

Avila Cottages

Draft Transportation Impact Study

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Executive Summary

This study evaluates the potential transportation impacts of the proposed Avila Cottages project located east of Wild Cherry Canyon and north of Avila Beach Drive in unincorporated San Luis Obispo County. The project would develop 50 rental cottages, support facilities, a restaurant, and public parking consistent with the San Luis Bay Coastal Area Plan to be used by guests, visitors, and employees. The project was included in the approved Master Plan for San Luis Bay Estates.

The weekday project trip generation estimate shows 738 new daily trips and 57 new PM peak hour trips. The Saturday estimate shows 756 new daily trips and 76 new mid-day peak hour trips. These are based on a conservative estimate of the project's traffic generating uses, and typical operations are expected to generate fewer trips.

Ten intersections were evaluated during the weekday afternoon (4-6 PM) and summer Saturday mid-day (11 AM-1 PM) time period, and five roadway segments were evaluated using ADT thresholds for County operated facilities and during the PM peak hour for Caltrans facilities.

The following deficiencies and recommended improvements are noted under Existing Plus Project conditions:

- Avila Beach Drive/Ontario Road (#9): The addition of project traffic degrades conditions on the southbound approach, which operates at LOS E during the Saturday mid-day peak hour under Existing Plus Project conditions. This intersection meets the peak hour signal warrant. Signalization of this intersection would result in acceptable operations and is included in the County's Roadway Impact Fee program
- Avila Beach Drive/US 101 SB Ramps/Shell Beach Road (#10): The addition of project traffic worsens delay on the side street approaches, with the worst approach continuing to operate at LOS D during the weekday PM peak hour and degrading to LOS F during the Saturday mid-day peak hour under Existing Plus Project conditions. This intersection meets the peak hour signal warrant. Caltrans approved a Project Study Report-Project Development Support document in May 2016 and the County is proceeding with the Project Approval and Environmental Document phase for interchange improvements at this location. The Intersection Control Evaluation for this intersection recommends a single lane roundabout, which would result in acceptable operations. These improvements are included in the County's Roadway Impact Fee program.

Cumulative conditions reflect buildout of land uses in the area and include roadway improvements funded in the County's Roadway Impact Fee program. No improvements are recommended to address Cumulative deficiencies. Under typical operations for the project, no Cumulative deficiencies are expected.

The following recommendations are provided to improve site access and on-site circulation:

- Improve the Project Driveway/Ana Bay Road intersection to provide acceptable sight distance by trimming vegetation that obstructs the sight distance.
- Develop a pedestrian path of travel to Avila Beach Drive.

Two special events scenarios are proposed by the project, one of which may necessitate a TDM plan at its larger attendance levels.

The analysis supporting these recommendations is provided in the body of this report.

Contents

Executive Summary	1
Contents	2
Introduction	3
Analysis Methods and Thresholds.....	6
Existing Conditions.....	8
Existing Plus Project Conditions	12
Cumulative Conditions.....	21
References.....	26
Figure 1: Project and Study Locations	4
Figure 2: Site Plan.....	5
Figure 3: Existing Peak Hour Volumes and Lane Configurations	11
Figure 4: Project Trip Distribution and Assignment.....	19
Figure 5: Existing Plus Project Volumes	20
Figure 6: Cumulative Volumes.....	24
Figure 7: Cumulative Plus Project Volumes	25
Appendix A: Traffic Count Sheets	
Appendix B: LOS Calculations Sheets	
Appendix C: Roadway Segment Analysis Sheets	
Appendix D: Signal Warrant Analysis	

Introduction

This study evaluates the potential transportation impacts of the proposed Avila Cottages project located on Ana Bay Road east of Wild Cherry Canyon and north of Avila Beach Drive in unincorporated San Luis Obispo County. The project includes the development of 50 rental cottages, support facilities, a restaurant, and public parking as required by the San Luis Bay Coastal Area Plan (LCP).

The project's location and study intersections are shown on **Figure 1**, and **Figure 2** shows the site plan. The following intersections were evaluated during the weekday afternoon (4-6 PM) and Saturday mid-day (11 AM-1 PM) time periods:

1. Project Driveway/Ana Bay Road
2. Avila Beach Drive/Ana Bay Road
3. Avila Beach Drive/First Street
4. Avila Beach Drive/San Miguel Street
5. Avila Beach Drive/San Luis Street
6. Avila Beach Drive/San Luis Bay Drive
7. San Luis Bay Drive/Ontario Road
8. San Luis Bay Drive/US 101 NB Ramps
9. Avila Beach Drive/Ontario Road
10. Avila Beach Drive/US 101 SB Ramps/Shell Beach Road

The following roadway segments were evaluated using ADT thresholds for County operated facilities and during the PM peak hour for Caltrans facilities:

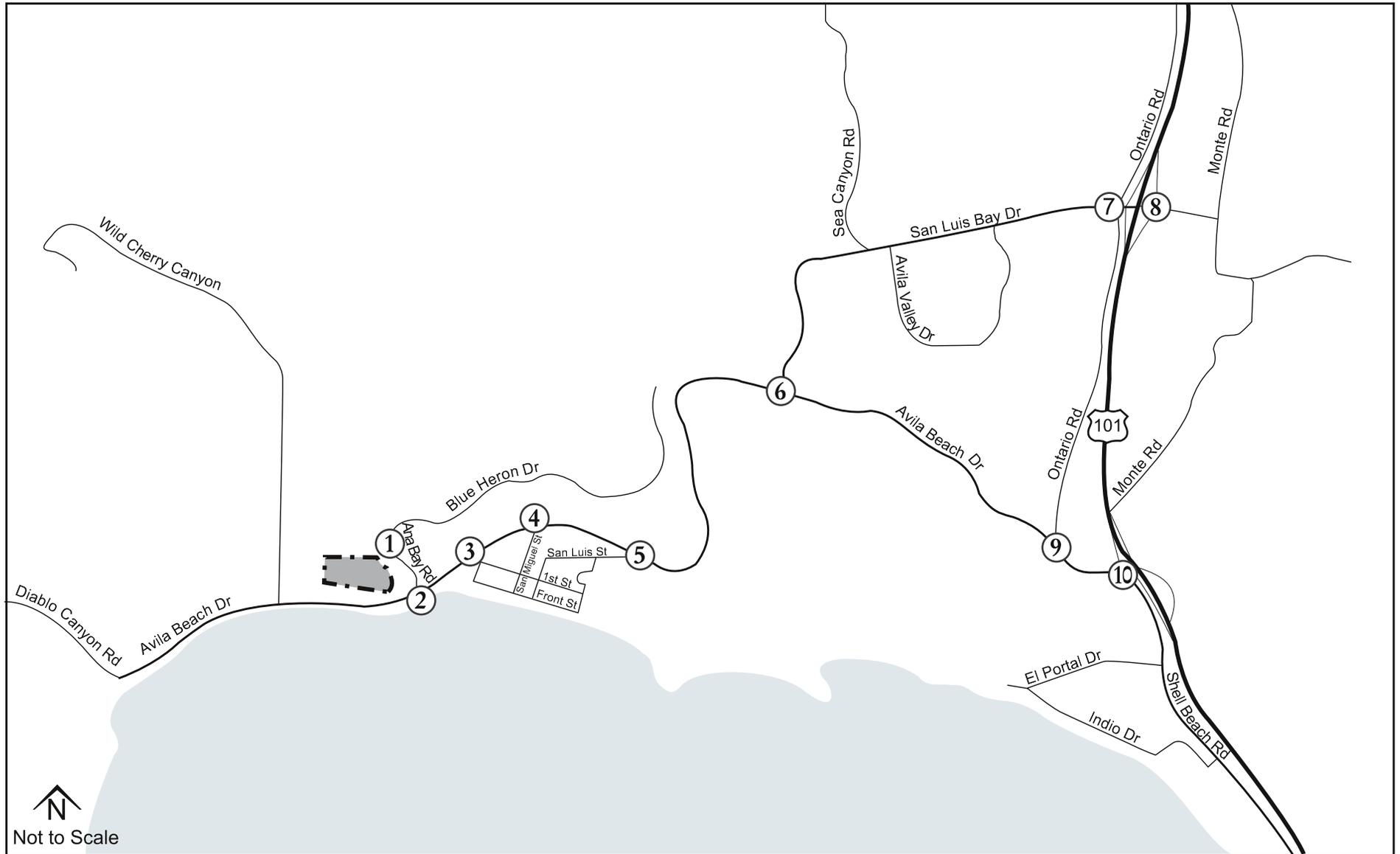
- Avila Beach Drive (West of San Luis Bay Drive)
- Avila Beach Drive (West of US 101)
- San Luis Bay Drive (West of US 101)
- US 101 (North of San Luis Bay Drive)
- US 101 (South of Avila Beach Drive)

The study intersections were evaluated under these analysis scenarios:

1. **Existing Conditions** reflect recently collected traffic counts and the existing transportation network.
2. **Existing Plus Project Conditions** add project generated traffic to Existing Conditions volumes.
3. **Cumulative Conditions** reflect future traffic conditions reflective of buildout of the Avila Beach area, developed using the Avila Traffic Model.
4. **Cumulative Plus Project Conditions** add project traffic to Cumulative Conditions volumes.

A description of the analysis approach follows Figures 1 and 2.

Figure 1: Project and Study Locations



July 2018

Legend:

- Project Site
- ⑦ - Study Intersection

Avila Cottages

Figure 2: Site Plan



Source: Appleton Partners, LLP



July 2018

Avila Cottages

Analysis Methods and Thresholds

The analysis approach was developed based on the County of San Luis Obispo and Caltrans standards.

County Facilities

The County's Traffic Impact Study policies provide guidelines for identifying transportation impacts. The study intersections are located within the Avila Beach Urban Reserve Line, where Level of Service (LOS) D is acceptable but LOS E is not. The San Luis Bay Coastal Area Plan (Chapter 8, Section B2) provides further guidance that Avila Beach Drive shall not be subject to traffic levels exceeding LOS C based on counts conducted on a weekday in May.

In July 2016 the County Board of Supervisors directed staff to require all Avila Beach projects subject to CEQA requiring a traffic study evaluate both the traffic impacts during the second week of May and during the most appropriate time period relative to the proposed land use as an interim approach until the Avila Beach Community Plan Update is finalized. The summer Saturday mid-day time period was identified as the most appropriate time period relative to the proposed hotel in consultation with County staff.

For side-street-stop controlled intersections, an impact is identified if the project results in LOS E or worse operations (LOS D or worse on Avila Beach Drive) on the stop-controlled approach and the project meets the peak hour signal warrant. Per the CA-MUTCD, "*The satisfaction of a traffic signal warrant or warrants shall not in itself require installation of a traffic control signal.*" The satisfaction of the peak hour signal warrant should therefore be considered as justification to conduct a more detailed warrant study evaluating the need for a new traffic signal.

Caltrans Facilities

Caltrans controls the US Highway 101 mainline and ramps and relies on LOS to identify impacts. Caltrans strives to maintain operations at the LOS C/D threshold on state-operated facilities, where LOS C is acceptable but LOS D is not. If an existing State Highway facility is operating at LOS D, E, or F the existing service level should be maintained.

Level of Service Thresholds

The level of service thresholds for intersections based on the 2010 Highway Capacity Manual (HCM) are presented in Table 1. The study intersections were analyzed with the Synchro 10 software package applying the 2010 HCM methods. For side-street-stop controlled intersections the overall intersection average delay per vehicle is provided followed by the worst approach average delay per vehicle in parenthesis. The LOS is reported only for the worst approach for these intersections consistent with the HCM.

Table 1: Intersection Level of Service Thresholds			
Signalized Intersections¹		Stop Sign Controlled Intersections²	
Control Delay (seconds/vehicle)	Level of Service	Control Delay (seconds/vehicle)	Level of Service
≤ 10	A	≤ 10	A
> 10 - 20	B	> 10 - 15	B
> 20 - 35	C	> 15 - 25	C
> 35 - 55	D	> 25 - 35	D
> 55 - 80	E	> 35 - 50	E
> 80	F	> 50	F

1. Source: Exhibit 18-4 of the 2010 *Highway Capacity Manual*.
2. Source: Exhibits 19-1 and 20-2 of the 2010 *Highway Capacity Manual*.

Roadway segment thresholds are summarized in Table 2 and Table 3. The mainline segments of US Highway 101 were evaluated using a vehicle density calculation using the Highway Capacity Software consistent with the 2010 HCM.

Table 2: Freeway Segment Level of Service Thresholds	
Density (passenger car/mile/lane)	Level of Service
≤ 11	A
> 11 - 18	B
> 18 - 26	C
> 26 - 35	D
> 35 - 45	E
> 45 (demand exceeds capacity)	F

1. Source: Table 1 of the 2010 *Highway Capacity Manual*.

The study roadway segments Avila Beach Drive and San Luis Bay Drive were evaluated using generalized daily volume thresholds based on the LCP.

Table 3: Arterial Segments Level of Service Thresholds			
Two-Lane Undivided Arterial Segment (With LTL)¹		Two-Lane Undivided Arterial Segment (No LTL)¹	
Average Daily Two-Way Volume	Level of Service	Average Daily Two-Way Volume	Level of Service
≤ 11,000	A	≤ 9,000	A
> 11,000 - 12,500	B	> 9,000 - 10,500	B
> 12,500 - 14,500	C	> 10,500 - 12,000	C
> 14,500 - 16,000	D	> 12,000 - 13,500	D
> 16,000 - 18,000	E	> 13,500 - 15,000	E
> 18,000	F	> 15,000	F

1. Source: 2015 Avila Valley Circulation Study Update, which estimated capacities by using HCM 2000 methodologies.

Existing Conditions

This section describes the existing transportation system and current operating conditions in the study area.

EXISTING ROADWAY NETWORK

US Highway 101 is a north-south facility connecting Los Angeles to San Francisco. In the vicinity of the project it is a four-lane freeway with full access interchanges at Avila Beach Drive and San Luis Bay Drive. There is an auxiliary lane serving southbound traffic roughly between the San Luis Bay Drive and Spyglass Drive interchanges.

Avila Beach Drive is an east-west arterial connecting US Highway 101 with Port San Luis. Along the project frontage it consists of two lanes and is posted with a speed limit of 40 miles per hour (mph).

San Luis Bay Drive is an arterial roadway connecting US Highway 101 to Avila Beach Drive, generally used for local trips and trips to and from the north on US Highway 101.

First Street is a collector roadway serving the downtown area of Avila Beach. The signalized intersection of First Street and Avila Beach Drive serves high volumes of pedestrians and cyclists and provides a controlled crossing location with a dedicated pedestrian and bicycle phase.

Ana Bay Road is a local road serving the project site and the Avila Beach Golf Resort. It is stop controlled where it intersects with Avila Beach Drive.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities include sidewalks, crosswalks, multi-use paths, and pedestrian signals at signalized intersections. The First Street/Avila Beach Drive intersection provides pedestrian crosswalks and a dedicated pedestrian/bicycle phase.

Bicycle facilities consist of multi-use paths separate from the roadway (Class I), on-street striped bike lanes (Class II), and signed bike routes (Class III). The Bob Jones City-to-the-Sea Trail is mostly a Class I multi-use path within Avila Beach. Avila Beach Drive is a Class III route east of San Luis Bay Drive and is identified as a recreational route west of San Luis Bay Drive. San Luis Bay Drive is a Class III bike route.

EXISTING TRANSIT SERVICE

The Avila Beach Trolley provides free fixed route service between Pismo Beach and Avila Beach on Friday evenings, Saturdays, and Sundays during the summer. Weekend service is provided hourly between 10 AM and 6 PM. The Trolley connects to the South County Transit network which serves the Five Cities area with four routes.

The San Luis Obispo Regional Transit Authority (RTA) provides regional fixed-route and dial-a-ride services to San Luis Obispo County. Route 10 serves the South County, with a stop in Pismo Beach.

EXISTING TRAFFIC CONDITIONS

Traffic counts for weekday PM peak hour conditions were collected at study intersections 3-10 in September 2014 as a part of the Avila Circulation Study. Intersections 1 and 2 were collected in June 2016, with volumes on Avila Beach Drive adjusted to match the volumes at Avila Beach Drive/First Street when counted as a part of the Avila Circulation Study.

In July 2016 the County Board of Supervisors directed staff to require all Avila Beach projects subject to CEQA requiring a traffic study evaluate both the traffic impacts during the second week of May and during the most appropriate time period relative to the proposed land use as an interim approach until the Avila Beach Community Plan Update is finalized. The summer Saturday mid-day time period was identified as the peak travel period for both Avila Beach and typical hotels in consultation with County staff.

Traffic counts for summer Saturday mid-day peak hour conditions were collected at all study intersections on August 20, 2016. The traffic volumes on this day were compared to other Saturdays in June, July, and August 2016 (including holiday weekend Saturdays) using data from the County’s permanent count station on Avila Beach Drive. The Saturday counts were found to be 7% below the average summer Saturday volumes. Accordingly, the Saturday counts at all study intersections were increased by 7% to represent the average summer Saturday.

Traffic counts on US Highway 101 were obtained from SLOCOG’s Highway 101 Mobility Study data. The traffic count sheets are included in Appendix A.

Figure 3 shows the existing peak hour traffic volumes and lane configurations. Table 4 shows the existing peak hour delay and corresponding LOS based on the thresholds shown in Table 1. Detailed calculation sheets are provided in Appendix B.

Table 4: Existing Intersection Peak Hour LOS			
Intersection	Peak Hour	Delay (sec/veh)¹	LOS²
1. Project Driveway/Ana Bay Road	Weekday PM	0.0 (0.0)	- (A)
	Saturday MD	0.0 (0.0)	- (A)
2. Avila Beach Drive/Ana Bay Road	Weekday PM	1.1 (18.3)	- (C)
	Saturday MD	1.0 (13.7)	- (B)
3. Avila Beach Drive/First Street	Weekday PM	19.1	B
	Saturday MD	21.8	C
4. Avila Beach Drive/San Miguel Street	Weekday PM	1.5 (19.6)	- (C)
	Saturday MD	1.6 (14.2)	- (B)
5. Avila Beach Drive/San Luis Street	Weekday PM	2.1 (21.7)	- (C)
	Saturday MD	1.6 (14.7)	- (B)
6. Avila Beach Drive/San Luis Bay Drive	Weekday PM	8.8	A
	Saturday MD	14.7	B
7. San Luis Bay Drive/Ontario Road	Weekday PM	3.4 (25.6)	- (D)
	Saturday MD	3.1 (10.7)	- (B)
8. San Luis Bay Drive/US 101 NB Ramps	Weekday PM	9.0 (35.5)	- (<i>E</i>)
	Saturday MD	6.6 (14.9)	- (B)
9. Avila Beach Drive/Ontario Road	Weekday PM	2.7 (23.9)	- (C)
	Saturday MD	4.9 (32.6)	- (<i>D</i>)
10. Avila Beach Drive/US 101 SB Ramps/Shell Beach Road	Weekday PM	4.5 (31.7)	- (<i>D</i>)
	Saturday MD	9.1 (47.7)	- (<i>E</i>)
1. HCM 2010 average control delay in seconds per vehicle (HCM 2000 used for Intersection 3).			
2. For side-street-stop controlled intersections the worst approach's delay is reported in parenthesis.			
Unacceptable operations shown in <i>bold italics</i> .			

The overall intersection LOS for side-street-stop controlled intersections are not reported, consistent with the HCM. Intersections 8, 9, and 10 have approaches with the worst delay below the desired LOS.

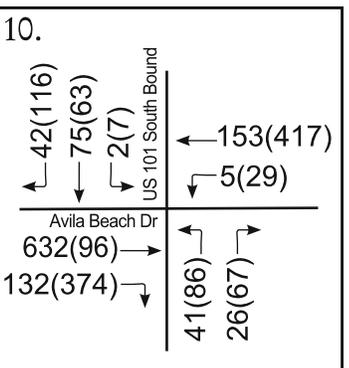
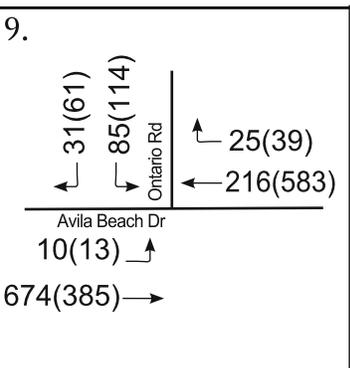
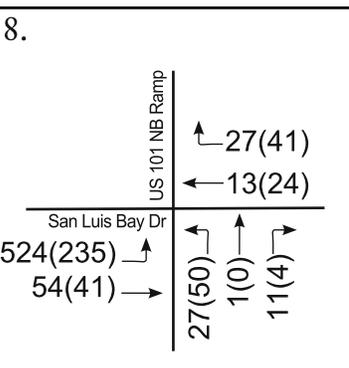
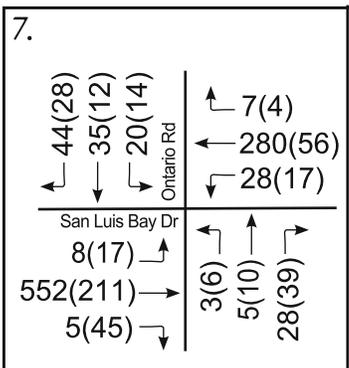
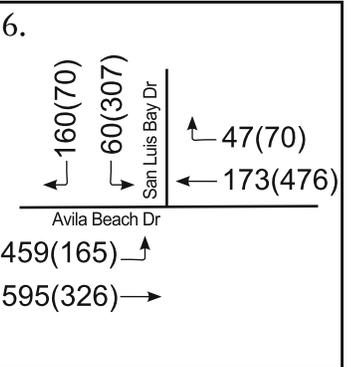
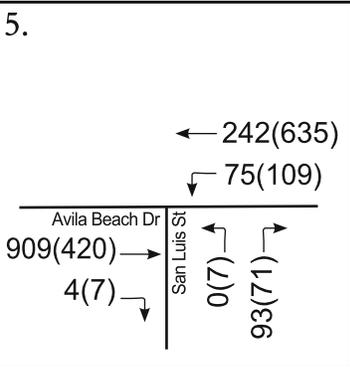
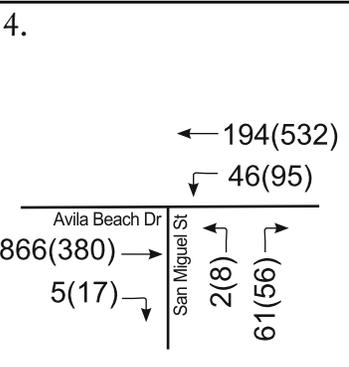
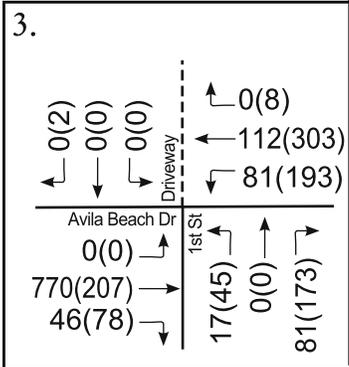
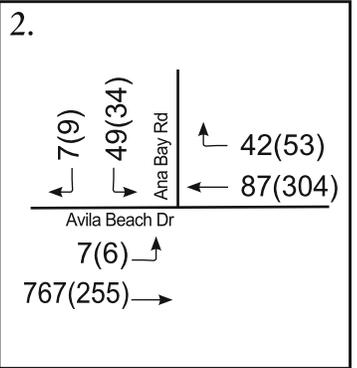
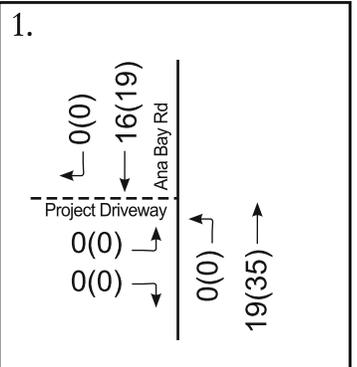
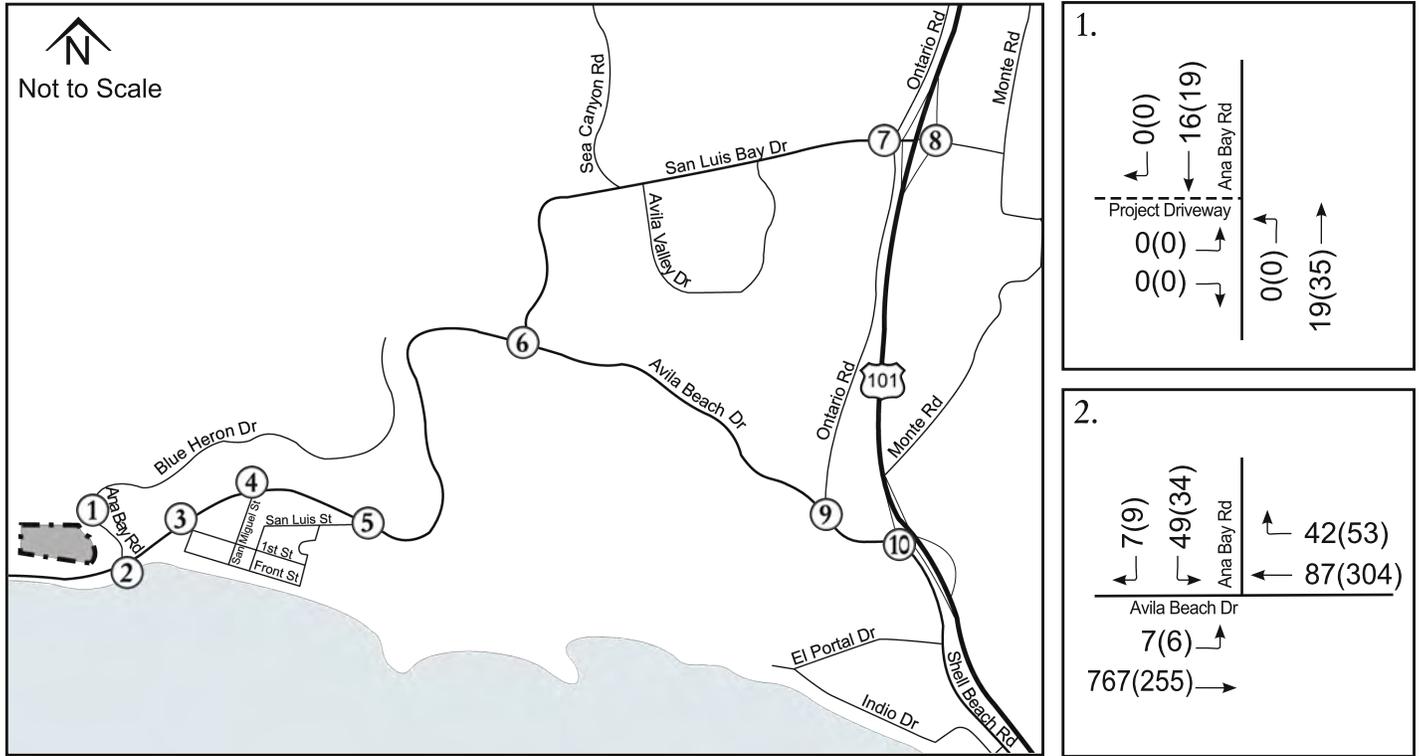
During field observations, eastbound queues at the Avila Beach Drive/First Street intersection extended the length of the bridge during the weekday PM peak and reached the bridge during the Saturday mid-day peak.

Table 5 summarizes the existing arterial segment LOS and existing freeway segment LOS based on the thresholds shown in Tables 2 and 3.

Table 5: Existing Weekday Segment Operations		
Arterial Segment	Two-way Daily Volume	LOS
Avila Beach Drive (West of San Luis Bay Drive)	11,136	B ¹
Avila Beach Drive (West of US 101)	9,631	A ¹
San Luis Bay Drive (West of US 101)	8,010	A ²
Freeway Segment	PM Peak Hour Density (pc/mi/ln)³	LOS
US Highway 101 north of San Luis Bay Drive		
Northbound	23.3	C
Southbound	28.6	<i>D</i>
US Highway 101 south of Avila Beach Drive		
Northbound	17.2	B
Southbound	30.9	<i>D</i>
1. Two-Lane Undivided Arterial Segment (With LTL). Source: <i>Avila Circulation Study Update</i> , 2015.		
2. Two-Lane Undivided Arterial Segment (No LTL). Source: <i>Avila Circulation Study Update</i> , 2015		
3. Passenger cars per mile per lane		
Unacceptable operations shown in <i>bold italics</i> .		

Both study segments of southbound US Highway 101 operate at LOS D during the weekday PM peak hour, which is below Caltrans' desired LOS C service level. All other study segments operate at LOS C or better.

Figure 3: Existing Peak Hour Volumes and Lane Configuration



Legend:

- Traffic Signal
- Stop Sign
- Study Area Intersection
- Project Site
- xx(yy) - Weekday PM (Saturday MD) Peak Hour Traffic Volumes



Existing Plus Project Conditions

This section evaluates the impacts of the proposed project on the surrounding transportation network. Existing Plus Project conditions reflect existing traffic levels plus the estimated traffic generated by the proposed project.

PROJECT TRAFFIC ESTIMATES

The amount of project traffic affecting the study intersections is estimated in three steps: trip generation, trip distribution, and trip assignment. Trip generation refers to the total number of new trips generated by the site. Trip distribution identifies the general origins and destination of these trips, and trip assignment specifies the routes taken to reach these origins and destinations.

Trip Generation

The project’s trip generation estimates, summarized in Table 6, were developed using rates in the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual*.

ITE Land Use (Code)	Size	Weekday Daily	Weekday PM Peak Hour			Saturday Daily	Saturday MD Peak Hour ⁴		
			In	Out	Total		In	Out	Total
Quality Restaurant (931) ¹	4,950 s.f.	445	25	12	37	467	32	22	54
	<i>Diverted Link Trips</i> ²	-116	-7	-3	-10	-121	-8	-6	-14
	<i>Restaurant Net New Trips</i>	329	18	9	27	346	24	16	40
Hotel (310) ³	50 units	409	15	15	30	410	20	16	36
	Total Driveway Trips	854	40	27	67	877	52	38	90
	Net New Trips	738	33	24	57	756	44	32	76

1. ITE Trip Generation Manual, Land Use Code 931, Quality Restaurant. Average rate used for Daily and Peak Hour trips.
 2. Diverted Link Trip reductions based on average of data in ITE manual (26% for restaurant).
 3. ITE Trip Generation Manual, Land Use Code 310, Hotel. Average rate used for Daily and Peak Hour trips.
 4. Saturday Mid-Day Peak Hour not available in ITE Trip Generation Manual, data used is Saturday Peak Hour of Generator.
 Source: ITE *Trip Generation Manual*, 9th Edition, 2012; CCTC, 2018.

The project trips are categorized as new trips and diverted link trips. Diverted link trips are attracted from the existing traffic volume on roadways near the project site but without direct access to the site. It requires a diversion from a roadway not adjacent to the site to another roadway to gain direct access to the site. A diverted link trip adds traffic to Ana Bay Road and shifts a trip on Avila Beach Drive. New trips are from drivers whose primary destination is located on the project site. These new trips increase traffic on the study roadway segments and at the study intersections. Diverted link trip reductions were applied to the restaurant component of the project, since typically a portion of traffic from this use are trips already on the adjacent roadway network without direct access to the site.

This is a conservative estimate of the project’s traffic generating uses, and typical operations are expected to generate fewer trips. Most hotels surveyed by ITE included supporting uses such as restaurants and cocktail lounges. The estimate in Table 6 considers restaurant trips and hotel trips to be independent, potentially overstating the number of trips generated.

The weekday project trip generation estimate shows 738 new daily trips and 57 new PM peak hour trips. The Saturday estimate shows 756 new daily trips and 76 new mid-day peak hour trips.

Trip Distribution and Assignment

The directions of approach and departure for project trips were estimated based on existing trip patterns and the locations of complementary land uses. Project trips were assigned to individual intersections based on the trip distribution percentages and were then added to the existing traffic volumes for Existing Plus Project Conditions. **Figure 4** shows the trip distribution and project trip assignment.

IMPACT ANALYSIS

Table 7 summarizes the automobile operating conditions at intersections under Existing and Existing Plus Project conditions. Detailed LOS calculation sheets are provided in Appendix B and signal warrant calculation sheets are provided in Appendix D. **Figure 5** shows the Existing Plus Project peak hour traffic volumes.

Table 7: Existing and Existing Plus Project Intersection Peak Hour LOS						
Intersection	Peak Hour	Existing		Existing Plus Project		
		Delay (sec/veh) ¹	LOS ²	Delay (sec/veh) ¹	LOS ²	Warrant Met? ³
1. Project Driveway/Ana Bay Road	Weekday PM	0.0 (0.0)	- (A)	5.1 (8.5)	- (A)	-
	Saturday MD	0.0 (0.0)	- (A)	4.9 (8.6)	- (A)	-
2. Avila Beach Drive/Ana Bay Road	Weekday PM	1.1 (18.3)	- (C)	1.8 (20.8)	- (C)	-
	Saturday MD	1.0 (13.7)	- (B)	1.8 (14.9)	- (B)	-
3. Avila Beach Drive/First Street	Weekday PM	19.1	B	22.8	C	-
	Saturday MD	21.8	C	22.1	C	-
4. Avila Beach Drive/San Miguel Street	Weekday PM	1.5 (19.6)	- (C)	1.5 (20.5)	- (C)	-
	Saturday MD	1.6 (14.2)	- (B)	1.6 (15.3)	- (C)	-
5. Avila Beach Drive/San Luis Street	Weekday PM	2.1 (21.7)	- (C)	2.1 (22.3)	- (C)	-
	Saturday MD	1.7 (14.1)	- (B)	1.6 (14.6)	- (B)	-
6. Avila Beach Drive/San Luis Bay Drive	Weekday PM	8.8	A	8.8	A	-
	Saturday MD	14.7	B	14.8	B	-
7. San Luis Bay Drive/Ontario Road	Weekday PM	3.4 (25.6)	- (D)	3.5 (26.8)	- (D)	-
	Saturday MD	3.1 (10.7)	- (B)	2.9 (10.9)	- (B)	-
8. San Luis Bay Drive/US 101 NB Ramps	Weekday PM	9.0 (35.5)	- (E)	9.1 (36.9)	- (E)	No
	Saturday MD	6.6 (14.9)	- (B)	6.8 (15.5)	- (C)	No
9. Avila Beach Drive/Ontario Road	Weekday PM	2.7 (23.9)	- (C)	2.8 (24.9)	- (C)	Yes
	Saturday MD	4.9 (32.6)	- (D)	5.2 (35.5)	- (E)	Yes
10. Avila Beach Drive/US 101 SB Ramps/Shell Beach Road	Weekday PM	4.5 (31.7)	- (D)	4.6 (34.0)	- (D)	Yes
	Saturday MD	9.1 (47.7)	- (E)	10.0 (56.2)	- (F)	Yes

1. HCM 2010 average control delay in seconds per vehicle (HCM 2000 used for Intersection 3).
 2. For side-street-stop controlled intersections the worst approach's delay is reported in parenthesis.
 3. Based on California MUTCD Warrant 3
 Unacceptable operations shown in **bold italics**.

The following deficiencies and recommendations are noted:

- San Luis Bay Drive/US 101 NB Ramps (#8): The addition of project traffic worsens delay on the northbound off-ramp approach, which continues to operate at LOS E during the weekday PM peak hour under Existing Plus Project conditions. This intersection does not meet the peak hour signal warrant, so no improvements are recommended.

- Avila Beach Drive/Ontario Road (#9): The addition of project traffic degrades conditions on the southbound approach, which operates at LOS E during the Saturday mid-day peak hour under Existing Plus Project conditions. This intersection meets the peak hour signal warrant. Signalization of this intersection would result in acceptable operations and is included in the County’s Roadway Impact Fee program
- Avila Beach Drive/US 101 SB Ramps/Shell Beach Road (#10): The addition of project traffic worsens delay on the side street approaches, with the worst approach continuing to operate at LOS D during the weekday PM peak hour and degrading to LOS F during the Saturday mid-day peak hour under Existing Plus Project conditions. This intersection meets the peak hour signal warrant. Caltrans approved a Project Study Report-Project Development Support document in May 2016 and is proceeding with the Project Approval and Environmental Document phase for interchange improvements at this location. The Intersection Control Evaluation for this intersection recommends a single lane roundabout, which would result in acceptable operations. These improvements are included in the County’s Roadway Impact Fee program.

All other study intersections are expected to operate acceptably with the addition of project traffic.

Table 8 summarizes the segment operations under Existing and Existing Plus Project Conditions.

Table 8: Existing and Existing Plus Project Weekday Peak Hour Segment LOS				
Arterial Segment	Existing PM		Existing Plus Project PM	
	Two-way Volume	LOS	Two-way Volume	LOS
Avila Beach Drive (West of San Luis Bay Drive)	11,136	B	11,727	B
Avila Beach Drive (West of US 101)	9,631	A	9,926	A
San Luis Bay Drive (West of US 101)	8,010	A	8,305	A
Freeway Segment	Density (pc/mi/ln)¹	LOS	Density (pc/mi/ln)¹	LOS
US Highway 101 north of San Luis Bay Drive				
Northbound	23.3	C	23.5	C
Southbound	28.6	D	28.8	D
US Highway 101 south of Avila Beach Drive				
Northbound	17.2	B	17.3	B
Southbound	30.9	D	31.0	D

1. Passenger cars per mile per lane.
Daily Roadway Capacities LOS by Facility Type from Avila Circulation Study Update 2015.
Unacceptable operations shown in **bold italics**.

The addition of project traffic would not change the service level for any of the study segments. The southbound segments of US Highway 101 would continue to operate unacceptably. The addition of project traffic increases vehicle density by less than one percent.

Bicycles

Bicycle deficiencies would occur if the project disrupts existing or planned bicycle facilities or is otherwise incongruent with the County’s Bikeways Plan. There is a multi-use path planned parallel to Avila Beach Drive along the project frontage. The project would not conflict with this or any other planned bicycle facility. There are currently no bicycle facilities along or parallel to Ana Bay Road or along the project driveway.

Pedestrians

Pedestrian deficiencies would occur if the project fails to provide safe and accessible pedestrian connections between the project and nearby destinations.

There are currently no pedestrian facilities along the Project Driveway or Ana Bay Road. The walking distance from the project site to the Avila Beach Drive/First Street intersection is roughly 2/3 of a mile, and hotel guests could walk to other destinations like the Golf Club and coastal access points.

The project proposes electric shuttles for guests traveling between the hotel and destinations in Avila Beach. This will reduce pedestrian trips from the site to nearby destinations.

Pedestrian volumes crossing Avila Beach Drive should be monitored to determine the need, if any, of enhanced crossing treatments such Rectangular Rapid Flashing Beacons. Detailed site designs should be reviewed once they are available to ensure that pedestrian facilities are continuous and connect with likely destinations to the maximum extent possible.

Transit

Transit deficiencies would occur if the project disrupts existing or planned transit facilities or services or conflicts with County plans, guidelines, policies, or standards.

The nearest transit stop to the project is served by the seasonal Avila Trolley, which stops in front of San Luis Bay Inn, adjacent property to the Project Site, for northbound trips and at Avila Beach Drive at First Street when it is headed southbound, approximately 1/2 miles from the Project Driveway on Ana Bay Road. The project would not result in any transit deficiencies.

Turn Lane Evaluation

The need for left turn lanes on Avila Beach Drive at Ana Bay Road was evaluated based on the procedure described in the AASHTO Green Book (section 9.7.3), with Table 9-23 shown at right.

The eastbound speed limit is 40 miles per hour. During the existing PM peak hour, the opposing westbound traffic on Avila Beach Drive is 129 vehicles per hour (vph). The eastbound advancing volume consists of 767 vph existing trips with an additional 7 vph turning left. This translates to one percent of the advancing volume making left turns. Table 9-23 does not provide a threshold for less than five percent left turns. If the left turning volume reached five percent of the advancing volumes, the left turn would be warranted.

Currently fewer than ten vehicles make the eastbound left turning movement, and fewer than ten vehicles are projected to be added to this movement by the project during the peak hour. In addition, the projected opposing westbound traffic would remain below 200 vph, and less than two percent of the advancing volumes would be left turns. Installation of a left turn lane would likely conflict with the planned multi-use path on the south side of Avila Beach Drive due to limited right-of-way and topographic

U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
40-mph Operating Speed				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
50-mph Operating Speed				
800	280	210	165	135
600	350	260	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
60-mph Operating Speed				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

constraints. A left turn lane is not recommended due to the low turning volumes and these site-specific constraints.

Site Access and On-Site Circulation

On-site circulation deficiencies would occur if project designs fail to meet appropriate standards, fail to provide adequate truck access, or would result in hazardous or unsafe conditions.

The proposed site plan is shown on **Figure 2**. Primary project access will be provided via Ana Bay Road. The project access point currently exists. Emergency vehicle access is proposed via Blue Heron Drive, which would allow emergency vehicle access to San Luis Bay Drive without relying on Avila Beach Drive.

No turn lanes are provided on Ana Bay Road at the project access point.

The electric shuttles would provide guests with travel accommodations from the hotel to Avila Beach destinations. This encourages guests going downtown not to take their vehicles, an improvement consistent with the Port San Luis Harbor District Parking Management Plan.

Stopping sight distance is the minimum length of clear roadway that must be visible for a motorist to stop for an object in the road. The stopping sight distance is sometimes used instead of intersection sight distance where restrictive conditions (such as excessive costs or immitigable environmental impacts) exist. For a design speed of 25 mph, the minimum stopping sight distance is 150 feet per the Caltrans Highway Design Manual. For 40 mph, it is 300 feet.

Sight distance at the intersection of the project driveway and Ana Bay Road is constrained due to vegetation growth on the southwest corner. The sight line for a northbound driver is shown in the photo below, with the orange cone representing the location of a driver in a vehicle exiting the project driveway.



While vehicles exiting the driveway have an ample sight line looking north, the sight distance is only about 120 feet looking south. The vegetation on the southwest corner should be trimmed to ensure vehicles traveling northbound have adequate stopping sight distance approaching the intersection.

The turning radius for vehicles entering and exiting the project driveway is highly constrained. Turning templates should be used and the driveway should be reconstructed as necessary to ensure the design vehicle can turn in and out without encroaching on opposing traffic. Additionally, the centerline on Ana Bay Road should be restriped as a no-passing zone wherever adequate passing sight distance is not available.

Sight distance at the intersection of Avila Beach Drive and Ana Bay Road for southbound drivers was found to be ample with approximately 465 feet looking west and approximately 390 feet looking east.

Special Events

The project proposes two special events scenarios. For both, it was assumed that vehicle occupancy would be 2.5 attendees per vehicle and that one trip end per vehicle would coincide with the Saturday mid-day peak hour. For the first scenario, the restaurant would be closed to the public and there would be up to 200 attendees, including staff. It was assumed that 50% of the attendees would be hotel guests or employees. This scenario was found to result in a total of 76 peak hour project trips, equal to the trip generation during the Saturday mid-day period under typical operations.

For the second scenario, the restaurant would remain open and there would be up to 100 attendees. It was assumed that 25% of the attendees would be hotel guests or employees. This scenario was found to result in a total of 106 peak hour project trips. For this scenario, it may be necessary to implement a Travel Demand Management (TDM) plan to reduce trips. Alternatively, if the number of attendees was reduced to 78 then the number of trips would decrease to 99. If the trip generation estimate includes only the Hotel land use, the number of peak hour project trips would be below 100.

Roadway Safety Analysis

Table 9: 2015-2017 Avila Beach Drive (Ana Bay - San Luis Bay) Collisions		
Primary Collision Factor	Alcohol/Drugs	13
	Improper Turn	10
	Unsafe Speed	7
	Other	5
Motor Vehicle Involved With	Moving Vehicle	14
	Parked Vehicle	7
	Bike/Ped	3
	Fixed Object/Other	11
Type	Hit Object	10
	Sideswipe	8
	Rear End	9
	Broadside	4
	Other	4
Severity	Severe	2
	Visible Injury	6
	PDO	27
Total		35
Note: Based on SWTIRS data from January 1, 2015 to December 31, 2017.		

From 2015-2017, there were 35 collisions along the Avila Beach Drive segment from Ana Bay Road to San Luis Bay Drive. Table 9 shows the breakdown of these 35 collisions by the following categories: primary collision factor, motor vehicle involved with, collision type, and severity. 27 collisions resulted in property damage only, two resulted in severe injuries, and six resulted in other visible injuries. Alcohol and drug related collisions account for almost 40 percent of all collisions, the greatest portion

among the other primary factors. Both severe injury collisions and three of the six visible injury collisions were a result of drivers impaired by drugs or alcohol.

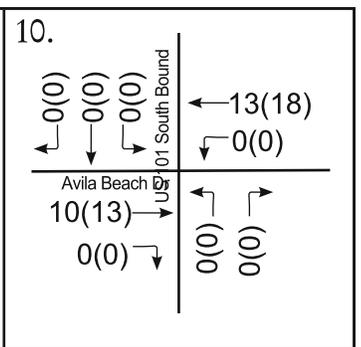
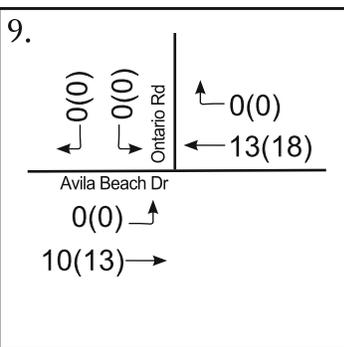
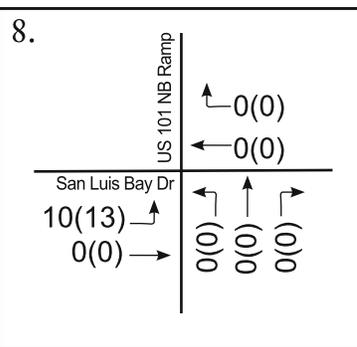
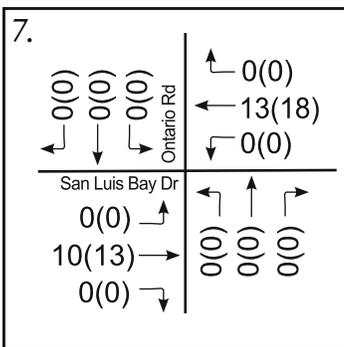
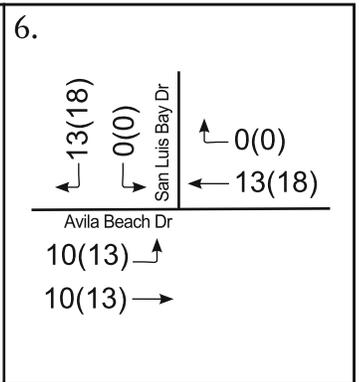
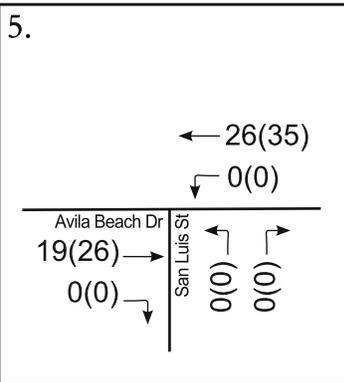
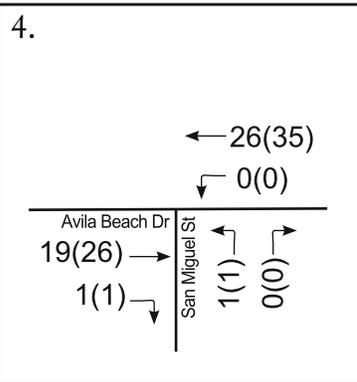
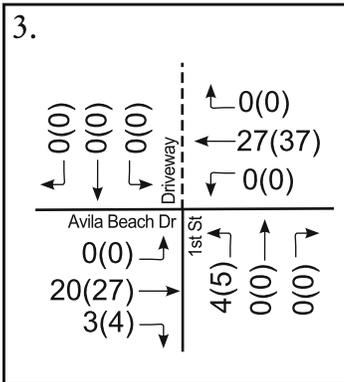
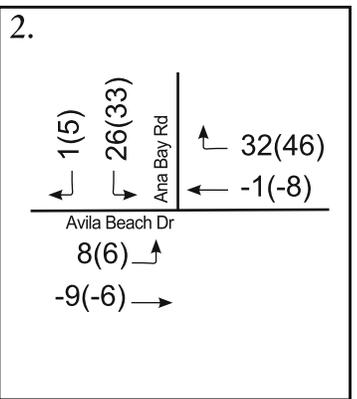
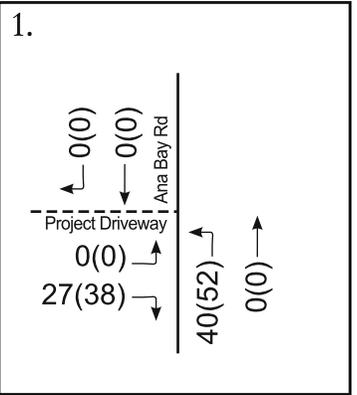
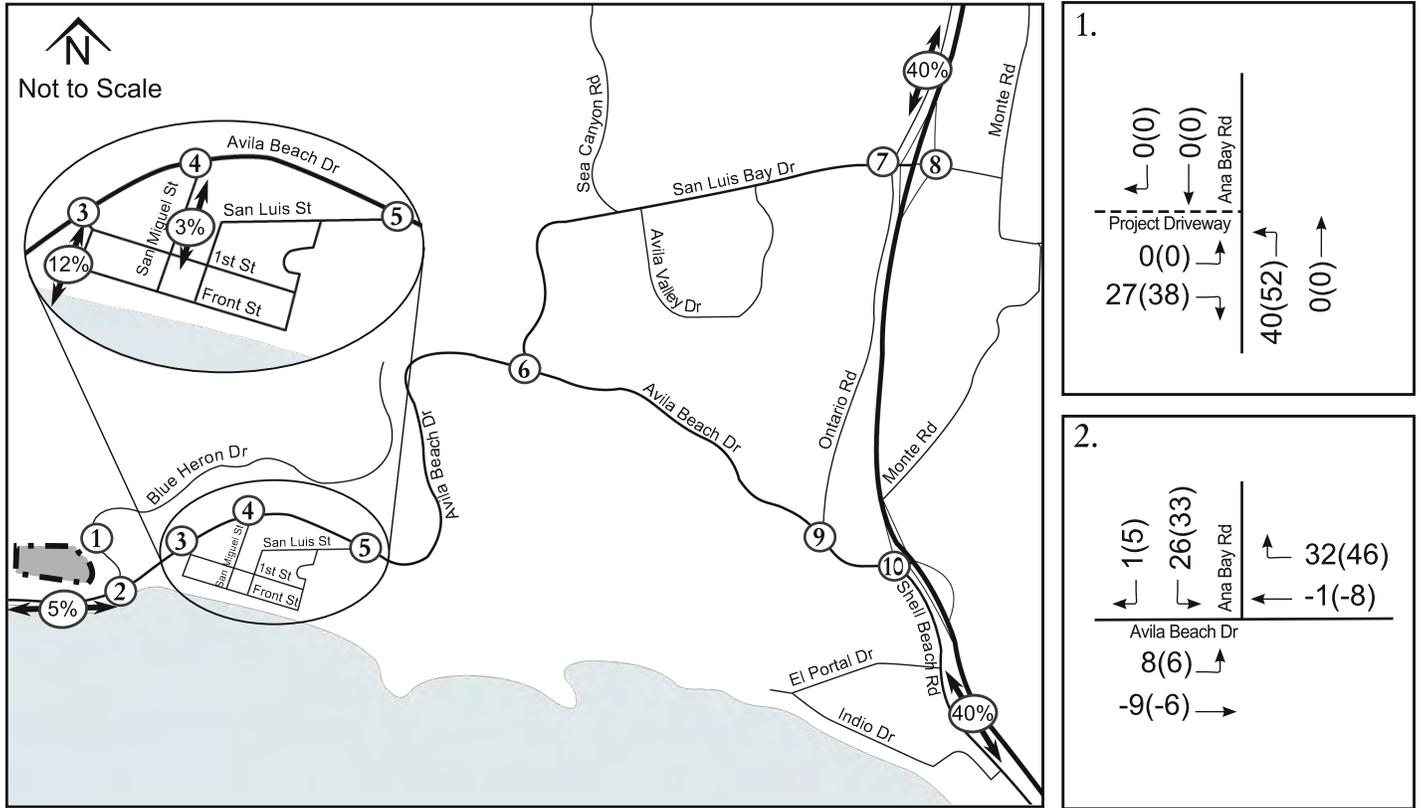
Table 10 shows the collision rate analysis for this segment and the Avila Beach Drive/Ana Bay Road intersection. Both the segment and intersection have higher collision rates than the County road and Caltrans State average collision rates, respectively. However, in both cases, the higher collision rate was found to be insignificant per the Caltrans Significance Test.

Table 10: Collision Rate Analysis					
Location	Reported Collisions ³	Reported Rate	Reference Rate ⁴	Collisions Significant ⁵	Significant?
Avila Beach Drive (Ana Bay Road to San Luis Bay Drive) ¹	35	1.53	1.15	41	No
Avila Beach Drive/Ana Bay Road intersection ²	2	0.19	0.16	6	No
1. Rates are in units of collisions per million vehicle miles. 2. Rates are in units of collisions per million vehicles. 3. Based on SWITRS data from January 1, 2015 to December 31, 2017. 4. Segment rate based on County road average collision rate; Intersection rate based on the Caltrans State average collision rate for similar intersections. 5. Based on Caltrans Significance Test. Source: Caltrans Table C Task Force Summary Report, 2002.					

We recommend that the County consider the following improvements to enhance safety conditions as a part of on-going improvement projects:

- Shoulder rumble strips with the following restrictions per the County Bikeways Plan: four foot shoulder width minimum when vertical elements (e.g. curbs or guardrails) are present, or three foot shoulder width minimum when vertical elements are not present. Shoulder rumble strip must not be placed in Class II bike lanes.
- Speed reduction markings or driver feedback signs at curves if determined to be warranted through safety monitoring programs. Curve signage is already present.

Figure 4: Project Trip Distribution and Assignment



Legend:

- $\textcircled{3\%}$ - Project Trip Distribution Percentage
- $xx(yy)$ - Weekday PM (Saturday MD) Peak Hour Traffic Volumes
- $\textcircled{7}$ - Study Area Intersection
- Project Site

Cumulative Conditions

Cumulative conditions represent build-out of the Avila Beach area.

CUMULATIVE ROADWAY NETWORK

The following network changes were assumed to be in place under Cumulative conditions:

- Avila Beach Drive/San Miguel Street (#4): Signal control and the addition of a 25-foot northbound right-turn pocket.
- Avila Beach Drive/San Luis Street (#5): Signal control and the addition of a 25-foot northbound right-turn pocket.
- San Luis Bay Drive/Ontario Road (#7): Signal control and the addition of 100-foot eastbound and westbound left-turn pockets.
- San Luis Bay Drive/US 101 NB Ramps (#8): Signal control with the existing lane configuration.
- Avila Beach Drive/Ontario Road (#9): Signal control with a 25-foot southbound right-turn pocket.
- Avila Beach Drive/US 101 SB Ramps/Shell Beach Road (#10): Single-lane roundabout with no bypass lanes. Per the Caltrans Roundabout Geometric Design Guidance, the California-specific values for critical headway and follow-up headway were used in the analysis.

The project would be required to contribute traffic impact fees which would apply towards future improvements in the area.

CUMULATIVE TRAFFIC FORECASTS

The Avila Traffic Model was developed to forecast future travel patterns in the Avila Beach area. The model incorporates future land uses to produce future year traffic forecasts. The most recent version of the model was calibrated and validated to year 2015 data and the future year scenario was developed to represent build-out conditions in the area, nominally for year 2035.

Cumulative forecasts for weekday PM conditions were obtained from the Avila Circulation Study. Cumulative forecasts for Saturday mid-day conditions were derived from the existing Saturday mid-day volumes using similar growth factors as was used for weekday PM. These forecasts include Diablo Canyon Power Plant as currently operational, so are conservative since the plant is now expected to be decommissioned in 2025.

CUMULATIVE TRAFFIC CONDITIONS

Table 11 summarizes traffic conditions at the study intersections under Cumulative and Cumulative Plus Project conditions. **Figure 6** and **Figure 7** depict Cumulative and Cumulative Plus Project condition traffic volumes, respectively.

Table 11: Cumulative and Cumulative Plus Project Intersection Peak Hour LOS						
Intersection	Peak Hour	Cumulative Delay		Cumulative Plus Project Delay		
		(sec/veh) ¹	LOS ²	(sec/veh) ¹	LOS ²	Warrant Met? ³
1. Project Driveway/Ana Bay Road	Weekday PM	0.0 (0.0)	- (A)	4.9 (8.5)	- (A)	-
	Saturday MD	0.0 (0.0)	- (A)	4.5 (8.6)	- (A)	-
2. Avila Beach Drive/Ana Bay Road	Weekday PM	1.3 (22.7)	- (C)	2.1 (27.1)	- (D)	No
	Saturday MD	1.4 (15.3)	- (C)	2.2 (17.1)	- (C)	No
3. Avila Beach Drive/First Street	Weekday PM	22.5	C	22.2	C	-
	Saturday MD	19.7	B	20.1	C	-
4. Avila Beach Drive/San Miguel Street	Weekday PM	5.5	A	5.7	A	-
	Saturday MD	4.2	A	4.5	A	-
5. Avila Beach Drive/San Luis Street	Weekday PM	7.3	A	7.0	A	-
	Saturday MD	4.7	A	4.9	A	-
6. Avila Beach Drive/San Luis Bay Drive	Weekday PM	12.9	B	12.4	B	-
	Saturday MD	21.6	C	22.1	C	-
7. San Luis Bay Drive/Ontario Road	Weekday PM	8.4	A	7.8	A	-
	Saturday MD	5.0	A	5.1	A	-
8. San Luis Bay Drive/US 101 NB Ramps	Weekday PM	7.9	A	8.1	A	-
	Saturday MD	5.1	A	5.1	A	-
9. Avila Beach Drive/Ontario Road	Weekday PM	5.6	A	5.7	A	-
	Saturday MD	6.5	A	6.6	A	-
10. Avila Beach Drive/US 101 SB Ramps/Shell Beach Road	Weekday PM	10.8	B	11.0	B	-
	Saturday MD	8.6	A	8.8	A	-

1. HCM 2010 average control delay in seconds per vehicle (HCM 2000 used for Intersection 3).
 2. For side-street-stop controlled intersections the worst approach's delay is reported in parenthesis.
 3. Based on California MUTCD Warrant 3
 Unacceptable operations shown in **bold italics**.

The following intersection would operate below the desired LOS:

- Avila Beach Drive/Ana Bay Road (#2): The addition of project traffic degrades conditions on the southbound approach, which operates at LOS D during the weekday PM peak hour under Cumulative Plus Project conditions. This intersection does not meet the peak hour signal warrant. Construction of a 25-foot southbound right turn pocket would decrease delay on the southbound approach by less than one second per vehicle during the weekday PM peak hour and would not change the LOS. No improvements are recommended. If the trip generation estimate includes only the Hotel land use, the southbound approach would operate at LOS C with the addition of project traffic.

All other study intersections are expected to operate acceptably with the addition of project traffic.

Table 12 summarizes the Cumulative traffic conditions along the study segments with and without the project.

Table 12: Cumulative and Cumulative Plus Project Weekday Peak Hour Segment LOS				
Arterial Segment	Cumulative PM		Cumulative Plus Project PM	
	Two-way Volume	LOS	Two-way Volume	LOS
Avila Beach Drive (West of San Luis Bay Drive)	12,936	C	13,526	C
Avila Beach Drive (West of US 101)	11,131	B	11,426	B
San Luis Bay Drive (West of US 101)	10,110	B	10,405	B
Freeway Segment	Density		Density	
	(pc/mi/ln)¹	LOS	(pc/mi/ln)¹	LOS
US Highway 101 north of San Luis Bay Drive				
Northbound	23.9	C	24.1	C
Southbound	29.5	D	29.7	D
US Highway 101 south of Avila Beach Drive				
Northbound	17.1	B	17.2	B
Southbound	30.6	D	30.7	D

1. Passenger cars per mile per lane.
Daily Roadway Capacities LOS by Facility Type from Avila Circulation Study Update 2015.
Unacceptable operations shown in **bold italics**.

The southbound segments of US Highway 101 would operate at LOS D both with and without the project. All other study segments will continue to operate at LOS C or better. The addition of project traffic would not change the service level on US Highway 101 or the study segments.

VEHICLE MILES TRAVELED

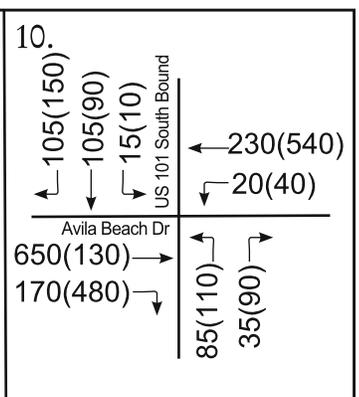
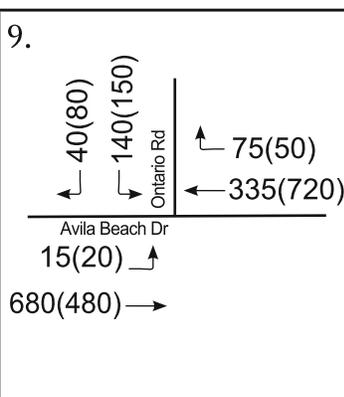
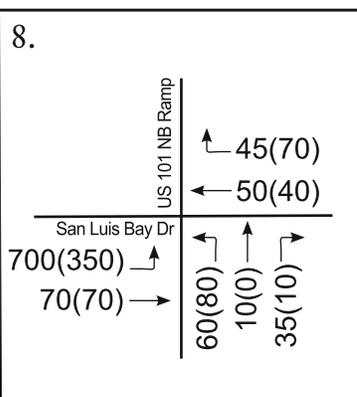
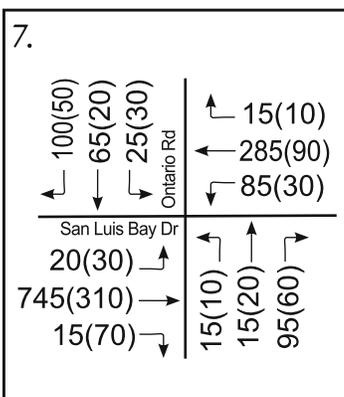
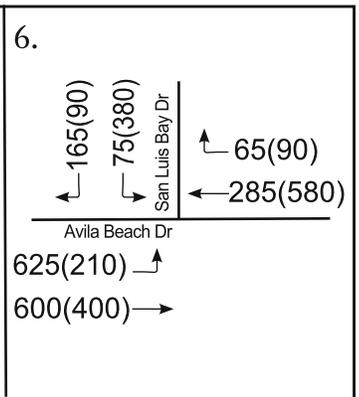
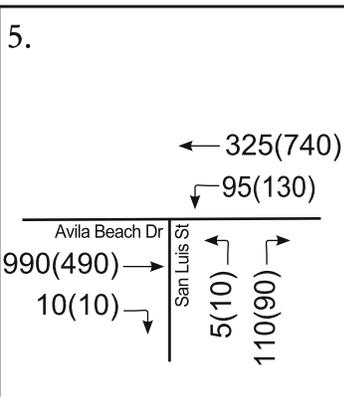
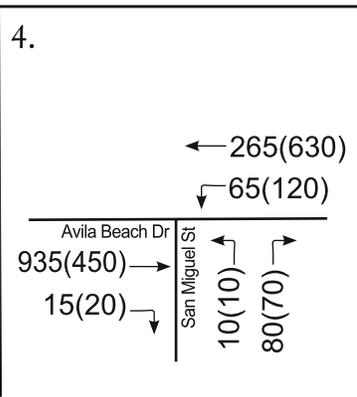
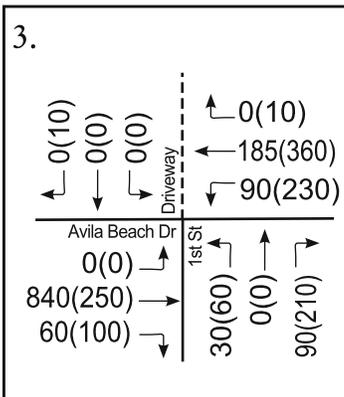
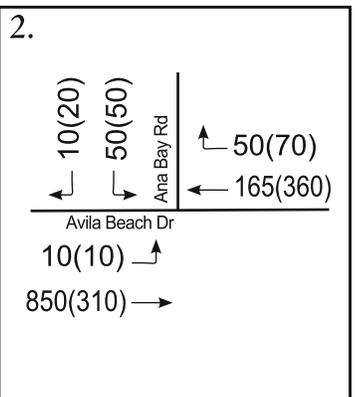
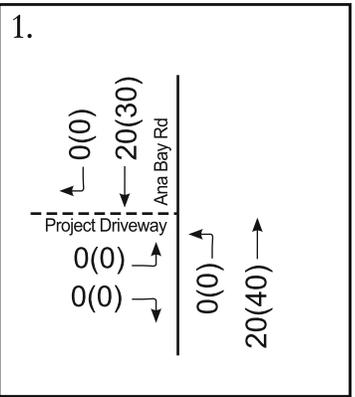
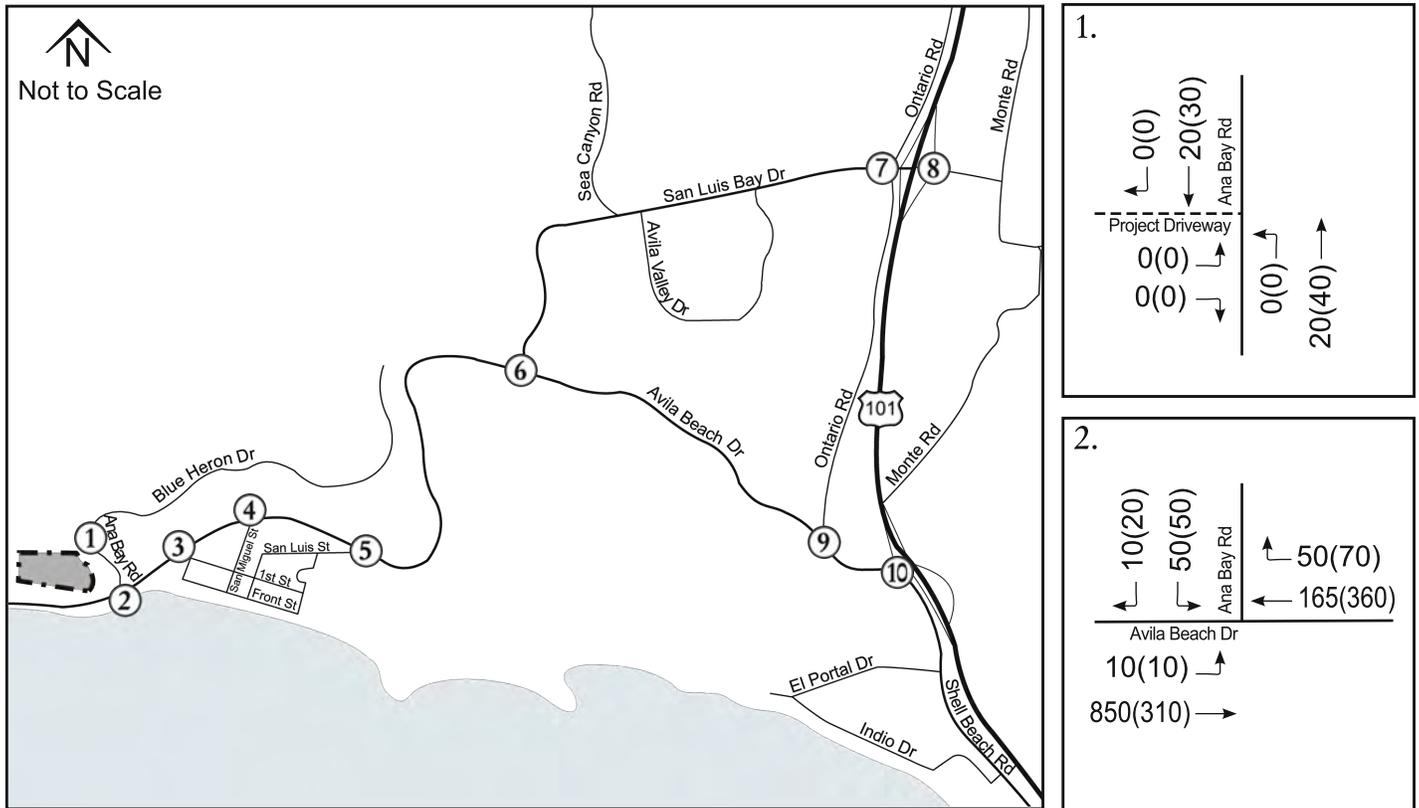
The SLOCOG Travel Demand Model was applied to estimate Vehicle Miles Traveled (VMT) for the project. The SLOCOG Model uses employees to represent non-residential land uses, so the number of employees on site were estimated and added to the Model. The County does not have a threshold for VMT impacts. Table 13 summarizes the Countywide VMT with and without the project.

Table 13: Vehicle Miles Traveled				
	No Project	With Project	Change	% Change
VMT	9,844,743	9,847,555	2,813	0.029%

1. Buildout Conditions using the SLOCOG Travel Demand Model

The project would increase Countywide VMT by less than 0.03 percent.

Figure 6: Cumulative Volumes



Legend:

- ⑦ - Study Area Intersection
- xx(yy) - Weekday PM (Saturday MD) Peak Hour Traffic Volumes
- ▭ - Project Site

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