuring the impact of driving (VMT) as it relates to achieving State goals of reducing greenhouse gas (GHG) emissions, encouraging infill development, and improving public health through active transportation.

In response to SB 743, the County of Santa Barbara adopted new transportation impact thresholds to adhere to CEQA requirements as described in their *Environmental Thresholds and Guidelines Manual*[1] (County Guidelines). The VMT analysis for the proposed project is based on the County's new guidance for transportation impacts. The methodology and VMT analysis findings are presented below.

[1] County of Santa Barbara Planning and Development, Environmental Thresholds and Guidelines Manual. (Planning and Development, January 2021). https://cosantabarbara.app.box.com/s/vtxutffe2n52jme97lgmv66os7pp3lm5

VMT Methodology Overview

The VMT methodology applied to the proposed project is consistent with the methodology used to determine the County's baseline VMT for employment projects and the corresponding impact threshold. The County's baseline VMT is calculated using the Santa Barbara County Association of Governments' (SBCAG) Regional Travel Demand Model (RTDM). The latest version of the SBCAG RTDM was developed for the *Fast Forward 2040: SBCAG Regional Transportation Plan and Sustainable Communities Strategy* (SBCAG RTP/SCS) (SBCAG, 2017) and was utilized for the project analysis.

The County's baseline VMT is defined by the geography of the unincorporated areas of the county (excluding incorporated cities). The County's baseline VMT is referred to as "county VMT" in the County Guidelines. County VMT reflects all vehicle-trips that start and/or end in the unincorporated areas of Santa Barbara County.

The SBCAG RTDM estimates VMT for 2010 and 2040. Since environmental documents must typically analyze projects under baseline conditions, VMT estimates for baseline conditions can be developed by interpolating between the 2010 base year and 2040 future year. For the proposed project, VMT estimates were calculated for the current year of 2021.

VMT Metrics for Employment Projects

According to County Guidelines, employment projects should analyze VMT using an efficiency metric (i.e., on a per employee basis) rather than based on absolute VMT. Using an efficiency metric allows the project to be compared to other employment uses in the county to determine if the project VMT is higher or lower than a typical employment use. The following VMT calculation is completed for employment projects using the SBCAG RTDM:

- Home-based work VMT per Employee: VMT generated from travel between employees' homes and work for a project site divided by the number of employees at the project site. Home-based work VMT per employee reflects all passenger vehicles (cars and light duty trucks) assigned on the roadway network.

The SBCAG RTDM is used to estimate Home-based work VMT by tracking all commute trips between the project site and employee residences and calculating the number of trips and length of those trips to estimate the VMT generated per employee.

VMT Impact Thresholds

The County's VMT thresholds compare the existing, or baseline, county VMT (i.e., pre-construction) to a project's VMT. For an employment project, a VMT impact would occur if:

- Project VMT exceeds a level of 15 percent below existing county VMT for Home-based work VMT per employee.

The county VMT and VMT impact thresholds for employment projects in Santa Barbara County are presented in **Table 1**.

Table 1: County VMT and VMT Impact Threshold for Employment Projects

VMT Metrics	Year 2021	
	County VMT	VMT Impact Threshold*
Home-Based Work VMT per Employee	15.8	13.4

* The VMT Impact Threshold for is 15% below the County VMT.

Project VMT Analysis

The SBCAG RTDM was updated to reflect the employment levels anticipated for the project site. Employment at the project site would vary by season as follows:

- During the non-harvest season (August to May), the project would require approximately 153 employees.
- During the harvest season (May to August), the project would require approximately 623 employees.

To account for peak employment activity, the 623 employees that would work at the facility during harvest season were used for the VMT analysis. However, on a per employee basis, the VMT trends are expected to be similar during non-harvest season.

The traffic analysis zone (TAZ) encompassing the project site was updated to reflect the 623 project employees. Both the 2010 RTDM and 2040 RTDM were updated to reflect the proposed project employment growth, model runs were conducted, and the Home-based work VMT per employee metrics were calculated for the project TAZ. **Table 2** presents the project VMT estimate. **Appendix A** contains the SBCAG RTDM inputs and outputs for the project TAZ.

Table 2: Arctic Cold Project VMT

VMT Metrics	Project VMT
Year 2010 Home-Based Work VMT per Employee	10.0
Year 2040 Home-Based Work VMT per Employee	8.1
Baseline 2021 Home-Based Work VMT per Employee	**9.3**

Project VMT Impact Findings

The project VMT was compared to the County's VMT threshold for employment projects. As shown in **Table 3**, the project VMT is less than the County's VMT impact threshold. Therefore, the project was found to have a less than significant VMT impact.

Table 3: Arctic Cold VMT Impact Findings

VMT Metrics	Project VMT	County VMT Impact Threshold	Significant VMT Impact?
Home-Based Work VMT per Employee (Baseline 2021)	9.3	13.4	**No**

Cumulative Conditions

For cumulative conditions, a project that is below the VMT impact thresholds and does not have a VMT impact under baseline conditions would also typically not have a cumulative impact as long as it is aligned with long-term State environmental goals, such as reducing GHG emissions, and relevant plans, such as the SBCAG RTP/SCS[2].

Since the Home-based work VMT per employee generated by the project is less than the County's VMT impact threshold for employment projects under baseline conditions, the project would also have a less than significant cumulative impact. In addition, the project would add employment to the northern portion of Santa Barbara County which is aligned with the goals of the SBCAG RTP/SCS.

Conclusions

This technical memorandum documents the process to determine the potential VMT impacts of the proposed Arctic Cold project in Santa Barbara County. The following summarizes the results of the VMT analysis:

- The Arctic Cold project site generates 9.3 Home-based work VMT per employee in comparison to the County's impact threshold of 13.4. Therefore, the project site is more VMT efficient than the average Home-based work VMT for employment land uses in the unincorporated area of the county and was found to have a less than significant VMT impact.

[2] Governor's Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA, 2018.

Appendix A - SBCAG RTDM Model Inputs and Outputs

Model Inputs - Land Use/Socio-Economic Data for 2010 and 2040 Model Runs

Year	Project TAZ		
	Population	Households	Employment
2010 No Build	2	1	0
2010 plus Project	2	1	**623**
2040 No Build	2	1	0
2040 plus Project	2	1	**623**

Model Outputs - Home-Based Work VMT for 2010 and 2040 Model Runs

Year	Project TAZ		
	Total Home-Based Work VMT	Employment	Home-Based Work VMT/Employee
2010 plus Project	6,235	623	10.01
2040 plus Project	5,053	623	8.11
2021 Baseline Interpolation	5,802	623	**9.31**