

**Appendix I:
Transportation Supporting Information**

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Transportation Impact Study for the Martin Hills Ranch Project



Prepared for the Town of Danville

Submitted by
W-Trans

March 5, 2026



**TRAFFIC ENGINEERING
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Executive Summary

The proposed project would result in the subdivision of an existing vacant parcel into 22 residential lots, with one single-family house each as well as 25-percent affordable housing in the form of five affordable accessory dwelling units (ADUs). Of the 27 total potential dwelling units, 26 would be located along the proposed extension of Como Way starting approximately 700 feet east of El Capitan Drive in the Town of Danville, with the remaining lot located at the end of Borica Drive. The project would be expected to generate an average of 231 trips per day, including 17 a.m. peak hour trips and 23 trips during the p.m. peak hour.

Proposed roadway facilities identified in the project site plan for the extension of Como Way would mostly comply with Town design policy, including having sidewalks, curbs, and gutters. However, the roadway and right-of-way would be narrower than the Town's requirement for 32 and 52 feet, respectively. Likewise, streetlighting is not indicated on the plans but is required by Town ordinance. Assuming an exemption is successfully pursued for the width requirements and streetlighting is added to the site plans, the proposed project would not conflict with any existing Town policies related to pedestrians, bicyclists, transit, or roadways and would therefore have a less-than-significant impact on facilities for these modes.

Based on County guidance, the project's impact on vehicle miles traveled (VMT) would be potentially significant as the project would be located in an area generating VMT 7.6 percent higher than the threshold of significance. By implementing a community-based travel planning program combined with the affordable ADU component, the project's VMT would be reduced to below the threshold of significance, resulting in a less-than-significant impact to VMT.

Sight distances at El Capitan Drive/Como Way are adequate for all movements into or out of Como Way. In all scenarios assessed, the projected maximum queue lengths at intersections would be within the available stacking space without or with the addition of project traffic, except at one location where the queue length already exceeds available capacity and adding trips associated with the project would negligibly affect the stacking distance. However, the sustained steep downhill grade for eastbound traffic leaving the project site may present a significant impact to safety. This could be reduced to a less-than-significant level through incorporation of a traffic circle into the design plans at the project entrance to reduce the speed of traffic departing the project site to 15 miles per hour or slower.

The project site would be accessed via the extension of Como Way as well as an emergency access path to Borica Drive. Although the project would be adequately designed for emergency vehicle access per Town and California Fire Code requirements, the block length east of the fire access road would exceed standards. Likewise, the cul-de-sac turnaround radii would be 40 feet, which is smaller than the requirement for 45 feet. Assuming the Town approves an exemption from the block length and cu-de-sac turnaround radius standards, the proposed project would have a less-than-significant impact to emergency access as it would otherwise be designed to accommodate emergency response vehicles and comply with other relevant codes. Traffic from the proposed development would be expected to have a less-than-significant impact on emergency response times.

All study intersections operate acceptably under Existing Conditions and would be expected to continue operating acceptably with traffic from the proposed project added.

The proposed vehicle parking supply would satisfy Town of Danville requirements assuming the future residences would be designed to contain at least two enclosed vehicle parking spaces per single-family dwelling.

Introduction

This report presents an analysis of the potential traffic impacts and adverse operational effects that would be associated with the development of 21 residential lots to be created and located off an extension of Como Way east from the current terminus approximately 700 feet east of El Capitan Drive in the Town of Danville, plus one lot at the eastern terminus of Borica Drive. The traffic study was completed in accordance with the criteria established by the Town of Danville and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide Town staff and policy makers with data that they can use to make an informed decision regarding the potential transportation impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to an acceptable level under the California Environmental Quality Act (CEQA), the Town's General Plan, or other policies. This report provides an analysis of those items that are identified as areas of environmental concern under CEQA and that, if significant, require an EIR. Impacts associated with access for pedestrians, bicyclists, and to transit; the vehicle miles traveled (VMT) generated by the project; potential safety concerns such as increased queuing in dedicated turn lanes or adequacy of sight distance; and emergency access are addressed in the context of the CEQA criteria. While no longer a part of the CEQA review process, vehicular traffic service levels at key intersections were evaluated for consistency with General Plan policies by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on anticipated travel patterns specific to the proposed project, then analyzing the effect the new traffic would be expected to have on the study intersections and need for improvements to maintain acceptable operation. The adequacy of parking is also addressed as a policy issue.

Applied Standards and Criteria

The report is organized to provide background data that supports the various aspects of the analysis, followed by the assessment of CEQA issues and then evaluation of policy-related issues. The CEQA criteria evaluated are as follows.

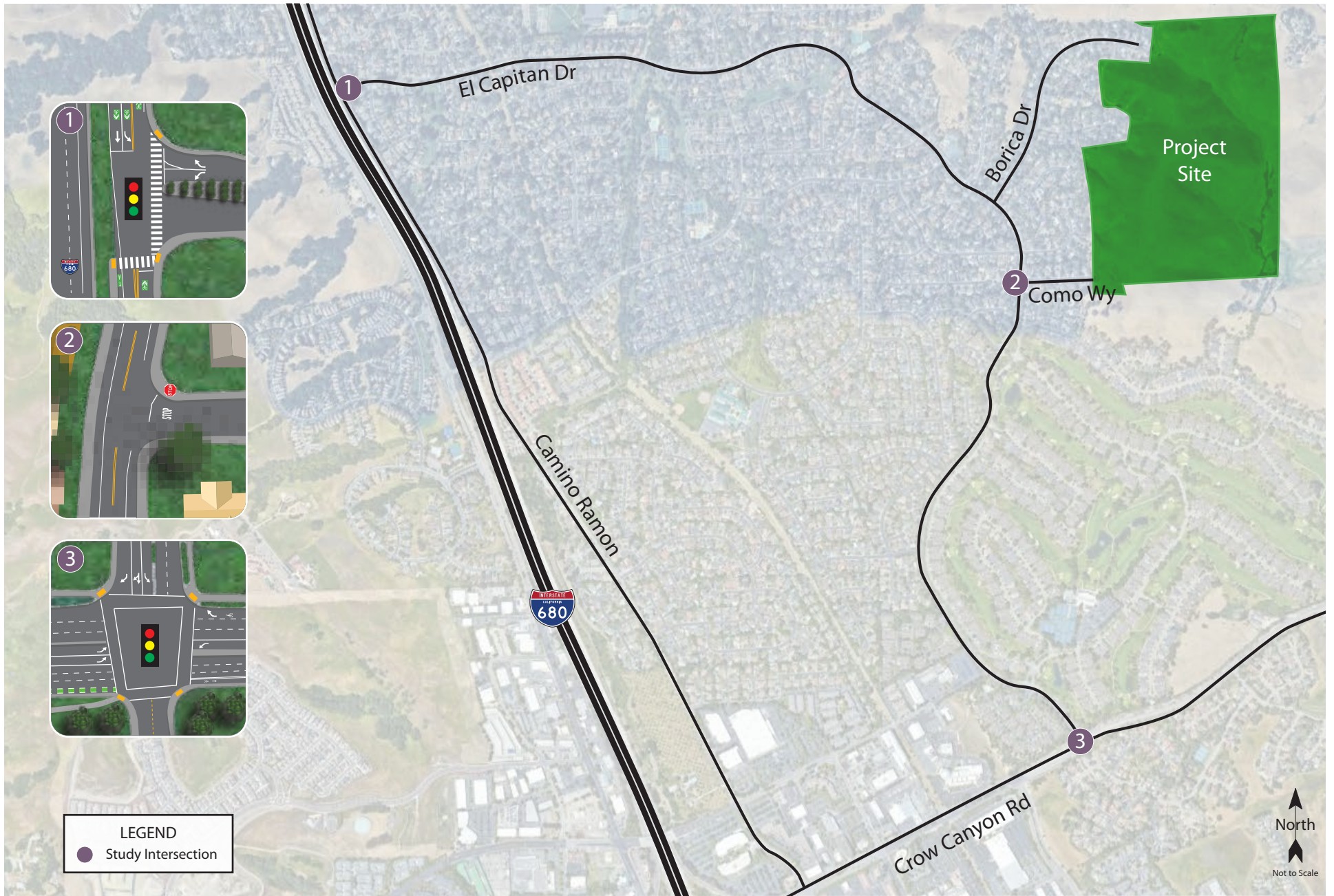
Would the project:

- a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
- b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?
- c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- d. Result in inadequate emergency access?

Project Profile

The project would result in the subdivision of an existing vacant parcel into 22 residential lots with one single-family house to be constructed per lot along with an assumed 25-percent affordable housing component in the form of five affordable accessory dwelling units (ADUs), for a total of 27 housing units. The project site is located off Como Way east of its current terminus approximately 700 feet east of El Capitan Drive, and the eastern end of Borica Drive, as shown in Figure 1, though development would be concentrated in the southwest quadrant, with the remainder of the site to remain undeveloped other than one lot located at the eastern end of Borica Drive.





Transportation Impact Study for the Martin Hills Ranch
Figure 1 – Study Area and Existing Lane Configurations

Transportation Setting

Study Area and Periods

The study area varies depending on the topic. For pedestrian trips it consists of all streets within a half-mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby generators or attractors. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety and operational analyses, it consists of the project frontage and the following intersections:

1. El Capitan Drive/Camino Ramon
2. El Capitan Drive/Como Way
3. El Capitan Drive/Crow Canyon Road

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

El Capitan Drive/Camino Ramon is a signalized three-legged intersection with protected left-turn phasing on the southbound Camino Ramon approach. Marked crosswalks with pedestrian phasing are present on the south and east legs. There are bicycle facilities on Camino Ramon, with shared-lane markings (“sharrows”) on the north leg and bicycle lanes on the south leg.

El Capitan Drive/Como Way is a three-legged intersection with stop control on the terminating Como Way approach.

El Capitan Drive/Crow Canyon Road is a signalized intersection with four legs, which includes protected left-turn phasing on the eastbound and westbound Crow Canyon Road approaches. The northbound and southbound approaches of El Capitan Drive have permissive left-turn phasing, and a right-turn overlap phase is present on the southbound approach. There are marked crosswalks with pedestrian phasing present on all legs and bicycle lanes in both directions on the east leg and in the eastbound direction on the west leg.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is July 1, 2018, through June 30, 2023. The collision rate calculations are provided in Appendix A.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2021 Collision Data on California State Highways*, California Department of Transportation (Caltrans), 2023. These average rates statewide are for intersections in the same environment (urban, suburban, or rural), with the same number of approaches (three or four), and the

same controls (all-way stop, two-way stop, or traffic signal). For all three study intersections, the calculated collision rate is below the statewide average for similar facilities.

Table 1 – Collision Rates for the Study Intersections

Study Intersection	Number of Collisions (2018-2023)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. El Capitan Dr/Camino Ramon	0	0.00	0.28
2. El Capitan Dr/Como Wy	0	0.00	0.13
3. El Capitan Dr/Crow Canyon Rd	10	0.19	0.33

Note: c/mve = collisions per million vehicles entering

Project Data

The project would result in the subdivision of an existing undeveloped parcel into 22 residential lots, plus reserved open space. These 22 residential lots would accommodate one single-family house per lot, along with five total ADUs resulting from an assumed sitewide 25-percent affordable housing component. Of the 22 residential lots, 21 would be accessed via an extension of Como Way from its current terminus about 700 feet east of El Capitan Drive with the remaining lot accessed via Borica Drive. The proposed project site plan is shown in Figure 2.

Trip Generation

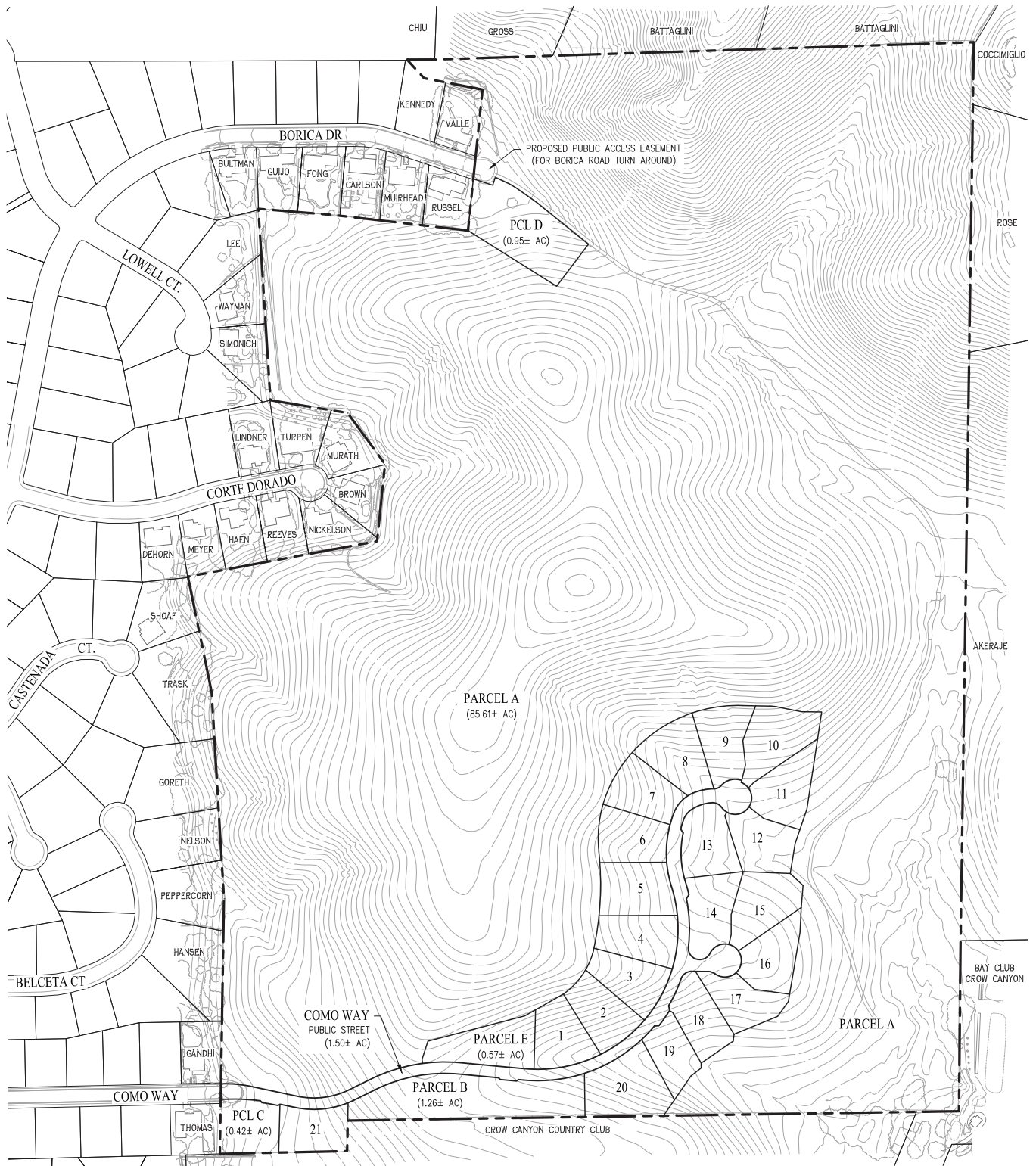
The anticipated trip generation for the proposed single-family houses was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, for “Single Family Detached Housing” (ITE LU #210). For the affordable ADUs, rates for the “Affordable Housing – Income Limits” (ITE LU #223) use were selected, as this description most closely matches the proposed use. Based on the application of these rates, the proposed project would be expected to generate an average of 231 trips per day, including 17 a.m. peak hour trips and 23 trips during the p.m. peak hour. These results are summarized in Table 2.

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
House	22 units	9.43	207	0.70	15	4	11	0.94	21	13	8
Affordable ADU	5 units	4.81	24	0.36	2	1	1	0.46	2	1	1
Total			231		17	5	12		23	14	9

Trip Distribution

The pattern used to allocate new project trips to the street network was determined by reviewing area traffic flows and distribution of likely destinations for residents of the proposed project. The distribution assumptions are shown in Table 3.

Route	Percent
Camino Ramon North of El Capitan Dr	20
Crow Canyon Rd West of El Capitan Dr	70
Crow Canyon Rd East of El Capitan Dr	10
TOTAL	100



Transportation Impact Study for the Martin Hills Ranch Figure 2 – Site Plan



Circulation System

This section addresses the first transportation bullet point on the CEQA checklist, which relates to the potential for a project to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Pedestrian Facilities

Existing and Planned Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, there is a network of sidewalks, crosswalks, and curb ramps, and street lighting as part of the single-family housing neighborhoods adjacent to the project site including on El Capitan Drive and Como Way. There are no planned pedestrian construction projects in the site area, according to the *Contra Costa Countywide Bicycle and Pedestrian Plan, 2018*.

Pedestrian Safety

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue for pedestrians. Collision records were reviewed for the most current ten-year period available, which at the time of the analysis was July 1, 2013, through June 30, 2023. During the ten-year study period there were two reported collisions involving pedestrians along El Capitan Drive, one involving a driver under the influence colliding with a pedestrian just north of Crow Canyon Road, and another from a pedestrian right-of-way violation at Greenbrook Drive. Neither collision resulted in reported injury or death.

Project Impacts on Pedestrian Facilities

In addition to the existing sidewalks on both sides of Como Way up to the project site frontage, the preliminary site plan indicates that the Como Way extension would include extending the five-foot sidewalk on one side of the street into the site. While the project site is currently zoned as an A-2 General Agricultural District per the *2030 General Plan, Town of Danville, 2013*, it is understood that to permit the proposed residential density and location, rezoning is being pursued to classify the site as a P-1 Planned Unit District with R-12 development standards. The Town of Danville *Municipal Code Sections 12-8.18 Sidewalks and Pedestrian Paths* and *31-17 Sidewalks and Paths* both require that sidewalks be provided in areas zoned R-12 or denser, and that these sidewalks shall be four feet wide exclusive of curb width. Therefore, the project would comply with Code requirements and have a less-than-significant impact as sidewalks along the new street segments with a width of at least four feet (exclusive of curbs) are incorporated into the site plan.

Finding – The project as proposed includes sidewalks along the Como Way extension, which would present a less-than-significant impact as this design would comply with adopted policy regarding pedestrian facilities.

Bicycle Facilities

Existing and Planned Bicycle Facilities

The *Town of Danville Bicycle Master Plan, 2021*, classifies bikeways into five categories.

- **Class I Shared-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.

- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IIIB Bike Route** – low-traffic, local streets where people biking have priority but share roadway space with motor vehicles.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In the project area, Class I bike paths exist on Iron Horse Regional Trail through the Town. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. Table 4 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *Bicycle Master Plan*.

Table 4 – Bicycle Facility Summary				
Status	Class	Length (miles)	Begin Point	End Point
Location				
Existing				
Iron Horse Regional Trl	I	4.52	Town Limits	Town Limits
El Capitan Dr	III	2.50	Camino Ramon	Crow Canyon Rd
Greenbrook Dr	III	2.20	Camino Tassajara	Camino Ramon
Planned				
St. Christopher Dr	III	0.40	El Capitan Dr	Greenbrook Dr
Harlan Dr	III	0.83	Greenbrook Dr	St. Christopher Dr
Greenbrook Dr	IIIB	1.70	Sycamore Valley Rd	Camino Ramon

Source: *Town of Danville Bicycle Master Plan, 2021; Google Maps, 2024*

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes. During the ten-year study period between July 1, 2013, through June 30, 2023, there was one reported collision involving a bicyclist; it occurred on El Capitan Drive. This involved a driver failing to yield to a bicyclist crossing the street at the Iron Horse Regional Trail crossing.

Project Impacts on Bicycle Facilities

There are no existing or planned bicycle facilities on Como Way, nor would such facilities be required on the project’s extension of the road. Additionally, there are no planned bicycle facilities for Como Way or on the project site per the *Bicycle Master Plan*. The Town of Danville *Municipal Code* does not require bike parking spaces for residential projects.

Finding – The project would not conflict with adopted policies regarding bicycle facilities, resulting in a less-than-significant impact with respect to bicycle facilities.

Transit Facilities

Existing Transit Facilities

The transit stop nearest the project site is located 1.3 miles from the project site at Crow Canyon Road/Alcosta Boulevard and is served by County Connection Transit (CCT) Route 623. The next nearest stop is located at Crow Canyon Road/Camino Ramon, approximately 1.5 miles from the project site, serving CCT Routes 21 and 321.

Route 623 provides school service from Monte Vista High School (MVHS) along Camino Tassajara and Crow Canyon Road. It operates one p.m. trip per weekday, based on the MVHS bell schedule.

Route 21 provides service between the Walnut Creek Bay Area Rapid Transit (BART) station and the San Ramon Transit Center. This route operates Monday through Friday with 30-minute headways between 5:45 a.m. and 9:30 p.m. no service is provided on weekends.

Route 321 provides weekend service between the Walnut Creek BART station, the San Ramon Transit Center, and John Muir Medical Center. This route operates exclusively on Saturdays and Sundays with one-hour headways between 6:30 a.m. and 9:15 p.m.

Two bicycles can be carried on most CCT buses. Bike rack space is on a first come, first served basis.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. CCT LINK is designed to serve the needs of individuals with disabilities within 1.5 miles of a County Connection fixed route bus or within three-quarters of a mile of a BART station when County Connection fixed route buses are not in operation.

Project Impacts on Transit Facilities

Transit service is not present along the streets near the project site. The *2023-2028 Short Range Transit Plan*, County Connection, 2022, indicates potential adjustments to service frequencies and consolidation of express routes, but does not outline additional service near the project site. Therefore, the project would not conflict with adopted plans and policies regarding transit, presenting a less-than-significant impact.

Finding – Construction of the project as proposed would not conflict with adopted policies regarding transit facilities and therefore would have a less-than-significant impact.

Roadway Facilities

Existing Roadway Facilities

There are currently no roadways on the project site. Como Way is a public local street that has a 32-foot roadway surface with gutters, curbs, and four-foot sidewalks on each side that terminate at the project site frontage. Como Way has streetlighting and a 50-foot right-of-way. Per Town requirements, a minor street must be 32 feet wide with curbs and have four-foot sidewalks. Therefore, the existing cross section of Como Way is adequate.

Project Impacts on Roadway Facilities

The preliminary project site plan includes extending Como Way as a public street, with a roadway surface ranging from 28 to 40 feet, curb flush with the roadway surface on one side of the roadway, and a five-foot sidewalk with curb and gutter on the other side. There would be a 10-foot public utility easement on each side of the right-of-way.

As mentioned previously, the Town's *Municipal Code* requires sidewalks along all streets in R-12 zones. Additionally, Section 31-19 *Curbs and Gutters* requires curbs and gutters to be constructed in all zones of R-20 lot size or smaller, which includes the R-12 zone. The project design would comply with these requirements as it includes curbs, gutters, and a sidewalk.

The *Municipal Code* requires paved turnarounds for cul-de-sac streets with a radius of at least 35 feet, which is included in the preliminary site plan as the Como Way extension and court both would terminate in turnarounds with 40-foot radii.

The maximum allowable slope for minor roads is 20 percent, which is greater than the highest slope delineated on the preliminary site plan of 11.82 percent.

Section 31.22 *Streets* requires that minor streets include a 32-foot pavement width (face-of-curb to face-of-curb) with a 52-foot-wide right-of-way. Excluding the transition at the project entrance, the proposed Como Way extension would range between 22 and 30 feet of pavement width, with a public right-of-way width of 28 to 36 feet. The *Municipal Code* does note that exceptions to the required minimum widths due to terrain conditions in hillside areas may be considered on a case-by-case basis. Given that the project would be located in a hillside area and the Como Way extension would not satisfy Town width requirements, the applicant should work with Town staff to secure the exemption specified in the *Municipal Code*.

Section 31-16 *Street Lighting* of the *Municipal Code* requires streetlighting to be provided for all subdivisions located in R-12 or denser zones. Streetlighting is not indicated on the site plan but is understood to be included in future iterations of the site design. Assuming that streetlighting is included, and with the roadway and right-of-way width exemptions approved, the project would have a less-than-significant impact on roadway facilities.

Finding – Some roadway design elements would comply with Town policy, such as the inclusion of sidewalks, curbs, and gutters, inclusion of turnarounds with 40-foot radii, and slopes under 20 percent. However, the roadway width and right-of-way width would be below *Municipal Code* requirements, and the site plan does not include streetlighting. If the applicant secures an exemption to the width requirements and includes streetlighting in the project design, there would be a less-than-significant impact to roadway facilities.

Recommendation – Exemption from the adopted standards regarding roadway and right-of-way width should be pursued from Town staff to ensure approval of the project and avoid conflict with roadway design policies. Streetlighting should be included in the site design to comply with Town requirements.

Significance Finding – The proposed project would not conflict with any plans or policies for bicycle or transit facilities. It would therefore have a less-than-significant impact on these facilities. Additionally, assuming the recommended width exemptions are secured and streetlighting is included in the project design, the project would have a less-than-significant impact on pedestrian and roadway facilities through consistency with adopted policy requiring inclusion of curbs, gutters, and sidewalks on all streets in R-12 or denser zones.

Vehicle Miles Traveled (VMT)

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based on the project’s anticipated Vehicle Miles Traveled (VMT).

Project and Citywide VMT

The *Growth Management Program*, Contra Costa Transportation Authority (CCTA), 2021, and the *Final Technical Procedures*, CCTA, 2022, outline the process and requirements for conducting a VMT analysis in accordance with SB 743. The *Growth Management Program* established a cooperative process requiring participation from all cities and towns in Contra Costa County to manage impacts of growth in the area. As a condition of that participation, the Town and other member jurisdictions are required to comply with and implement the *Final Technical Procedures*. The *Final Technical Procedures* prescribe that a residential project generating vehicle travel that is 15 or more percent below the existing citywide residential VMT per capita may indicate a less-than-significant transportation impact. Per the CCTA’s travel demand model, the 2022 citywide VMT per resident for the Town of Danville is 22.10 miles. The significance threshold (85 percent) is therefore 18.79 miles. The CCTA’s model is comprised of thousands of traffic analysis zones (TAZs) and project would be located in TAZ 40049, which has a VMT per resident of 20.33 miles. As this is greater than the significance threshold of 18.79 miles, the project would have a potentially significant impact on VMT based on CCTA’s guidance. Transportation demand management (TDM) measures resulting in a reduction in VMT of 7.6 percent or greater would result in a less-than-significant impact with mitigation. The information is summarized in Table 5.

VMT Metric	Danville Citywide VMT Rate	Significance Threshold	TAZ 40049 VMT Rate	Resulting Significance	Percent Reduction Required
VMT per Capita	22.10	18.79	20.33	Potentially Significant	7.6%

Note: VMT Rate is measured in VMT/Capita, for the number of daily miles driven per resident

VMT Mitigation Measures

The *Final Technical Procedures* states that if a project has the potential to significantly impact VMT, then mitigation measures shall be identified along with a specific percent level of VMT reduction using a defensible and well-documented resource, such as the California Air Pollution Control Officers Association’s (CAPCOA’s) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (“CAPCOA Handbook”), October 2024.

Per the CAPCOA Handbook, affordable housing generates fewer VMT than market rate housing. Incorporating below market-rate housing (Strategy T-4) reduces VMT by 28.6 percent times the proportion of affordable units according to the Handbook. The project description includes adding affordable ADUs at a rate of 25 percent of the total of market-rate housing. It is understood that this includes five ADUs for 22 market-rate lots, so the affordable housing ratio is 18.5 percent (five of 27 total units). For a VMT reduction, this translates to a 5.3 percent project-wide reduction in VMT. An additional 2.3 percent reduction would still be required, which could be accommodated by incorporating other measures.

One strategy from the CAPCOA Handbook that may be relevant to a suburban residential subdivision project is to provide community-based travel planning (CBTP) (Strategy T-23). CBTP is an outreach-based approach where information, incentives, and support for using transportation alternatives, carpooling, or reducing trips, is shared

with residents. A homeowner's association or other similar organization would administer the program. The effectiveness is a 2.3-percent reduction multiplied by the proportion of residences in the community targeted by CBTP efforts. For a community where every household is included in CBTP efforts, the maximum effectiveness would therefore be a 2.3 percent reduction in VMT. This would be sufficient to reduce the project's VMT to below the threshold of significance, resulting in a less-than-significant impact to VMT. It is understood that the applicant and Town are in agreement with this approach.

Finding – The residents of the proposed project would be expected to generate 20.33 miles per capita daily which is greater than the threshold of 18.79 miles per capita, or 15 percent below the average VMT per capita for the Town of Danville. This would represent a significant impact of the project on VMT, and could be mitigated by implementing a CBTP program.

Recommendation – The project should incorporate a CBTP program.

Significance Finding - The proposed project would have a potentially significant impact on VMT. To reduce the impact to a less-than-significant level with mitigation, the VMT generated by the project would have to be reduced by 2.3 percent. This could be achieved by incorporating a CBTP program into the proposed project.

Safety Issues

The potential for the project to impact safety was evaluated in terms of the adequacy of sight distance at the project access point as well as the adequacy of stacking space in dedicated turn lanes at the study intersections to accommodate additional queuing due to adding project-generated trips. This section addresses the third transportation bullet on the CEQA checklist which is whether or not the project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Site Access

The majority of the project site would be accessed via an extension of Como Way from its current terminus approximately 700 feet east of El Capitan Drive. The proposed housing units would front the extension of Como Way, which would terminate as a cul-de-sac. There would also be one cul-de-sac side street on the east side of the proposed Como Way extension. One residential lot would be accessed instead via the existing cul-de-sac at the eastern end of Borica Drive.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distance along El Capitan Drive at Como Way was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance at intersections of public streets is based on corner sight distances with the approach travel speeds used as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

A brief speed survey was conducted to sample traffic speeds at El Capitan Drive in the vicinity of Como Way. The 85th-percentile speed was determined to be 33 and 32 mph in the northbound and southbound directions, respectively. For right turns (into northbound traffic), 415 feet is required for 33-mph travel. The available corner sight distance was determined to be over 500 feet for westbound right-turn movements, which is adequate for the measured critical speed.

For left turns from Como Way onto El Capitan Drive (into southbound traffic), 32 mph translates to a requirement for 450 feet of sight distance. While only 350 feet of sight distance was observed, the all-way stop-controlled intersection of El Capitan Drive/Alicante Drive-Balceta Court is located 260 feet north of and visible from El Capitan Drive/Como Way. Due to the presence of stop controls at this intersection, the additional time required for traffic to stop then accelerate at the intersection presents sufficient reaction time for westbound drivers turning left from Como Way onto El Capitan Drive. It is noted that the corner sight distance required for the posted speed limit of 25 mph is 350 feet, matching the distance observed.

A driver turning left onto Como Way (from southbound El Capitan Drive) requires 250 feet of stopping sight distance at 35 mph. This distance was determined to be available during the field visit. As all drivers at El Capitan Drive/Alicante Drive-Balceta Court have to stop before proceeding southbound towards Como Way, this provides additional reaction time for following drivers to avoid colliding with drivers slowing or stopping to turn left onto Como Way.

Finding – There is adequate sight distance at El Capitan Drive/Como Way for all movements into or out of Como Way.

Queuing

The Town of Danville does not prescribe thresholds of significance regarding queue lengths. However, an increase in queue length due to project traffic was considered a potentially significant impact if the increase would cause the queue to extend out of a dedicated turn lane into a through traffic lane, or the back of queue into a visually restricted area, such as a blind corner. If queues would already be expected to extend past a dedicated turn lane or into a visually restricted area without project traffic, the addition of project traffic was considered to constitute a potentially adverse effect only if it would cause a new unacceptable conditions; in other words, if the queue were already beyond the turn lane and the project would cause it to stack into an adjacent intersection or a visually restricted area, and that would not occur without the project, that would be considered an impact.

Under each scenario, the projected maximum queues in turn pockets at the study intersections were determined using the SIMTRAFFIC application of Synchro and averaging the maximum projected queue for each of ten runs. Summarized in Table 6 are the predicted queue lengths and available storage capacities for each turn pocket at a study intersection. Copies of the SIMTRAFFIC projections are contained in Appendix B.

Study Intersection Approach	Available Storage	Maximum Queues			
		AM Peak Hour		PM Peak Hour	
		E	E+P	E	E+P
1. El Capitan Dr/Camino Ramon Westbound Right-Turn	80	98	97	62	61
Southbound Left-Turn	90	72	77	63	66
3. El Capitan Dr/Crow Canyon Rd Eastbound Left-Turn	300	78	83	112	123
Eastbound Right-Turn	200	11	10	15	11
Westbound Left-Turn	125	12	18	16	34
Westbound Right-Turn	200	40	53	47	45
Southbound Left-Turn	135	56	55	64	68

Notes: Maximum Queue based on the average of the maximum value from ten SIMTRAFFIC runs; all distances are measured in feet; E = existing conditions; E+P = existing plus project conditions; **Bold** text = queue length exceeds available storage

The queues on several movements are predicted to decrease slightly with project traffic added compared to without-project conditions. This is attributed to the stochastic nature of the modeling wherein traffic is randomly seeded and the average of ten runs is reported, occasionally resulting in shorter queues with project traffic than without it. However, as these reductions are four feet or fewer, the practical effect of the project is negligible.

Finding – The project would not be expected to cause any queues to exceed available storage that would not do so without the project, so the project impact on queuing would be less than significant.

Traffic Calming

The Como Way extension would be built on an incline, increasing in elevation as it extends east from the current terminus. This includes a relatively steep slope closest to the existing terminus where in the first 710 feet the elevation would increase 57 feet for an average grade of eight percent with a maximum grade of 11.82 percent. This presents a concern regarding the prevailing speed of downhill (westbound) vehicles heading towards the existing Como Way alignment, particularly as all but one of the 21 residential lots would be located east of this 710-foot section, reducing the friction factor driving through a neighborhood may present as compared to a roadway with open space on both sides. The opportunity for downhill speeding would be a potentially significant impact of the project relative to safety.

One possible solution to reduce speeds as westbound drivers transition from the project site to the existing Como Way alignment, would be to install a traffic circle at the project entry. By installing a horizontal deflection, drivers would need to reduce their speed as they depart the site. When designing the traffic circle, using a fastest path designed for 15 mph would result in vehicle activity substantially similar to existing traffic on Como Way. As no collisions were reported on Como Way or at El Capitan Drive/Como Way during the five-year collision study period, this would by inspection result in a less-than-significant impact with regards to safety.

In addition to designing for a 15-mph fastest path, the design of the traffic circle should include consideration for trucks by inclusion of mountable truck aprons as appropriate, and deterrence for westbound (downhill) traffic to use the eastbound (uphill) side of the traffic circle to achieve a faster path of travel. The traffic circle should also include appropriate signage and striping to warn oncoming drivers of the traffic calming device and enable them to slow accordingly. While the final design of the traffic circle may not occur until submittal of the construction plans for permits, inclusion of the device in the plans for the project would result in an impact on safety that is less than significant.

Finding – The extended downhill grade for drivers departing the project site would present a concern regarding drivers traveling over the posted speed limit, which would be a potentially significant impact to safety. This impact could be mitigated through inclusion of traffic calming measures to reduce the speeds of westbound (downhill) drivers to be substantially similar to existing traffic on Como Way.

Recommendation – A traffic circle should be incorporated into the design of the project entry at the existing terminus of Como Way, and include a fastest path of travel of 15 mph, mountable truck aprons as needed, deterrence for traffic to use the wrong side of the traffic circle to achieve faster speeds, and adequate visibility in the form of advance signage and striping as appropriate.

Significance Finding – With the recommendation to include a traffic circle at the entry to the project stie, the proposed project would not create any new hazards or introduce incompatible uses to the roadway system, so its impact on safety would be less than significant.

Emergency Access

The final transportation bullet on the CEQA checklist requires an evaluation as to whether the project would result in inadequate emergency access or not.

Site Access

The Town of Danville *Municipal Code 10-6* adopts the 2022 California Fire Code (CFC) as the standard for the Town along with amendments from the San Ramon Valley Fire Protection District (SRVFPD) through *Ordinance No. 2022-37*. Between Section D103.3 of *Ordinance No. 2022-37* and the CFC *Section 503.1.1 Buildings and Facilities*, fire access roads are required to be provided within 150 feet of all exterior building walls (unless an exemption is granted), which needs to have a minimum unobstructed width of 20 feet, a minimum inside turn radius of 25 feet, and a minimum outside turn radius of 45 feet. Any fire access road longer than 150 feet requires a turnaround; Section D103.3 of *Ordinance No. 2022-37* requires a diameter of 90 feet for a cul-de-sac. Appendix D of the CFC requires roadways adjacent to fire hydrants to be at least 26 feet wide.

Per the preliminary site plan, the Como Way extension would be generally 22 to 30 feet wide with turning radii greater than 25 feet for inside corners and 45 feet for outside corners. The road would widen to 26 feet adjacent to fire hydrants. Therefore, the horizontal roadway dimensions would meet adopted requirements.

Como Way would end in a cul-de-sac turnaround with an outer radius of 40 feet. There would be another turnaround extending from Como Way that would also have an outer radius of 40 feet. While this is adequate per the *Municipal Code's* requirement for a 35-foot radius, the CFC requires a 45-foot radius. It is understood that the applicant is working with the fire code official to secure an exemption to the 45-foot radii requirement to permit 40-foot radii.

For grading, *Ordinance No. 2022-37* permits a maximum longitudinal slope of 20 percent with high-traction design for slopes 16 percent or greater, and a maximum permissible cross slope of eight percent. The site plan indicates a maximum longitudinal slope of 11.82 percent and a cross slope of two percent, meeting these requirements.

The extension of Como Way would bring the 700-foot road to a total length of around 2,500 feet. Per the site plan, there is a proposed fire access road that would connect to the extension approximately 400 feet from the existing terminus of Como Way and to Borica Drive. The fire access road would provide secondary emergency access to the existing and proposed houses. However, *Municipal Code 31-22.1.g Block Length* specifies that the maximum block length (distance between intersections or an intersection and road terminus) permissible is 1,000 feet. While the fire access road would reduce the block length on Como Way by providing a secondary connection partway into the project site, there would still be about 1,400 feet between where the access road connects to Como Way and the eastern terminus of the road. While this indicates a conflict of the project design with adopted fire codes (a significant impact), it is understood that the applicant is working with Town staff to secure exemptions to this code and receive any required approvals.

Como Way currently has 14 houses, which with the project would increase to 35 houses total, or 40 residential units with ADUs included. *Appendix D Section D107.1* of the CFC requires residential developments with more than 30 houses to have two separate fire access roads. The existing 14 units and one of the new residential units would have two separate fire access roads (west on Como Way to El Capitan Drive or east on Como Way to the new fire access road then to Borica Drive), leaving a remainder of 20 houses (25 residential units) for the project located east of the fire access road connection, and therefore having only one access point. As fewer than 30 units would have one fire access road, the project would comply with the CFC fire access road count requirement.

Emergency Response Times

The addition of project traffic to the surrounding roadway network would increase the average control delay at each intersection by less than one-half second, as detailed in the Capacity Analysis chapter. Further, as all roadway users must yield the right-of-way to emergency vehicles when using their sirens and lights, the added project-generated traffic would be expected to have a less-than-significant impact on emergency response.

Finding – The project would be adequately designed for emergency vehicle access per requirements of the *Municipal Code* and CFC, although the block length east of the fire access road connecting Como Way and Borica Drive would exceed standards, and the cul-de-sac turnaround radii of 40 feet would be smaller than the CFC requirement for 45 feet. Project traffic would have a negligible effect on emergency response times.

Recommendation – Exemption from the adopted standards regarding block length and cul-de-sac turnaround radii should be pursued from Town staff to ensure approval of the project and avoid conflict with emergency access policies.

Significance Finding – Assuming approvals for the block length and cul-de-sac turnaround radii are secured, the proposed project would be designed to accommodate emergency response vehicles and would not impede emergency responders, resulting in a less-than-significant impact on emergency response.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual (HCM)*, 6th Edition, Transportation Research Board, 2016. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for the intersection with side-street stop controls (El Capitan Drive/Como Way), which is unsignalized and has stop controls on one approach, was analyzed using the “Two-Way Stop-Controlled” intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The study intersections that are currently controlled by a traffic signal were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using signal timing obtained from the Town of Danville and the City of San Ramon.

The ranges of delay associated with the various levels of service are indicated in Table 7.

Table 7 – Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2016

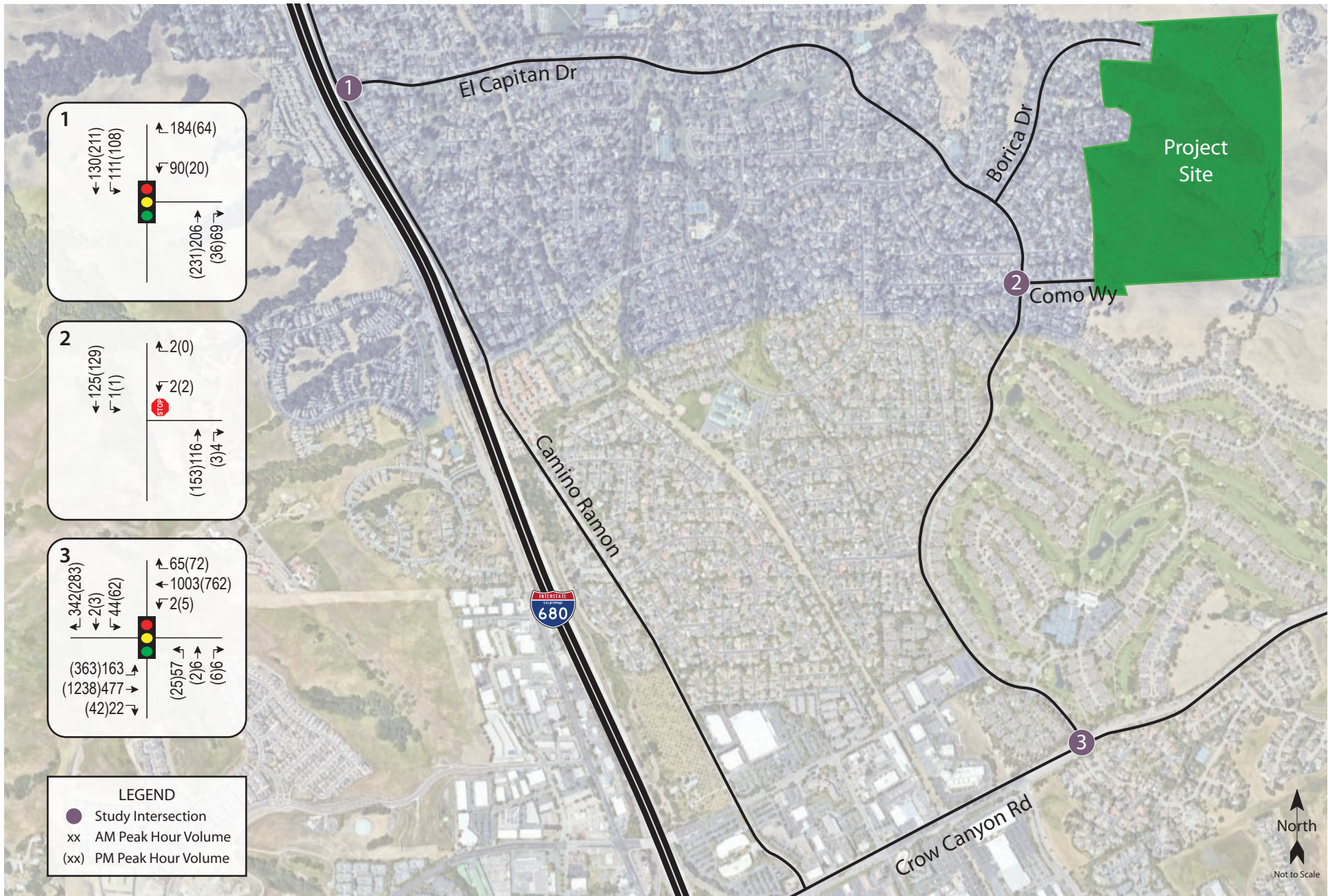
Traffic Operation Standards

The standard for acceptable intersection operation is LOS D, per the *2030 General Plan*, Town of Danville, 2013.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on August 20, 2024, while local schools were in session.

Under existing conditions, all intersections are operating acceptably at LOS B or better. The existing traffic volumes are shown in Figure 3. A summary of the intersection Level of Service calculations is contained in Table 8, and copies of the calculations are provided in Appendix C.



Transportation Impact Study for the Martin Hills Ranch
Figure 3 – Existing Traffic Volumes



Table 8 – Existing Peak Hour Intersection Levels of Service

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. El Capitan Dr/Camino Ramon	9.2	A	6.7	A
2. El Capitan Dr/Como Wy	0.2	A	0.1	A
<i>Westbound Como Wy Approach</i>	<i>9.7</i>	<i>A</i>	<i>10.3</i>	<i>B</i>
3. El Capitan Dr/Crow Canyon Rd	11.1	B	10.7	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Project Conditions

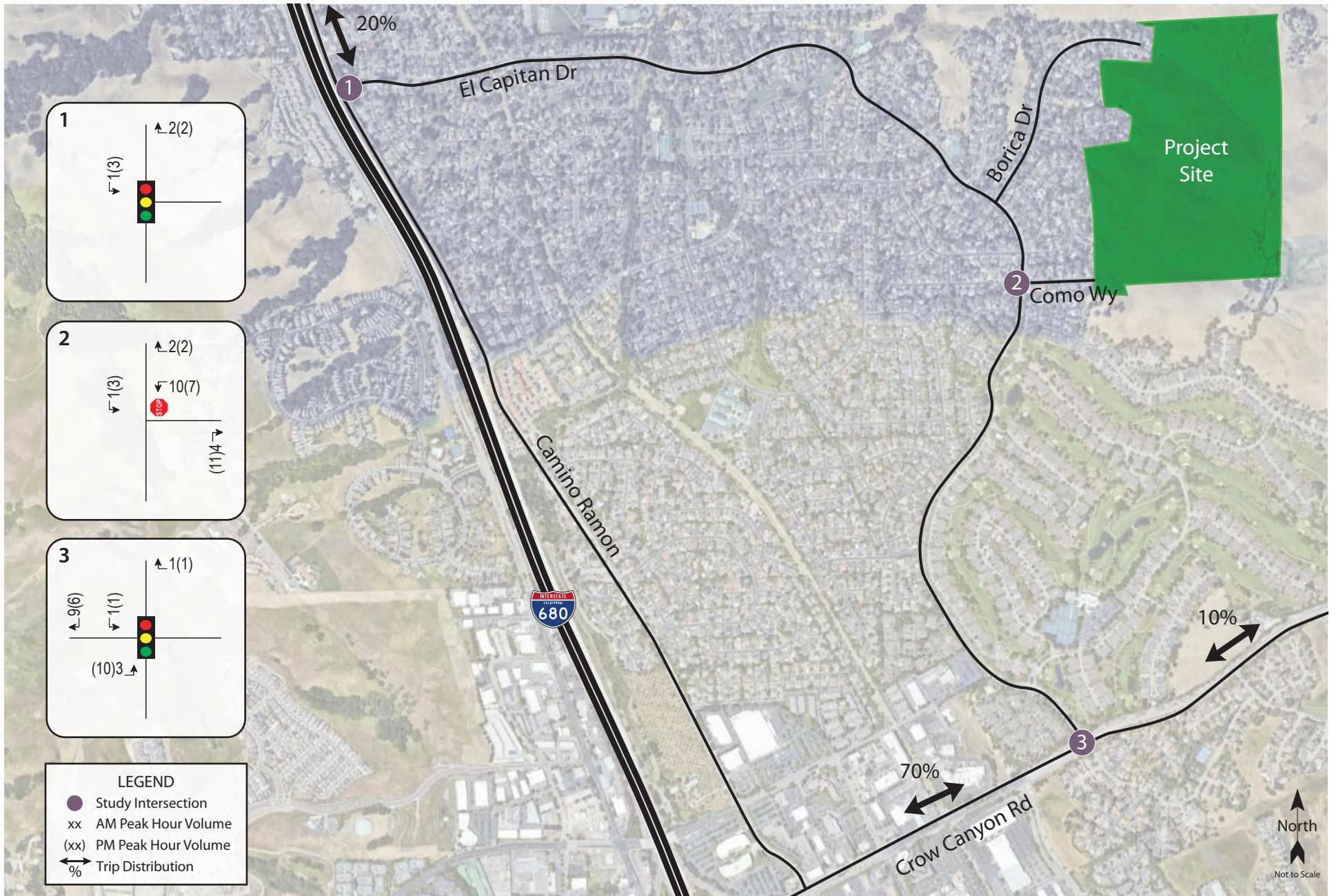
Upon the addition of project-related traffic to the existing volumes, the study intersections are expected to operate at the same Levels of Service as without project volumes. These results are summarized in Table 9. Project traffic volumes and distributions are shown in Figure 4, and Existing plus Project volumes are included in Figure 5.

Table 9 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

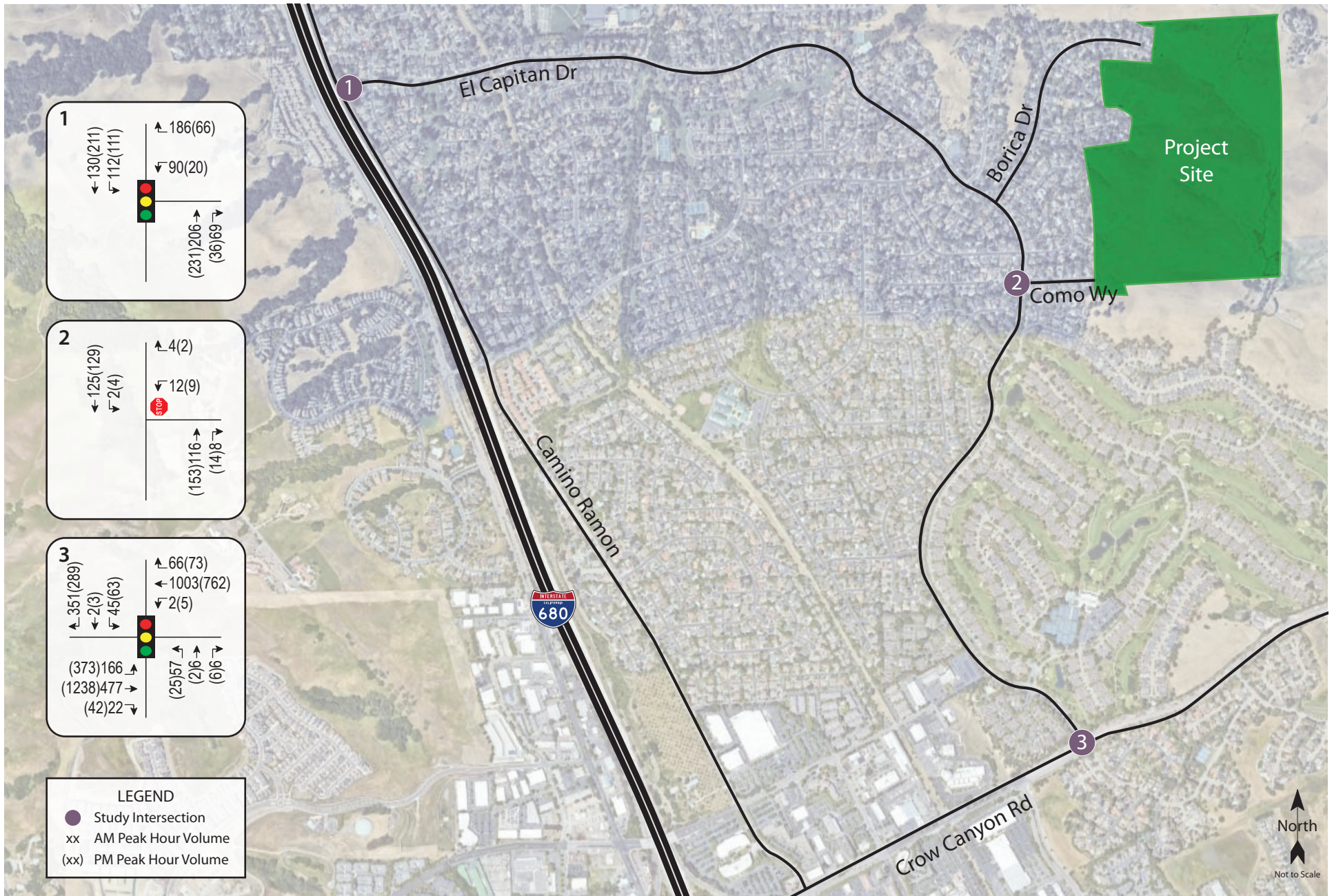
Study Intersection Approach	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. El Capitan Dr/Camino Ramon	9.2	A	6.7	A	9.3	A	6.8	A
2. El Capitan Dr/Como Wy	0.2	A	0.1	A	0.7	A	0.4	A
<i>Westbound Como Wy Approach</i>	<i>9.7</i>	<i>A</i>	<i>10.3</i>	<i>B</i>	<i>10.2</i>	<i>B</i>	<i>10.3</i>	<i>B</i>
3. El Capitan Dr/Crow Canyon Rd	11.1	B	10.7	B	11.2	B	10.7	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Finding – The study intersections are expected to continue operating acceptably at the same Levels of Service upon the addition of project-generated traffic as without it.



Transportation Impact Study for the Martin Hills Ranch
Figure 4 – Project Traffic Volumes and Trip Distribution



Transportation Impact Study for the Martin Hills Ranch
Figure 5 – Existing plus Project Traffic Volumes



Parking

Jurisdiction parking supply requirements for single-family zoning are based on the Town of Danville *Municipal Code* section 32-22.13 *Off-Street Parking*. Per Town requirements, at least two off-street parking spaces within an enclosed garage with dimensions of at least 20-feet-wide by 22-feet-deep must be provided for each single-family lot. Off-street parking is not identified on the preliminary site plan; however, each housing unit would be reviewed as part of the permitting process to ensure Town requirements are satisfied.

Section 32-76.14 *Parking Requirements for Accessory Dwelling Units* includes minimum on-street parking spaces for new accessory dwelling units. This section of the *Municipal Code* also states exemptions for accessory dwelling units which would be part of the proposed or existing primary residence or an accessory structure. It is assumed that the proposed ADUs would be part of the primary residences and would therefore not require additional on-street parking provisions.

It is noted that eight parallel parking spaces would be provided on the Como Way extension, as shown on the project's site plan.

Finding – The proposed parking supply for the project would satisfy the Town's requirements assuming each individual housing unit is reviewed and approved as part of the standard permitting process.

Response to Public Comments

In the Town Transportation Division's comment letter dated December 16, 2025, Comment 9 requests that the transportation impact study include the various public comments received on the administrative draft EIR, and denote where they are addressed within the document.

Public Comments and Responses

Bleasdell, February 3, 2025

The comment letter contains several concerns: that Como Way is too narrow to accommodate additional traffic, the authors are not open to losing sidewalks or street parking, it is difficult to turn onto El Capitan Drive due to the horizontal curve and that drivers speed on El Capitan Drive, project traffic would increase the risk of crashes, the stated 19- to 20-unit development size is unreliable in terms of quantity, and that the authors appreciate the presence of cows on the project site.

The existing Como Way alignment matches Town requirements as denoted in the Roadway Facilities section of the Circulation System chapter. The project would not result in loss of access to sidewalks or street parking on Como Way as it only proposes roadway development east of the existing alignment. As detailed in the Sight Distance section of the Safety Issues chapter, there is adequate sight distance available at El Capitan Drive/Como Way for the measured prevailing speed of traffic. While increased traffic volume always contains the potential to increase collisions, the crash rate of El Capitan Drive/Como Way is below the statewide average, with zero collisions reported during the five-year crash study period. The unit count is understood to be 22 units with five ADUs, for 27 total units. The presence of cows is not a transportation engineering matter so not addressed herein.

Caltrans, February 20, 2025

This letter simply states that Caltrans looks forward to reviewing the VMT analysis when able, which is contained in the Vehicle Miles Traveled (VMT) chapter.

Giancoletto, January 29, 2025

This letter is primarily concerned with the width of Como Way and that the addition of project traffic will cause safety issues, notably that drivers have to slow down and pull over to pass each other when parked vehicles are present. The width of Como Way satisfies the Town's requirement for such a facility, as noted in the Roadway Facilities section of the Circulation System chapter.

Haen, January 28, 2025

The concerns raised by this comment letter are regarding the project site's permanent open space designation and legality of the Borica Drive parcel. As these are not transportation engineering matters, they are not addressed herein.

Reeves, January 22, 2025

This letter raises concerns regarding inconsistency between stated locations of homes on Borica Drive and Como Way, and hillside stability and drainage issues. As stated in several places of this report, the understanding is that there would be one residential lot on Borica Drive with the remainder located on an extension of Como Way. The hillside stability and drainage issues are not transportation engineering matters so are not addressed herein.

Ryan, February 20, 2025

The first concern of this letter is the drainage of the site, which is not a transportation matter. The second concern is that Como Way is not suitable for project traffic as it is narrow and has street parking on both sides, and that El Capitan Drive/Como Way has limited sight distance to the left for drivers approaching on Como Way. The third concern is that the project would be better accessed via a wider road such as Borica Drive.

As noted in in the Roadway Facilities section of the Circulation System chapter, the existing Como Way alignment matches Town requirements. Per the Sight Distance section of the Safety Issues chapter, there is adequate sight distance available at El Capitan Drive/Como Way for the measured prevailing speed of traffic.

Walsh, February 20, 2025

The concerns raised by this letter include the width of Como Way being inadequate to provide access to the project, sight distance at El Capitan Drive/Como Way due to the horizontal curve and speeding drivers on El Capitan Drive, the speed of project-related traffic descending from the project site, and the placement of the stormwater catchment basin.

The current Como Way alignment complies with Town standards outlined in the Roadway Facilities section of the Circulation System chapter. As noted in the Sight Distance section of the Safety Issues chapter, sufficient sight distance is available at El Capitan Drive/Como Way based on the measured prevailing speed of traffic. The potential for traffic descending from the project site to speed is addressed in the Traffic Calming section of the Safety Issues chapter. The stormwater basin placement is not a transportation engineering matter so not addressed herein.

Conclusions and Recommendations

Conclusions

- The proposed project would be expected to generate an average of 231 trips per day, including 17 during the a.m. peak hour and 23 during the evening peak hour.
- The project as designed would not conflict with adopted plans and policies regarding pedestrian, bicycle, or transit facilities, resulting in a less-than-significant impact to these facility types. For roadway facilities, the project would comply with sidewalk, curb, gutter, turnaround, and slope requirements, but would be narrower than the Town's roadway surface and right-of-way requirements. Likewise, streetlighting would be required but is not demonstrated on the plans. With an exemption to the width requirements granted and assuming the streetlighting is added to the site plan, the project would have a less-than-significant impact on roadway facilities.
- The impact of the project on VMT would be potentially significant as the project would be located in an area with a VMT per capita that is 7.6 percent higher than the threshold for significant impact. The project would already reduce this by 5.3 percent through the inclusion of affordable ADUs, and the remainder could be mitigated to a less-than-significant level by incorporating a community-based travel planning program.
- Adequate sight distance is available for movements into and out of Como Way at El Capitan Drive, and the addition of project traffic to existing volumes would not result in turn pocket queues exceeding available storage. Therefore, there would be a less-than-significant with respect to transportation safety for these aspects. However, the project may result in downhill speeding on Como Way, presenting a potentially significant impact which incorporation of traffic calming on the Como Way extension in the form of a traffic circle at the project site entry would reduce to a less-than-significant level.
- The project would be adequately designed for emergency access and not impede emergency response, presenting a less-than-significant impact to emergency response assuming approval is granted to exempt the project from Town standards regarding block length and cul-de-sac turnaround radii.
- All study intersections are expected to operate acceptably at LOS B or better during both peak hours, without or with the inclusion of project trips.
- While parking is not proposed as part of the current project other than eight spaces along the Como Way extension, it is assumed that each individual housing unit would be reviewed to ensure compliance with Town requirements for parking as part of the standard permitting process.

Recommendation

- The applicant should work with Town staff to secure an exemption to the roadway width and right-of-way width requirements for narrow streets given the hillside setting of the project.
- Streetlighting is recommended to be demonstrated on the site plans to comply with Town policy.
- A community-based travel planning program should be incorporated into the project upon completion.
- A traffic circle should be included in the site design at the project entry on Como Way. This traffic circle should be designed for a 15-mph fastest path speed, include mountable truck aprons as needed, deter wrong-way

driving around the traffic circle, and be adequately visible with signage and striping implemented as appropriate.

- The project applicant should secure written exemption from adopted standards regarding maximum block lengths from Town staff, as well as approval for 40-foot cul-de-sac turnaround radii.

Study Participants and References

Study Participants

Principal in Charge	Mark E. Spencer, PE (Traffic)
Senior Traffic Engineer	Kevin Carstens, PE (Civil, Traffic)
Assistant Engineers	Alyssa Labrador, EIT, Joseph Faria-Poynter, EIT
Graphics	Jessica Bender, Rebecca Mansour, Erika Totanes
Editing/Formatting	Erika Totanes
Quality Control	Dalene J. Whitlock, PE (Civil, Traffic), PTOE

References

- 2021 Collision Data on California State Highways, California Department of Transportation, 2023
- 2022 California Fire Code, Office of the State Fire Marshal, 2022
- 2023-2028 Short Range Transit Plan, County Connection, 2022
- 2030 General Plan, Town of Danville, 2013
- Contra Costa Countywide Bicycle and Pedestrian Plan, Contra Costa Transportation Authority, 2018
- County Connection, <http://countyconnection.org/>
- Final Technical Procedures, Contra Costa Transportation Authority, 2022
- Growth Management Program, Contra Costa Transportation Authority, 2021
- Highway Capacity Manual, 6th Edition, Transportation Research Board, 2016
- Highway Design Manual, 7th Edition, California Department of Transportation, 2020
- Municipal Code, American Legal Publishing Corporation, 2024
- Ordinance No. 2022-37, San Ramon Valley Fire Protection District, 2022
- Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2018-2023
- Town of Danville Bicycle Master Plan, Town of Danville, 2021
- Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory, Governor's Office of Planning and Research, 2018
- Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, 2021

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Appendix A

Collision Rate Calculations



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Intersection Collision Rate Worksheet

Martin Hills Ranch

Intersection # 1: El Capitan Dr & Camino Ramon

Date of Count: Tuesday, August 20, 2024

Number of Collisions: 0
Number of Injuries: 0
Number of Fatalities: 0
Average Daily Traffic (ADT): 9900
Start Date: July 1, 2018
End Date: June 30, 2023
Number of Years: 5

Intersection Type: Tee
Control Type: Signals
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{0}{9,900} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.00 c/mve	0.0%	0.0%
Statewide Average*	0.28 c/mve	0.9%	49.1%

Notes

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2021 Collision Data on California State Highways, Caltrans

Intersection # 2: El Capitan Dr & Como Way

Date of Count: Tuesday, August 20, 2024

Number of Collisions: 0
Number of Injuries: 0
Number of Fatalities: 0
Average Daily Traffic (ADT): 2900
Start Date: July 1, 2018
End Date: June 30, 2023
Number of Years: 5

Intersection Type: Tee
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{0}{2,900} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.00 c/mve	0.0%	0.0%
Statewide Average*	0.13 c/mve	1.3%	47.3%

Notes

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2021 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Martin Hills Ranch

Intersection # 3: El Capitan Dr & Crow Canyon Rd

Date of Count: Tuesday, August 20, 2024

Number of Collisions: 10
Number of Injuries: 5
Number of Fatalities: 0
Average Daily Traffic (ADT): 28600
Start Date: July 1, 2018
End Date: June 30, 2023
Number of Years: 5

Intersection Type: Four-Legged

Control Type: Signals

Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{10}{28,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.19 c/mve	0.0%	50.0%
Statewide Average*	0.33 c/mve	0.6%	47.7%

Notes

ADT = average daily total vehicles entering intersection
 c/mve = collisions per million vehicles entering intersection
 * 2021 Collision Data on California State Highways, Caltrans

Appendix B

Queuing Calculations



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Queuing and Blocking Report

09/04/2024

Intersection: 1: Camino Ramon & El Capitan Dr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	107	100	129	80	58
Average Queue (ft)	39	55	55	41	18
95th Queue (ft)	81	98	100	72	47
Link Distance (ft)	7575		1033		1045
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	80		90		
Storage Blk Time (%)	0	1	0		
Queuing Penalty (veh)	1	1	0		

Intersection: 2: El Capitan Dr & Como Way

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	30	9	15
Average Queue (ft)	4	0	1
95th Queue (ft)	20	6	7
Link Distance (ft)	686	4549	7575
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

09/04/2024

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB	
Directions Served	L	L	T	T	T	R	L	T	T	R	LTR	L	
Maximum Queue (ft)	51	94	83	66	27	18	22	213	207	48	84	64	
Average Queue (ft)	14	45	29	19	3	2	2	117	103	17	34	25	
95th Queue (ft)	40	78	62	47	17	11	12	178	173	40	67	56	
Link Distance (ft)	1495			1495	1495	1410			1410	400			
Upstream Blk Time (%)													
Queuing Penalty (veh)													
Storage Bay Dist (ft)	300	300	200			125	200			135			
Storage Blk Time (%)								4	0				
Queuing Penalty (veh)								0	0				

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	SB	SB
Directions Served	TR	R
Maximum Queue (ft)	76	107
Average Queue (ft)	35	50
95th Queue (ft)	60	86
Link Distance (ft)	4549	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	650	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2

Queuing and Blocking Report

09/04/2024

Intersection: 1: Camino Ramon & El Capitan Dr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	43	73	98	79	71
Average Queue (ft)	12	29	37	37	11
95th Queue (ft)	35	62	79	63	45
Link Distance (ft)	7575		1033		1045
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	80		90		
Storage Blk Time (%)	0		0		
Queuing Penalty (veh)	0		0		

Intersection: 2: El Capitan Dr & Como Way

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	27	12	3
Average Queue (ft)	2	0	0
95th Queue (ft)	15	6	3
Link Distance (ft)	686	4549	7575
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

09/04/2024

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB	
Directions Served	L	L	T	T	T	R	L	T	T	R	LTR	L	
Maximum Queue (ft)	111	129	107	112	85	28	24	199	189	63	62	81	
Average Queue (ft)	40	73	49	47	25	3	3	111	95	20	22	32	
95th Queue (ft)	81	112	91	92	64	15	16	172	165	47	50	64	
Link Distance (ft)			1495		1495	1495	1410		1410	400			
Upstream Blk Time (%)													
Queuing Penalty (veh)													
Storage Bay Dist (ft)	300	300					200	125				200	135
Storage Blk Time (%)									4	0			
Queuing Penalty (veh)									0	0			

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	SB	SB
Directions Served	TR	R
Maximum Queue (ft)	76	96
Average Queue (ft)	32	44
95th Queue (ft)	59	80
Link Distance (ft)	4549	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	650	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Queuing and Blocking Report

09/04/2024

Intersection: 1: Camino Ramon & El Capitan Dr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	118	102	120	87	74
Average Queue (ft)	36	54	56	41	21
95th Queue (ft)	77	94	100	71	56
Link Distance (ft)	7575		1033		1045
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	80		90		
Storage Blk Time (%)	0	1	0		
Queuing Penalty (veh)	1	1	0		

Intersection: 2: El Capitan Dr & Como Way

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	35	6	25
Average Queue (ft)	12	0	1
95th Queue (ft)	37	4	12
Link Distance (ft)	686	4549	7575
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

09/04/2024

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB	
Directions Served	L	L	T	T	T	R	L	T	T	R	LTR	L	
Maximum Queue (ft)	49	86	66	63	18	13	32	228	228	56	83	64	
Average Queue (ft)	14	45	28	18	3	2	2	125	109	16	36	24	
95th Queue (ft)	40	78	57	45	13	9	18	193	184	40	68	56	
Link Distance (ft)			1495		1495	1495	1410		1410	400			
Upstream Blk Time (%)													
Queuing Penalty (veh)													
Storage Bay Dist (ft)	300	300					200	125				200	135
Storage Blk Time (%)									5	0			
Queuing Penalty (veh)									0	0			

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	SB	SB
Directions Served	TR	R
Maximum Queue (ft)	86	101
Average Queue (ft)	38	52
95th Queue (ft)	66	84
Link Distance (ft)	4549	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	650	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2

Queuing and Blocking Report

09/04/2024

Intersection: 1: Camino Ramon & El Capitan Dr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	L	T
Maximum Queue (ft)	48	83	117	78	86
Average Queue (ft)	13	28	39	37	13
95th Queue (ft)	38	64	88	63	52
Link Distance (ft)	7575		1033		1045
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		80		90	
Storage Blk Time (%)	0	0		0	0
Queuing Penalty (veh)	0	0		0	0

Intersection: 2: El Capitan Dr & Como Way

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	33	480	19
Average Queue (ft)	9	16	1
95th Queue (ft)	32	459	12
Link Distance (ft)	686	4549	7575
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

09/04/2024

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	L	T	T	T	R	L	T	T	R	LTR	L
Maximum Queue (ft)	103	132	113	107	86	18	26	191	182	63	67	85
Average Queue (ft)	41	76	48	46	24	3	2	114	96	21	20	35
95th Queue (ft)	80	116	92	88	62	13	14	169	160	48	50	69
Link Distance (ft)			1495	1495	1495			1410	1410			400
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	300	300				200	125			200		135
Storage Blk Time (%)								4	0			
Queuing Penalty (veh)								0	0			

Intersection: 3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

Movement	SB	SB
Directions Served	TR	R
Maximum Queue (ft)	65	83
Average Queue (ft)	31	43
95th Queue (ft)	55	76
Link Distance (ft)	4549	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		650
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Appendix C

Intersection Level of Service Calculations





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HCM 6th Signalized Intersection Summary
1: Camino Ramon & El Capitan Dr

09/04/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	90	184	206	69	111	130
Future Volume (veh/h)	90	184	206	69	111	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	106	102	242	62	131	153
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	204	182	437	112	168	1039
Arrive On Green	0.11	0.11	0.31	0.31	0.09	0.56
Sat Flow, veh/h	1781	1585	1428	366	1781	1870
Grp Volume(v), veh/h	106	102	0	304	131	153
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1794	1781	1870
Q Serve(g_s), s	1.4	1.6	0.0	3.6	1.9	1.0
Cycle Q Clear(g_c), s	1.4	1.6	0.0	3.6	1.9	1.0
Prop In Lane	1.00	1.00		0.20	1.00	
Lane Grp Cap(c), veh/h	204	182	0	549	168	1039
V/C Ratio(X)	0.52	0.56	0.00	0.55	0.78	0.15
Avail Cap(c_a), veh/h	1383	1230	0	2123	1383	2214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	10.8	0.0	7.5	11.4	2.8
Incr Delay (d2), s/veh	0.8	1.0	0.0	1.1	3.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.4	0.0	0.8	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.5	11.8	0.0	8.5	14.4	2.8
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	208		304			284
Approach Delay, s/veh	11.7		8.5			8.2
Approach LOS	B		A			A
Timer - Assigned Phs	2		4	5	6	
Phs Duration (G+Y+Rc), s	18.8		7.0	6.4	12.4	
Change Period (Y+Rc), s	4.5		4.0	4.0	4.5	
Max Green Setting (Gmax), s	30.5		20.0	20.0	30.5	
Max Q Clear Time (g_c+1), s	3.0		3.6	3.9	5.6	
Green Ext Time (p_c), s	0.9		0.2	0.1	2.1	
Intersection Summary						
HCM 6th Ctrl Delay			9.2			
HCM 6th LOS			A			

HCM 6th TWSC
2: El Capitan Dr & Como Way

09/04/2024

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	116	4	1	125
Future Vol, veh/h	2	2	116	4	1	125
Conflicting Peds, #/hr	7	7	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	2	136	5	1	147
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	302	153	0	0	148	0
Stage 1	146	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	690	893	-	-	1434	-
Stage 1	881	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	680	881	-	-	1424	-
Mov Cap-2 Maneuver	680	-	-	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.7	0	0.1			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	768	1424	-	-
HCM Lane V/C Ratio	-	-	0.006	0.001	-	-
HCM Control Delay (s)	-	-	9.7	7.5	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-	-

HCM 6th Signalized Intersection Summary
 3: Tahiti Dr/EI Capitan Dr & Crow Canyon Rd

09/04/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	163	477	22	2	1003	65	57	6	6	44	2	342
Future Volume (veh/h)	163	477	22	2	1003	65	57	6	6	44	2	342
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	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	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	502	22	2	1056	63	60	6	3	46	0	259
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	360	2492	773	5	1374	599	280	25	6	365	0	717
Arrive On Green	0.10	0.49	0.49	0.00	0.39	0.39	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	3456	5106	1583	1781	3554	1548	961	201	53	1403	0	3162
Grp Volume(v), veh/h	172	502	22	2	1056	63	69	0	0	46	0	259
Grp Sat Flow(s),veh/h/ln	1728	1702	1583	1781	1777	1548	1214	0	0	1403	0	1581
Q Serve(g_s), s	1.9	2.3	0.3	0.0	10.7	1.1	1.8	0.0	0.0	0.0	0.0	2.9
Cycle Q Clear(g_c), s	1.9	2.3	0.3	0.0	10.7	1.1	2.1	0.0	0.0	1.0	0.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	0.87		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	360	2492	773	5	1374	599	311	0	0	365	0	717
V/C Ratio(X)	0.48	0.20	0.03	0.41	0.77	0.11	0.22	0.00	0.00	0.13	0.00	0.36
Avail Cap(c_a), veh/h	2506	4938	1531	646	3437	1497	877	0	0	1075	0	2318
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.5	6.0	5.5	20.6	11.1	8.1	16.8	0.0	0.0	16.4	0.0	13.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	19.0	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.6	0.1	0.0	3.2	0.3	0.6	0.0	0.0	0.3	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.8	6.0	5.5	39.6	11.4	8.1	16.9	0.0	0.0	16.4	0.0	13.6
LnGrp LOS	B	A	A	D	B	A	B	A	A	B	A	B
Approach Vol, veh/h		696			1121			69			305	
Approach Delay, s/veh		8.9			11.3			16.9			14.0	
Approach LOS		A			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	26.2		10.1	9.3	22.0		10.1				
Change Period (Y+Rc), s	5.0	*6		5.0	5.0	*6		5.0				
Max Green Setting (Gmax), s	15.0	*40		26.0	30.0	*40		25.0				
Max Q Clear Time (g_c+1), s	2.0	4.3		4.9	3.9	12.7		4.1				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.1	3.3		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 User approved changes to right turn type.

HCM 6th Signalized Intersection Summary
 1: Camino Ramon & EI Capitan Dr

09/04/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	20	64	231	36	108	211
Future Volume (veh/h)	20	64	231	36	108	211
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	11	260	39	121	237
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	44	39	508	76	152	1099
Arrive On Green	0.02	0.02	0.32	0.32	0.09	0.59
Sat Flow, veh/h	1781	1585	1589	238	1781	1870
Grp Volume(v), veh/h	22	11	0	299	121	237
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1827	1781	1870
Q Serve(g_s), s	0.3	0.1	0.0	2.9	1.5	1.3
Cycle Q Clear(g_c), s	0.3	0.1	0.0	2.9	1.5	1.3
Prop In Lane	1.00	1.00		0.13	1.00	
Lane Grp Cap(c), veh/h	44	39	0	585	152	1099
V/C Ratio(X)	0.50	0.28	0.00	0.51	0.80	0.22
Avail Cap(c_a), veh/h	1624	1445	0	2541	1624	2601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.6	10.5	0.0	6.1	9.8	2.1
Incr Delay (d2), s/veh	3.1	1.4	0.0	0.8	3.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.4	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.7	11.9	0.0	6.9	13.4	2.3
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h			299			358
Approach Delay, s/veh			6.9			6.0
Approach LOS			A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		17.4		4.5	5.9	11.5
Change Period (Y+Rc), s		4.5		4.0	4.0	4.5
Max Green Setting (Gmax), s		30.5		20.0	20.0	30.5
Max Q Clear Time (g_c+1), s		3.3		2.3	3.5	4.9
Green Ext Time (p_c), s		1.5		0.0	0.1	2.0

Intersection Summary		
HCM 6th Ctrl Delay		6.7
HCM 6th LOS		A

HCM 6th TWSC
2: El Capitan Dr & Como Way

09/04/2024

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Vol, veh/h	2	0	153	3	1	129
Future Vol, veh/h	2	0	153	3	1	129
Conflicting Peds, #/hr	4	3	0	4	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	0	161	3	1	136
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	309	170	0	0	168	0
Stage 1	167	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	683	874	-	-	1410	-
Stage 1	863	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	677	868	-	-	1405	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.3	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	677	1405		
HCM Lane V/C Ratio	-	-	0.003	0.001		
HCM Control Delay (s)	-	-	10.3	7.6	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0		

HCM 6th Signalized Intersection Summary
3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

09/04/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	363	1238	42	5	762	72	25	2	6	62	3	283
Future Volume (veh/h)	363	1238	42	5	762	72	25	2	6	62	3	283
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	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	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	382	1303	38	5	802	67	26	2	5	65	0	204
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	552	2366	718	12	1103	481	272	29	25	363	0	896
Arrive On Green	0.16	0.46	0.46	0.01	0.31	0.31	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	3456	5106	1549	1781	3554	1550	880	235	199	1405	0	3163
Grp Volume(v), veh/h	382	1303	38	5	802	67	33	0	0	65	0	204
Grp Sat Flow(s),veh/h/ln	1728	1702	1549	1781	1777	1550	1314	0	0	1405	0	1581
Q Serve(g_s), s	4.1	7.2	0.5	0.1	7.9	1.2	0.2	0.0	0.0	0.8	0.0	1.9
Cycle Q Clear(g_c), s	4.1	7.2	0.5	0.1	7.9	1.2	0.7	0.0	0.0	1.5	0.0	1.9
Prop In Lane	1.00		1.00	1.00		1.00	0.79		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	552	2366	718	12	1103	481	326	0	0	363	0	896
V/C Ratio(X)	0.69	0.55	0.05	0.42	0.73	0.14	0.10	0.00	0.00	0.18	0.00	0.23
Avail Cap(c_a), veh/h	2634	5190	1574	679	3612	1575	967	0	0	1118	0	2595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	7.6	5.8	19.5	12.1	9.8	15.4	0.0	0.0	15.7	0.0	10.8
Incr Delay (d2), s/veh	0.6	0.1	0.0	8.2	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.8	0.1	0.1	2.5	0.3	0.2	0.0	0.0	0.4	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	7.7	5.8	27.7	12.4	9.8	15.5	0.0	0.0	15.8	0.0	10.9
LnGrp LOS	B	A	A	C	B	A	B	A	A	B	A	B
Approach Vol, veh/h	1723			874			33			269		
Approach Delay, s/veh	9.5			12.3			15.5			12.1		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	24.2		9.9	11.3	18.2		9.9				
Change Period (Y+Rc), s	5.0	* 6		5.0	5.0	* 6		5.0				
Max Green Setting (Gmax), s	15.0	* 40		26.0	30.0	* 40		25.0				
Max Q Clear Time (g_c+I1), s	2.1	9.2		3.9	6.1	9.9		2.7				
Green Ext Time (p_c), s	0.0	4.3		0.2	0.3	2.3		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	10.7	
HCM 6th LOS	B	

Notes
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 User approved changes to right turn type.

HCM 6th Signalized Intersection Summary
1: Camino Ramon & El Capitan Dr

09/04/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔		↔	↔
Traffic Volume (veh/h)	90	186	206	69	112	130
Future Volume (veh/h)	90	186	206	69	112	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	106	105	242	62	132	153
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	208	185	436	112	169	1038
Arrive On Green	0.12	0.12	0.31	0.31	0.09	0.56
Sat Flow, veh/h	1781	1585	1428	366	1781	1870
Grp Volume(v), veh/h	106	105	0	304	132	153
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1794	1781	1870
Q Serve(g_s), s	1.4	1.6	0.0	3.7	1.9	1.0
Cycle Q Clear(g_c), s	1.4	1.6	0.0	3.7	1.9	1.0
Prop In Lane	1.00	1.00		0.20	1.00	
Lane Grp Cap(c), veh/h	208	185	0	548	169	1038
V/C Ratio(X)	0.51	0.57	0.00	0.55	0.78	0.15
Avail Cap(c_a), veh/h	1376	1224	0	2113	1376	2203
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	10.8	0.0	7.5	11.5	2.8
Incr Delay (d2), s/veh	0.7	1.0	0.0	1.1	3.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.5	0.0	0.8	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.5	11.8	0.0	8.6	14.4	2.9
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	211		304			285
Approach Delay, s/veh	11.6		8.6			8.2
Approach LOS	B		A			A
Timer - Assigned Phs	2		4	5	6	
Phs Duration (G+Y+Rc), s	18.9		7.0	6.5	12.4	
Change Period (Y+Rc), s	4.5		4.0	4.0	4.5	
Max Green Setting (Gmax), s	30.5		20.0	20.0	30.5	
Max Q Clear Time (g_c+1), s	3.0		3.6	3.9	5.7	
Green Ext Time (p_c), s	0.9		0.2	0.1	2.1	
Intersection Summary						
HCM 6th Ctrl Delay			9.3			
HCM 6th LOS			A			

HCM 6th TWSC
2: El Capitan Dr & Como Way

09/04/2024

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔		↔	↔
Traffic Vol, veh/h	11	4	116	7	2	125
Future Vol, veh/h	11	4	116	7	2	125
Conflicting Peds, #/hr	7	7	0	7	7	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	5	136	8	2	147
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	305	154	0	0	151	0
Stage 1	147	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	687	892	-	-	1430	-
Stage 1	880	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %						
Mov Cap-1 Maneuver	676	880	-	-	1420	-
Mov Cap-2 Maneuver	676	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.1	0	0.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	721	1420	-	
HCM Lane V/C Ratio	-	-	0.024	0.002	-	
HCM Control Delay (s)	-	-	10.1	7.5	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th Signalized Intersection Summary
3: Tahiti Dr/EI Capitan Dr & Crow Canyon Rd

09/04/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	166	477	22	2	1003	65	57	6	6	45	2	350
Future Volume (veh/h)	166	477	22	2	1003	65	57	6	6	45	2	350
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	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	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	175	502	22	2	1056	63	60	6	3	47	0	267
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	360	2490	772	5	1372	598	281	25	7	367	0	725
Arrive On Green	0.10	0.49	0.49	0.00	0.39	0.39	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	3456	5106	1583	1781	3554	1548	956	198	52	1403	0	3162
Grp Volume(v), veh/h	175	502	22	2	1056	63	69	0	0	47	0	267
Grp Sat Flow(s),veh/h/ln	1728	1702	1583	1781	1777	1548	1206	0	0	1403	0	1581
Q Serve(g_s), s	2.0	2.3	0.3	0.0	10.8	1.1	1.8	0.0	0.0	0.0	0.0	3.0
Cycle Q Clear(g_c), s	2.0	2.3	0.3	0.0	10.8	1.1	2.1	0.0	0.0	1.0	0.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	360	2490	772	5	1372	598	312	0	0	367	0	725
V/C Ratio(X)	0.49	0.20	0.03	0.41	0.77	0.11	0.22	0.00	0.00	0.13	0.00	0.37
Avail Cap(c_a), veh/h	2493	4912	1523	643	3418	1489	868	0	0	1070	0	2308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	6.1	5.5	20.7	11.1	8.2	16.8	0.0	0.0	16.4	0.0	13.5
Incr Delay (d2), s/veh	0.4	0.0	0.0	19.0	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.6	0.1	0.0	3.2	0.3	0.6	0.0	0.0	0.3	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	6.1	5.5	39.7	11.5	8.2	16.9	0.0	0.0	16.4	0.0	13.6
LnGrp LOS	B	A	A	D	B	A	B	A	A	B	A	B
Approach Vol, veh/h		699			1121			69			314	
Approach Delay, s/veh		9.0			11.4			16.9			14.0	
Approach LOS		A			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	26.3		10.2	9.3	22.1		10.2				
Change Period (Y+Rc), s	5.0	* 6		5.0	5.0	* 6		5.0				
Max Green Setting (Gmax), s	15.0	* 40		26.0	30.0	* 40		25.0				
Max Q Clear Time (g_c+1), s	2.0	4.3		5.0	4.0	12.8		4.1				
Green Ext Time (p_c), s	0.0	1.4		0.2	0.1	3.2		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		11.2
HCM 6th LOS		B

Notes
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 User approved changes to right turn type.

HCM 6th Signalized Intersection Summary
1: Camino Ramon & EI Capitan Dr

09/04/2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	20	66	231	36	110	211
Future Volume (veh/h)	20	66	231	36	110	211
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach	No		No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	13	260	39	124	237
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	47	42	507	76	156	1100
Arrive On Green	0.03	0.03	0.32	0.32	0.09	0.59
Sat Flow, veh/h	1781	1585	1589	238	1781	1870
Grp Volume(v), veh/h	22	13	0	299	124	237
Grp Sat Flow(s),veh/h/ln	1781	1585	0	1827	1781	1870
Q Serve(g_s), s	0.3	0.2	0.0	2.9	1.5	1.3
Cycle Q Clear(g_c), s	0.3	0.2	0.0	2.9	1.5	1.3
Prop In Lane	1.00	1.00		0.13	1.00	
Lane Grp Cap(c), veh/h	47	42	0	583	156	1100
V/C Ratio(X)	0.47	0.31	0.00	0.51	0.79	0.22
Avail Cap(c_a), veh/h	1616	1438	0	2528	1616	2587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.6	10.5	0.0	6.1	9.9	2.1
Incr Delay (d2), s/veh	2.7	1.6	0.0	0.8	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.4	0.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.3	12.1	0.0	7.0	13.3	2.3
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h		35	299			361
Approach Delay, s/veh		12.8	7.0			6.1
Approach LOS		B	A			A
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		17.5		4.6	5.9	11.5
Change Period (Y+Rc), s		4.5		4.0	4.0	4.5
Max Green Setting (Gmax), s		30.5		20.0	20.0	30.5
Max Q Clear Time (g_c+1), s		3.3		2.3	3.5	4.9
Green Ext Time (p_c), s		1.5		0.0	0.1	2.0

Intersection Summary		
HCM 6th Ctrl Delay		6.8
HCM 6th LOS		A

HCM 6th TWSC
2: El Capitan Dr & Como Way

09/04/2024

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Vol, veh/h	8	2	153	13	3	129
Future Vol, veh/h	8	2	153	13	3	129
Conflicting Peds, #/hr	4	3	0	4	3	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	2	161	14	3	136
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	318	175	0	0	179	0
Stage 1	172	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	675	868	-	-	1397	-
Stage 1	858	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	668	862	-	-	1392	-
Mov Cap-2 Maneuver	668	-	-	-	-	-
Stage 1	855	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.2	0	0.2			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	699	1392		
HCM Lane V/C Ratio	-	-	0.015	0.002		
HCM Control Delay (s)	-	-	10.2	7.6	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0		

HCM 6th Signalized Intersection Summary
3: Tahiti Dr/El Capitan Dr & Crow Canyon Rd

09/04/2024

	↔	↔	↕	↕	↔	↔	↕	↕	↔	↔	↕	↕
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↕	↕	↔	↔	↕	↕	↔	↔	↕	↕
Traffic Volume (veh/h)	372	1238	42	5	762	73	25	2	6	63	3	288
Future Volume (veh/h)	372	1238	42	5	762	73	25	2	6	63	3	288
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	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	1.00	1.00	1.00
Work Zone On Approach	No		No		No		No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	392	1303	38	5	802	68	26	2	5	66	0	209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	561	2378	721	12	1102	480	271	29	24	362	0	905
Arrive On Green	0.16	0.47	0.47	0.01	0.31	0.31	0.12	0.12	0.12	0.12	0.00	0.12
Sat Flow, veh/h	3456	5106	1549	1781	3554	1550	877	234	198	1405	0	3163
Grp Volume(v), veh/h	392	1303	38	5	802	68	33	0	0	66	0	209
Grp Sat Flow(s),veh/h/ln	1728	1702	1549	1781	1777	1550	1310	0	0	1405	0	1581
Q Serve(g_s), s	4.2	7.2	0.5	0.1	8.0	1.3	0.2	0.0	0.0	0.8	0.0	2.0
Cycle Q Clear(g_c), s	4.2	7.2	0.5	0.1	8.0	1.3	0.7	0.0	0.0	1.5	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	0.79		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	561	2378	721	12	1102	480	324	0	0	362	0	905
V/C Ratio(X)	0.70	0.55	0.05	0.42	0.73	0.14	0.10	0.00	0.00	0.18	0.00	0.23
Avail Cap(c_a), veh/h	2620	5161	1565	675	3592	1566	959	0	0	1112	0	2593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	7.6	5.8	19.6	12.2	9.9	15.5	0.0	0.0	15.8	0.0	10.8
Incr Delay (d2), s/veh	0.6	0.1	0.0	8.2	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.8	0.1	0.1	2.5	0.3	0.2	0.0	0.0	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	7.7	5.8	27.8	12.5	9.9	15.5	0.0	0.0	15.9	0.0	10.9
LnGrp LOS	B	A	A	C	B	A	B	A	A	B	A	B
Approach Vol, veh/h	1733			875			33			275		
Approach Delay, s/veh	9.6			12.4			15.5			12.1		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	5.3	24.4	9.9		11.4	18.3	9.9					
Change Period (Y+Rc), s	5.0	* 6	5.0		5.0	* 6	5.0					
Max Green Setting (Gmax), s	15.0	* 40	26.0		30.0	* 40	25.0					
Max Q Clear Time (g_c+1), s	2.1	9.2	4.0		6.2	10.0	2.7					
Green Ext Time (p_c), s	0.0	4.3	0.2		0.3	2.3	0.1					

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes
 User approved volume balancing among the lanes for turning movement.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 User approved changes to right turn type.