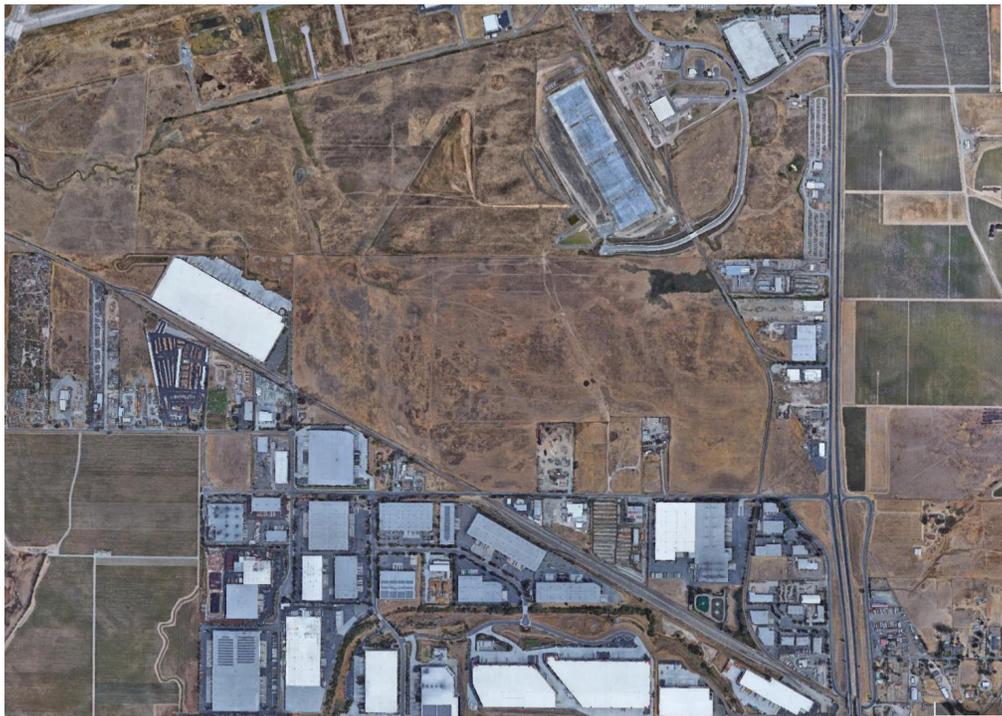


**Appendix H:
Transportation Supporting Information**

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Traffic Impact Study for the Giovannoni Logistics Center



Prepared for the City of American Canyon

Submitted by
W-Trans

July 22, 2021



**TRAFFIC ENGINEERING
TRANSPORTATION PLANNING**
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Executive Summary

The proposed project includes the construction of 2.2 to 2.4 million square feet of warehouse which would be built concurrently with the planned extension of Devlin Road between Green Island Road and South Kelly Road in the City of American Canyon. This project is expected to generate an average of 3,888 equivalent passenger car trips per day, including 240 trips during the a.m. peak hour, and 264 during the p.m. peak hour.

The study area for the operational analysis includes the intersections of Devlin Road/South Kelly Road, Devlin Road/Green Island Road and Paoli Loop Road/Green Island Road. Analysis indicates that the unsignalized intersections operate acceptably under Existing Conditions and would continue to do so under Future Conditions and upon the addition of project-related traffic volumes. SR 29/South Kelly Road would operate at LOS F under Future Conditions without or with the project, but this operation was considered acceptable since the intersection is exempt from the City's LOS standard and Caltrans has no operational standard. As required by the City in their Traffic Impact Fee Program, the project should pay a fee toward the cost of the planned future improvements to SR 29 to address cumulative effects of project traffic.

Although the project would be expected to have a less-than-significant transportation impact on vehicle miles traveled (VMT), the implementation of TDM measures such as use of ridesharing, offering secure bicycle parking, and educational materials would further lower the anticipated project VMT and are therefore recommended.

The project includes the addition of sidewalks along the Devlin Road extension and a multi-modal path along Green Island Road in the area adjacent to the project. Bicycle facilities serving the project site are generally adequate, though space should be provided for bicycles to be stored on-site. The project includes an extension to the Napa Valley Vine Trail along Delvin Road which improves local and regional bicycle connectivity. Existing transit stops are not within the immediate vicinity of the site. This is typical for this area and is therefore considered an acceptable condition.

Vehicles would access the project via multiple driveways on Green Island Road and the future Devlin Road extension. Sight distances at the project driveways for both entering and exiting drivers is expected to be adequate assuming placement of buildings, signs and landscaping are outside the areas needed for clear lines of sight. Assuming a maximum project size of 2.4 million square feet, City Code requires a minimum of 1,230 parking spaces should be provided.

Introduction

This report presents an analysis of the potential traffic impacts that would be associated with the proposed development of 2.2 to 2.4 million square feet of warehouse space between Green Island Road and Devlin Road in the area west of SR 29 in the City of American Canyon. The traffic study was completed in accordance with the criteria established by the City of American Canyon and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts and effects on traffic operation of a proposed project, and any associated improvements that would be required in order to mitigate these impacts and effects to an acceptable level under CEQA, the City's General Plan, or other policies. Impacts relative to access for pedestrians, bicyclists, and to transit are addressed in the context of the CEQA criteria. Consistent with SB 743, the project's transportation impacts were analyzed using VMT. 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 impact the new traffic would be expected to have on the study intersections.

Project Profile

The project as proposed includes 2.2 to 2.4 million square feet of high cube warehouse space. The site is situated between Green Island Road and Devlin Road in the area west of SR 29 in the City of American Canyon and would be accessible from either roadway. Approximate boundaries of the site are illustrated in Figure 1.



Traffic Study for the Giovangoni Logistics Center
Figure 1 – Study Area and Lane Configurations



Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections selected through consultation from City staff:

1. SR 29/South Kelly Road
2. Devlin Road/South Kelly Road
3. Devlin Road/Green Island Road (Future Intersection)
4. Paoli Loop Road/Green Island Road

Operating conditions during the weekday 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

SR 29/South Kelly Road is a signalized four-legged intersection with protected left turns on all approaches. There are crosswalks on the west, north and east legs.

Devlin Road/South Kelly Road is an all-way stop-controlled intersection with crosswalks on the east and south legs.

Devlin Road/Green Island Road (Future) is a future tee intersection with stop control on the southbound Devlin Road approach. Crosswalks are planned at the north leg.

Paoli Loop Road/Green Island Road is a tee intersection with stop control on the northbound Paoli Loop Road approach. There are no crosswalks.

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 October 1, 2015 through September 30, 2020.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as reported in the publication *2016 Collision Data on California State Highways*, California Department of Transportation (Caltrans). 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). A more detailed evaluation is provided for study intersections where the collision rates were higher than the statewide average. The collision rate calculations are provided in Appendix A.

Table 1 – Collision Rates for the Study Intersections

Study Intersection	Number of Collisions (2015-2020)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. SR 29/South Kelly Road	48	0.82	0.58
2. Devlin Road/South Kelly Road	2	0.32	0.55
3. Devlin Road/Green Island Road ¹	-	-	-
4. Paoli Loop Road/Green Island Road	2	0.20	0.16

Note: c/mve = collisions per million vehicles entering

¹ Collision rate was not evaluated at this future intersection

Of the 48 reported collisions that occurred at the intersection of SR 29/South Kelly Road, 30 were rear-end collisions with the primary cause being unsafe speeds. This type of crash is common at signalized intersections where there is congestion, especially during peak periods. Because of the regional nature of the traffic that causes the congestion, and as this location is under the jurisdiction of Caltrans, there is little that the City can do to address this condition though increased enforcement and analysis of the potential to improve signal timing to reduce congestion could be requested of the Highway Patrol and Caltrans, respectively.

The collision rate at Paoli Loop Road/Green Island Road is higher than the statewide average, with one of the two reported collisions being a head-on collision and the other being a broadside collision. The broadside collision resulted from “traffic signal and sign” violations, and the head-on collision was attributed to unsafe speed. With no clear pattern and given the very low number of crashes, no remedial actions are apparent.

Alternative Modes

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, sidewalk coverage is limited in the area surrounding the project site. Existing gaps and obstacles along the connecting roadways impact convenient and continuous access for pedestrians and present safety concerns in those locations where appropriate pedestrian infrastructure would address potential conflict points. Within the study area, new sidewalks are planned along the future extension of Devlin Road.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2017, classifies bikeways into four categories:

- **Class I Multi-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 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 II bike lanes exist on Devlin Road between Middleton Way and South Kelly Road. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. Table 2 summarizes

the existing and planned bicycle facilities in the project vicinity as contained in the *Napa Countywide Bicycle Plan*, Napa Valley Transportation Authority, 2019.

Table 2 – Bicycle Facility Summary				
Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
Devlin Road	II	0.09	Middleton Way	South Kelly Road
Planned				
S Kelly Rd	I	0.20	SR 29	Devlin Rd
Vine Trail (along Devlin Rd)	I	1.62	Middleton Way	Watson Ln
Green Island Rd	I	0.33	Vine Trail	Commerce Blvd
Green Island Rd	II	0.25	Northern Intersection of Green Island Rd and Mezzetta Ct	Vine Trail

Source: *Napa Countywide Bicycle Plan*, Napa Valley Transportation Authority, 2019

Transit Facilities

Valley Intercity Neighborhood Express (VINE) Transit provides fixed route bus service throughout Napa County. American Canyon Transit (ACT) is an on-demand, door-to-door, transit service for persons with disabilities who cannot independently use regular fixed-route transit services. Neither VINE nor ACT maintains stops near the project site.

On-demand private taxi services are available in the study area 24 hours a day. Taxis can be used for trips within the local Planning Area and farther destinations, including nearby airports. Other ride-hailing applications are also available in study area and provide transportation throughout the Bay Area.

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, 2018. 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 intersections with side street stop controls, or those which are unsignalized and have one or two approaches stop controlled, were 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 with stop signs on all approaches were analyzed using the “All-Way Stop-Controlled” Intersection methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing, and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole and then related to a Level of Service.

The study intersections that are currently controlled by a traffic signal, or may be in the future, 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 Caltrans.

The ranges of delay associated with the various levels of service are indicated in Table 3.

Table 3 – Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	All-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. Upon stopping, drivers are immediately able to proceed.	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 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	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 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach and wait for vehicle to clear from one or more approaches prior to entering the intersection.	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 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	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 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	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 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, 6th Edition, Transportation Research Board, 2018

Traffic Operation Standards

City of American Canyon

The *City of American Canyon General Plan Circulation Element* specifies minimum level-of-service standards for all streets and intersections in the City's jurisdiction. In section 4.1.6, the City establishes the following performance standards for acceptable LOS:

Achieve and maintain a Multimodal LOS D or better for roadways and intersections during peak hours where possible for as long as possible. However, recognizing that LOS D may not be achievable or cannot be maintained upon full buildout of the General Plan, due to traffic generated from sources beyond control of the City, the City Council shall have the discretion to only require feasible mitigation measures that may not achieve LOS D, but will reduce the impact of any development use or VMT planned for in the Land Use Element of the General Plan.

The locations that may not achieve or maintain LOS D are as follows and will be exempt from the LOS D policy:

- State Route 29 through the City
- American Canyon Road from SR 29 to Flosden Road-Newell Drive
- Flosden Road south of American Canyon Road

Caltrans

The study intersection of SR 29/South Kelly Road is located on the State Transportation Network (STN) and is therefore under jurisdiction of Caltrans. It is noted that Caltrans does not currently have a standard of significance relative to intersection operation as this is no longer a CEQA issue. The new vehicle miles traveled-focused Transportation Impact Study Guide (TISG), published in May 2020, replaced the Guide for the Preparation of Traffic Impact Studies, 2002. As indicated in the TISG, the Department is transitioning away from requesting LOS or other vehicle operations analyses of land use projects and will instead focus on Vehicle Miles Traveled (VMT).

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 hours. This condition does not include project-generated traffic volumes. Volume data was collected on various dates in February, May and November 2019 while local schools were in session and prior to the outbreak of COVID-19 and the resulting change in travel patterns. It is noted that travel patterns within American Canyon vary between the a.m. and p.m. peak hours and individual drivers may use different routes for their morning and evening commutes. Copies of the traffic count data sheets are provided in Appendix B.

Intersection Levels of Service

Under existing conditions, all study intersections are operating acceptably during both peak hours evaluated. The existing traffic volumes are shown in Figure 2. A summary of the intersection Level of Service calculations is contained in Table 4, and copies of the calculations are provided in Appendix C.

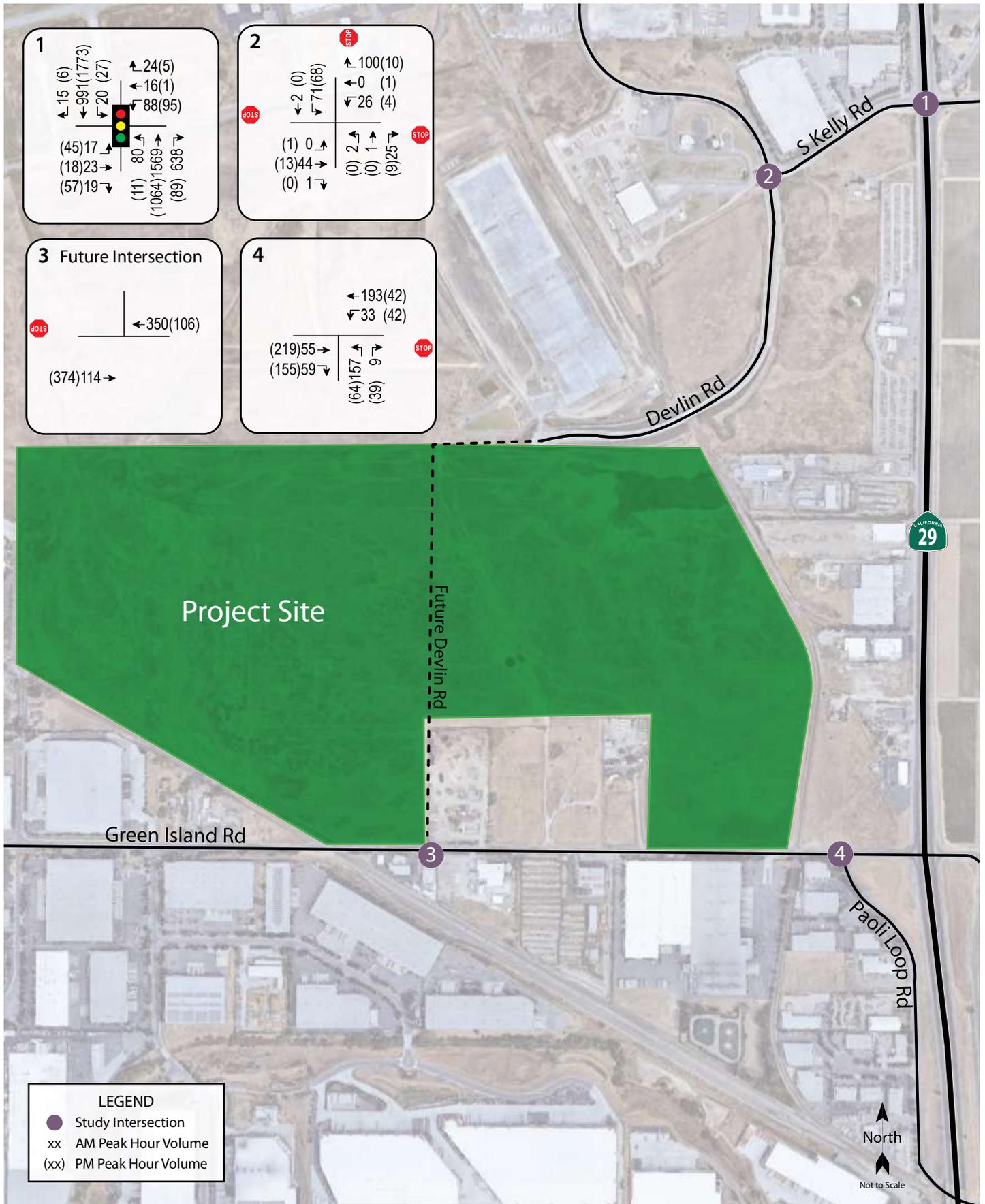
Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. SR 29/S Kelly Rd	34.6	C	15.9	B
2. Devlin Rd/S Kelly Rd	7.8	A	8.0	A
3. Devlin Rd/Green Island Rd ¹	-	-	-	-
<i>Southbound (Devlin Rd) Approach</i>	-	-	-	-
4. Paoli Loop Rd/Green Island Rd	4.9	A	3.1	A
<i>Northbound (Paoli Loop) Approach</i>	13.3	B	13.5	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*

¹ Level of Service was not evaluated at this future intersection

Future Conditions

Future (2040) a.m. and p.m. peak hour volume projections for SR 29/South Kelly Road were derived from a build-out analysis which is contained in the *Napa Junction III Transportation Impact Analysis Report*, Omni-Means, LTD,



Traffic Study for the Giovannoni Logistics Center
Figure 2 – Existing Traffic Volumes



2011; this scenario represents cumulative traffic conditions that would be expected upon build out of the land uses identified in the *General Plan*. Although some of the anticipated development included in this previous effort

may already be complete and occupied, to provide a conservative estimate of future operation the incremental increase in trips associated with build out of the City of American Canyon under its current *General Plan* was added to current volumes to determine Future (year 2040) operating conditions without the project. A growth rate was then created for the intersection of SR 29/South Kelly Road based on the volumes for this location in the *Napa Junction III Transportation Impact Analysis Report*.

Because the west side of SR 29 is already nearly built out other than the project site, so would be expected to experience considerably less of an increase in traffic compared to SR 29, a growth rate of one-percent per year was used to develop future a.m. and p.m. peak hour volumes for the study intersections located west of SR 29.

Under the anticipated Future volumes, the study intersections are expected to operate acceptably during the a.m. and p.m. peak hours except for SR 29/South Kelly Road, which is expected to operate at LOS F during both peak hours. Future volumes are shown in Figure 3 and operating conditions are summarized in Table 5.

Study Intersection Approach	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. SR 29/S Kelly Rd	107.4	F	84.3	F
2. Devlin Rd/S Kelly Rd	8.0	A	8.0	A
3. Devlin Rd/Green Island Rd ¹ <i>Southbound (Devlin Rd) Approach</i>	- -	- -	- -	- -
4. Paoli Loop Rd/Green Island Rd <i>Northbound (Paoli Loop) Approach</i>	5.2 14.3	A B	3.1 13.4	A 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*

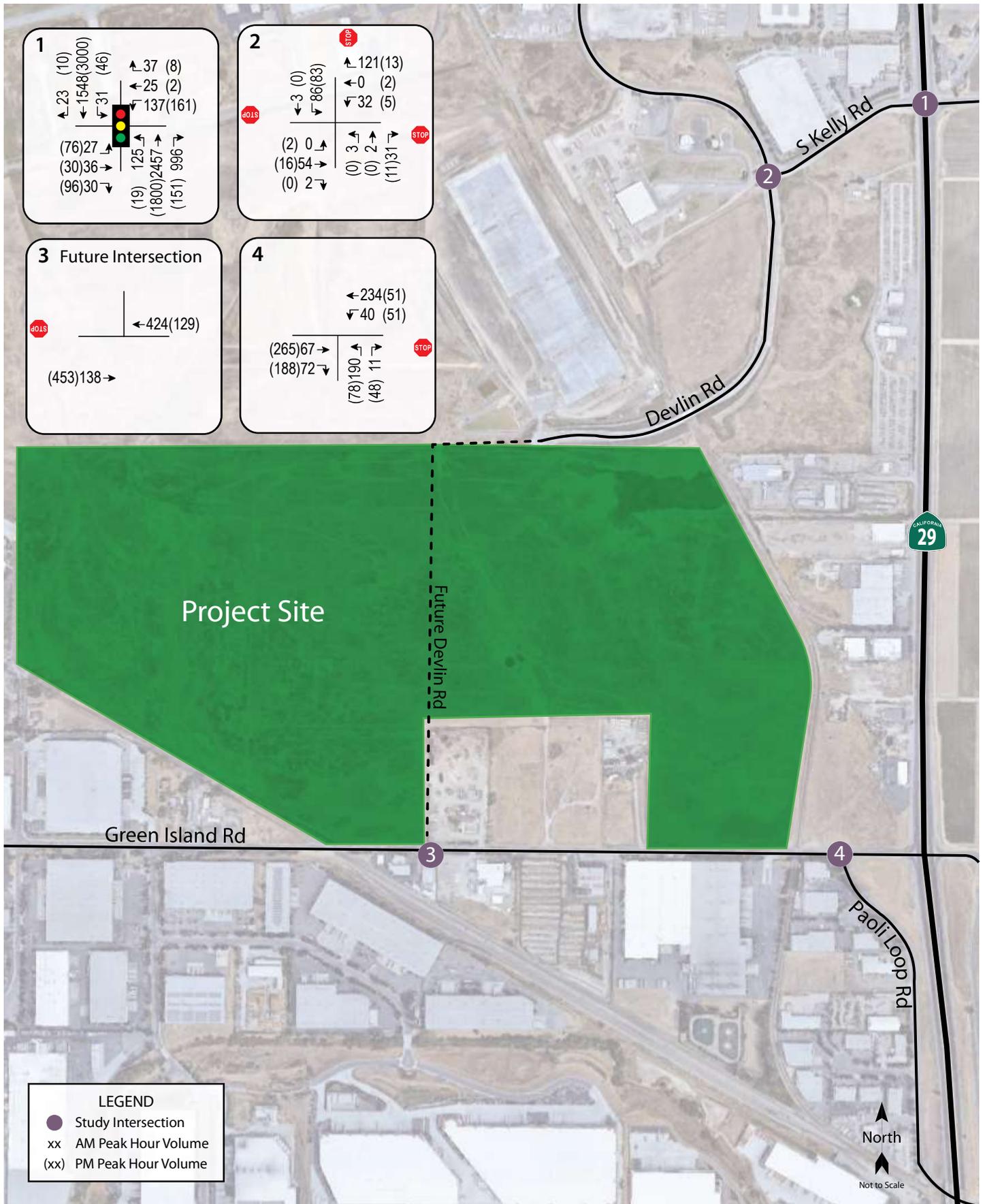
¹ Level of Service was not evaluated at this future intersection

While the intersection of SR 29/South Kelly Road is projected to operate at LOS F during each peak hour, this operation was considered acceptable since SR 29 is exempt from the City's LOS standard and Caltrans no longer applies an LOS standard. The *City of American Canyon – Broadway District Specific Plan Draft EIR*, First Carbon Solutions, 2017, states that there are future plans for SR 29 to have three through lanes in each direction through American Canyon. Because funding has not been identified for this capacity enhancement, it was conservatively assumed that the current configuration with only two through lanes in each direction would remain, and this configuration was used for the analysis.

Furthermore, the future year analysis results for facilities along SR 29 (specifically, the intersection of SR 29/South Kelly Road) is deemed to be more conservative than what was presented for this intersection in the *Watson Ranch Specific Plan Environmental Impact Report* (September 2018) which indicated LOS C and D operation for the a.m. and p.m. peak hours, respectively.

Project Description

The project includes the construction of 2.2 to 2.4 million square feet of warehouse which would be built concurrently with the planned extension of Devlin Road between Green Island Road and South Kelly Road in



Traffic Study for the Giovannoni Logistics Center
Figure 3 – Future Traffic Volumes

American Canyon. It should be noted that the extension of Devlin Road is identified in the City’s General Plan as a circulation improvement and its completion would have been pursued by the City with or without the involvement of this project. The project would be completed in two phases. Phase 1 includes the construction of the Devlin Road extension and two warehouse buildings along with supporting surface parking lots and circulating roads on the east side of the Devlin Road extension. A supply of 858 parking spaces is presently planned for Phase 1. Phase 2 would consist of three or four warehouse buildings and supporting parking lots and circulating roads to the west of the Devlin Road extension.

The extension of Devlin Road would be approximately 3,000 feet long and include bicycle lanes and a sidewalk along its eastern edge. The project also includes the construction of a multi-modal path along the northern side of Green Island Road at the project frontage.

The proposed project site plan for Phase 1 is shown in Figure 4. A site plan for Phase 2 is currently being developed and was not available for use in this study.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 10th Edition, 2017 for a “High-Cube Transload and Short-Term Storage Warehouse” (Land Use #154). The project would be comprised of multiple warehouse buildings with a combined size of between 2.2 and 2.4 million square feet. To be conservative, the maximum size of 2.4 million square feet was used to estimate the trip generation. The project is not anticipated to generate any internal capture trips, pass-by trip credits or any other trip reductions. The number of truck trips associated with a High-Cube Warehouse was estimated using rates published in the *Trip Generation Manual* and validated using local vehicle classification counts conducted in June 2021. Copies of the counts and truck percentage derivation are provided in Appendix B.

As shown in Table 6, the project is expected to generate an average of 3,888 net-new passenger car equivalent trips per day, including 240 trips during the a.m. peak hour and 264 during the p.m. peak hour. These new trips represent the increase in traffic associated with the project compared to existing volumes. To account for the effect of heavy vehicles (such as tractor trucks), a heavy vehicle adjustment factor was applied to convert truck trips to an equivalent passenger car trip total. The passenger car equivalency factor (PCE) for heavy vehicles is assumed to be 2.0 (i.e., each tractor truck has the effect of two passenger cars due to longer start up times at intersections and when making turns). Thus, the number of truck trips per hour was multiplied by 2.0 to determine the equivalent passenger car trips per hour.

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
High-Cube Warehouse	2,400 ksf										
Vehicles (Trucks + Pass. Cars)		1.40	3,360	0.08	192	148	44	0.10	240	67	173
Trucks		0.22	528	0.02	48	37	11	0.01	24	7	17
Pass. Cars		-	2,832	-	144	111	33	-	216	60	156
Trucks (pass. car equivalents)		-	1,056	-	96	74	22	-	48	14	34
Total Passenger Car Trips			3,888		240	185	55		264	74	190

Note: ksf = 1,000 square feet, Total Passenger Car Trips = Passenger Cars plus Passenger Car Equivalent Units of Trucks

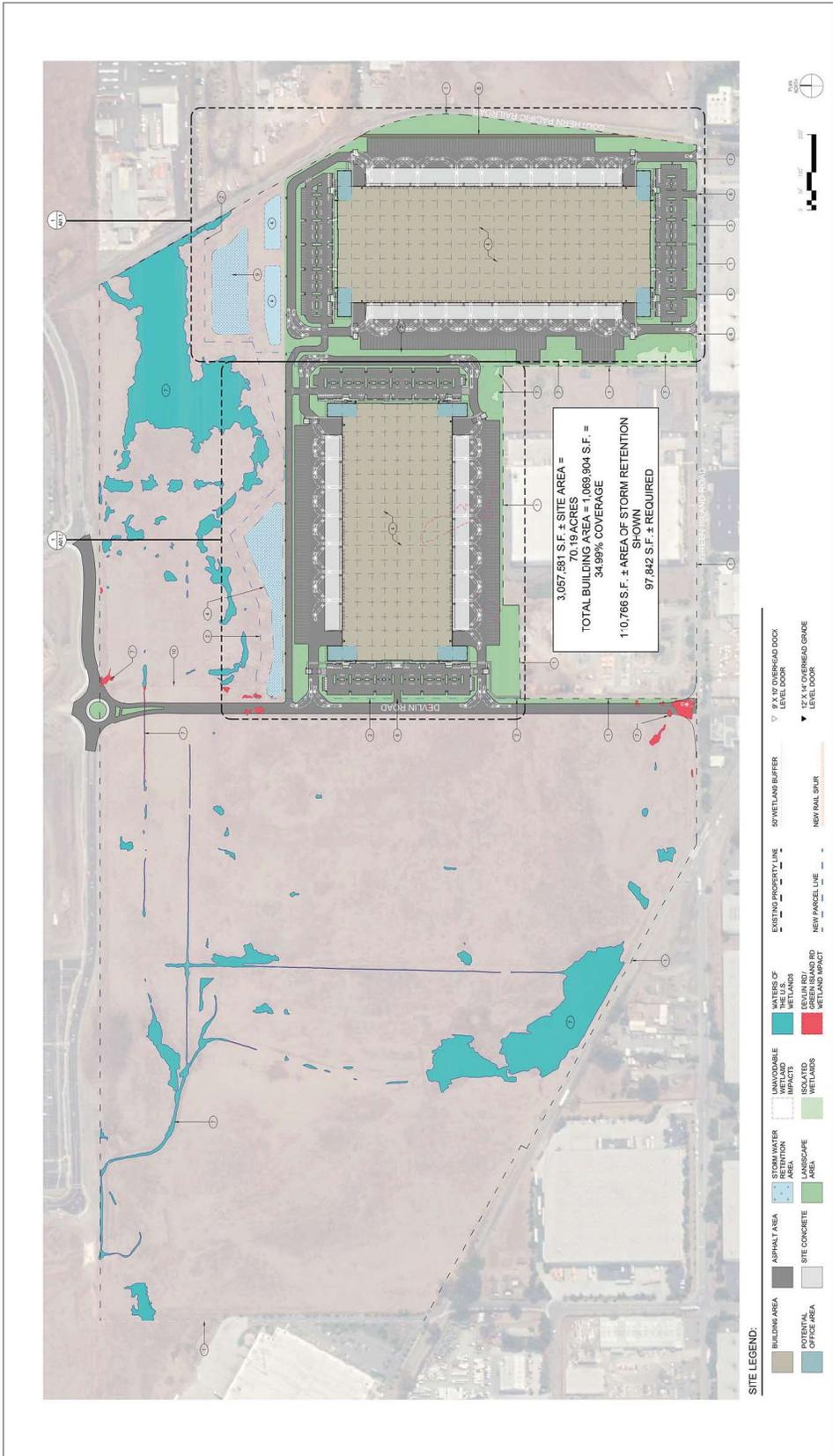


Exhibit 3
Preliminary Site Plan – Phase 1
 CITY OF AMERICAN CANYON
 GIOVANNONI LOGISTICS CENTER PROJECT
 NOTICE OF PREPARATION

Traffic Study for the Giovannoni Logistics Center
Figure 4 – Site Plan



Trip Distribution

The pattern used to allocate new project trips to the street network was determined by reviewing likely routes for employees, visitors, and deliveries. The directionality experienced on SR 29 during the morning and evening commute periods was considered in developing the proposed assumptions. Based on the assumptions shown in Table 7, the following distribution was applied. Project traffic volumes are shown in Figure 5.

Route	AM		PM	
	Percent	Trips	Percent	Trips
To/from North on SR 29	50%	120	55%	145
To/from South on SR 29	50%	120	45%	119
TOTAL	100%	240	100%	264

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, all study intersections are expected to continue operating at LOS C or better. These results are summarized in Table 8. Existing plus Project traffic volumes are shown in Figure 6.

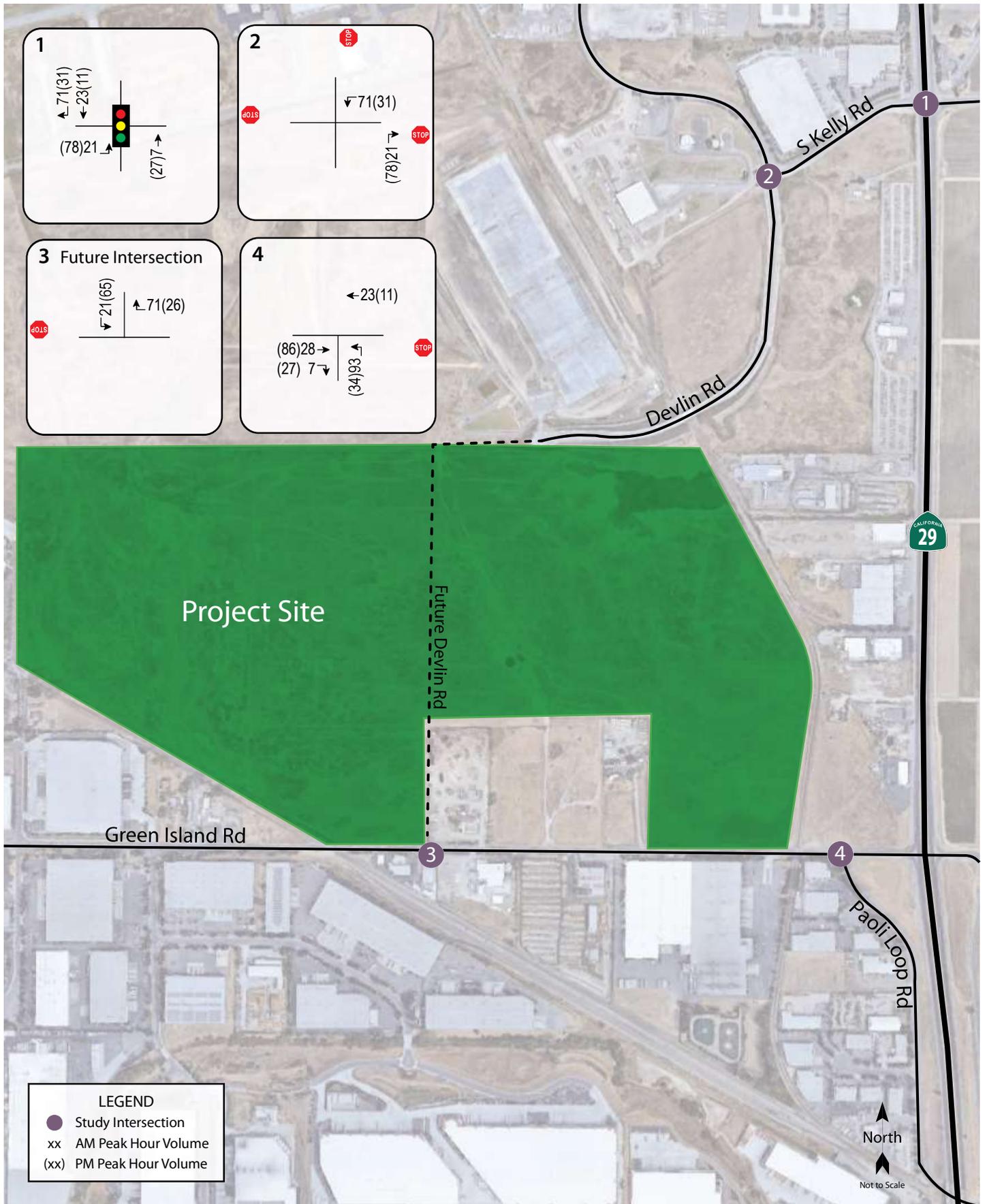
Study Intersection Approach	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 29/S Kelly Rd	34.6	C	15.9	B	34.7	C	16.7	B
2. Devlin Rd/S Kelly Rd	7.8	A	8.0	A	8.4	A	7.9	A
3. Devlin Rd/Green Island Rd	-	-	-	-	0.5	A	1.4	A
<i>Southbound (Devlin Rd) Approach</i>	-	-	-	-	<i>12.1</i>	<i>B</i>	<i>12.7</i>	<i>B</i>
4. Paoli Loop Rd/Green Island Rd	4.9	A	3.1	A	7.5	A	4.0	A
<i>Northbound (Paoli Loop) Approach</i>	<i>13.3</i>	<i>B</i>	<i>13.5</i>	<i>B</i>	<i>17.9</i>	<i>C</i>	<i>18.1</i>	<i>C</i>

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*

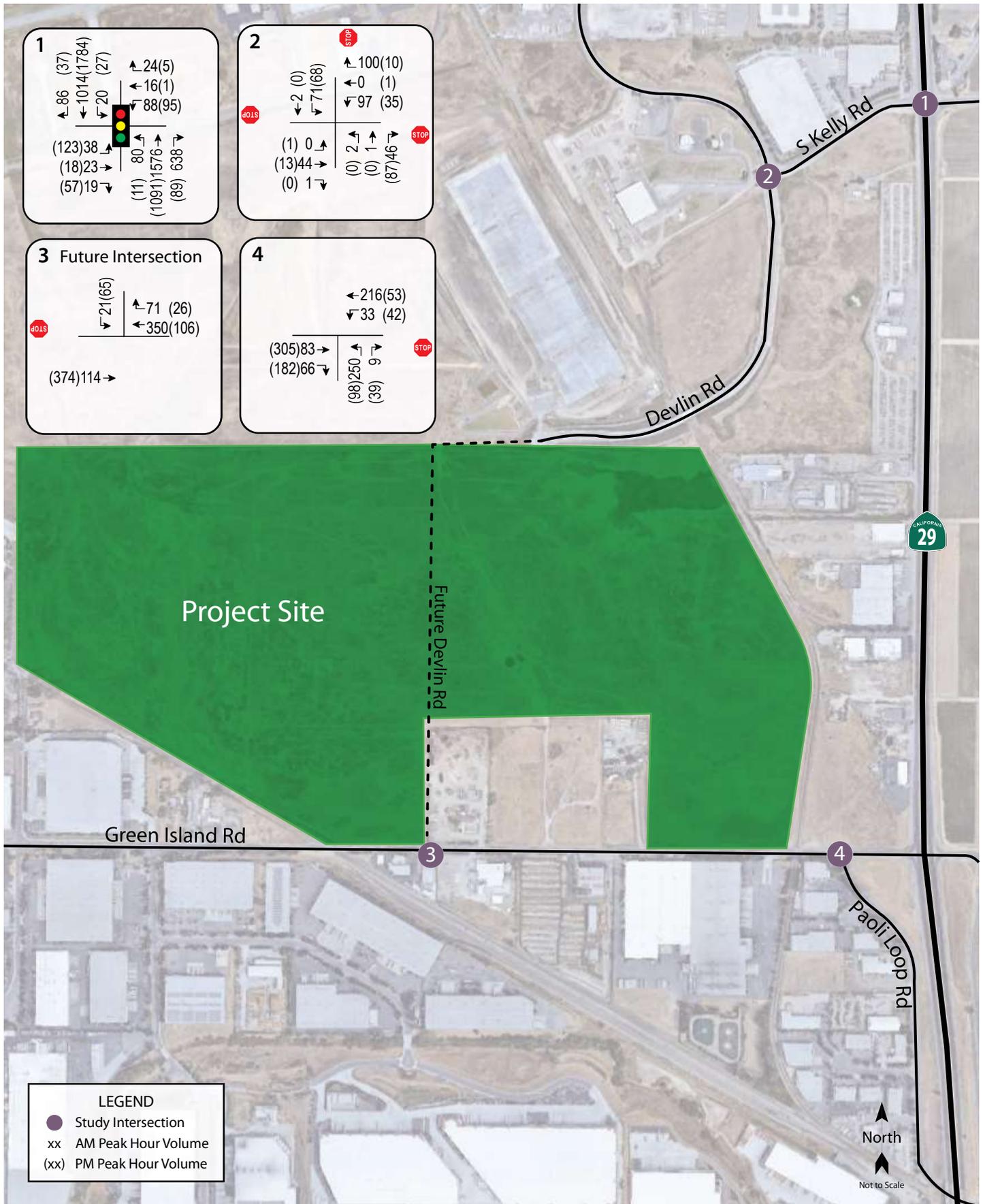
Finding – The study intersections are anticipated to operate at LOS C or better with project-generated traffic added.

Future plus Project Conditions

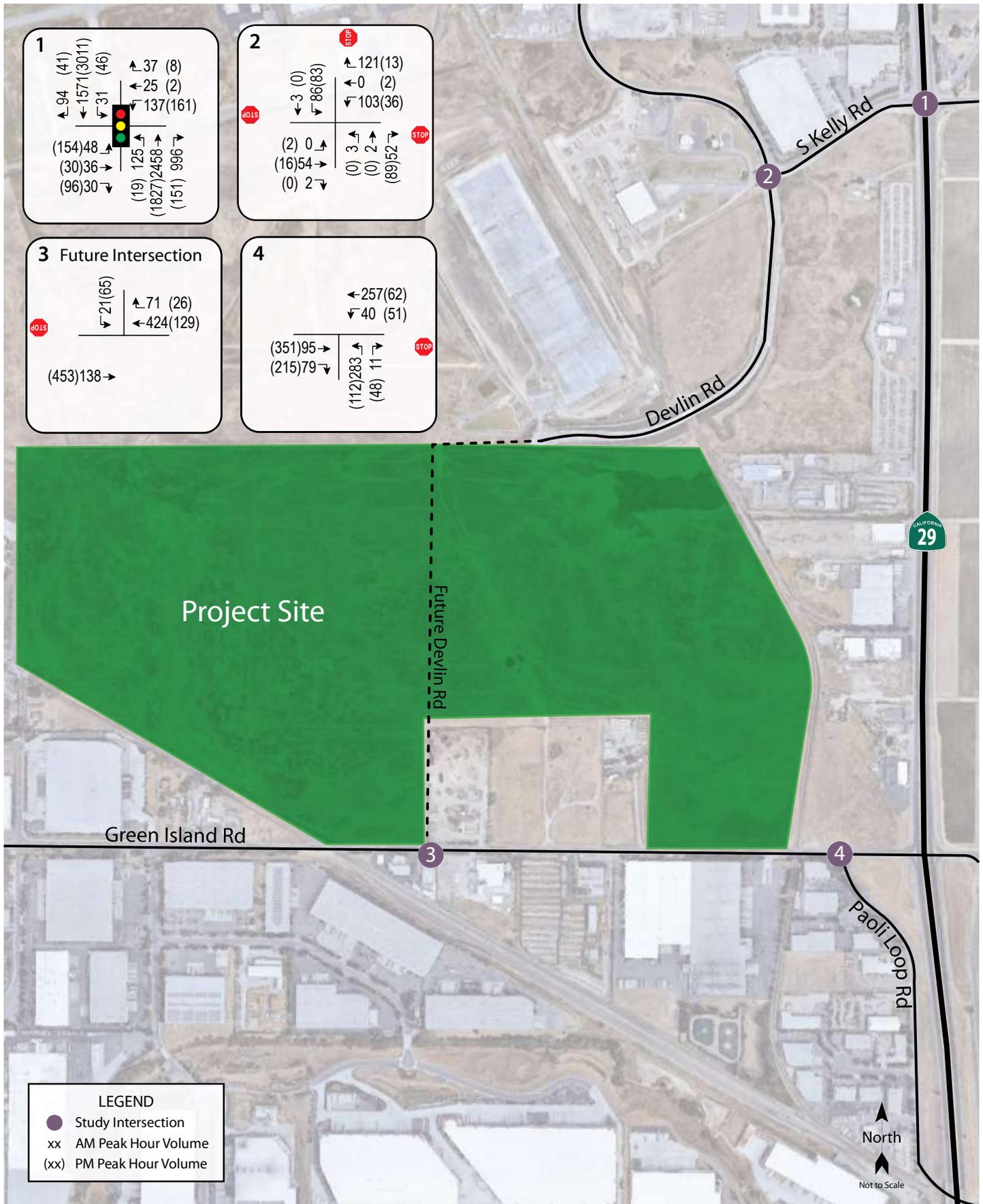
Upon the addition of project-generated traffic to the anticipated Future volumes, all unsignalized study intersections are expected to operate acceptably. SR 29/South Kelly Road would continue to operate at LOS F during both peak hours. Future plus Project traffic volumes are shown in Figure 7 and operating conditions are summarized in Table 9.



Traffic Study for the Giovannoni Logistics Center
Figure 5 – Project Traffic Volumes



Traffic Study for the Giovannoni Logistics Center
Figure 6 – Existing Plus Project Traffic Volumes



Traffic Study for the Giovannoni Logistics Center
Figure 7 – Future Plus Project Traffic Volumes

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

Study Intersection Approach	Future Conditions				Future plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 29/S Kelly Rd	107.4	F	84.3	F	107.0	F	88.7	F
2. Devlin Rd/S Kelly Rd	8.0	A	8.0	A	8.5	A	7.6	A
3. Devlin Rd/Green Island Rd <i>Southbound (Devlin Rd) Approach</i>	-	-	-	-	0.4	A	1.4	A
	-	-	-	-	<i>13.1</i>	<i>B</i>	<i>13.9</i>	<i>B</i>
4. Paoli Loop Rd/Green Island Rd <i>Northbound (Paoli Loop) Approach</i>	5.2	A	3.1	A	7.8	A	3.7	A
	<i>14.3</i>	<i>B</i>	<i>13.4</i>	<i>B</i>	<i>19.3</i>	<i>C</i>	<i>16.7</i>	<i>C</i>

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*

As mentioned previously, there are future plans for SR 29 to have three travel lanes in each direction through American Canyon. As required by the City in their Traffic Impact Fee Program, the project should pay a proportional share fee toward the cost of this planned future infrastructure improvement. As specific building projects move forward, each should contribute to the funds needed for the planned improvements to SR 29 based on the City’s fee schedule.

Finding – The study intersections will continue operating acceptably with project traffic added, with the exception of SR 29/South Kelly Road, which would operate at LOS F with or without the addition of project traffic, though the project’s effect would be considered acceptable since SR 29 is exempt from the City’s LOS standard.

Recommendation – As required by the City in their Traffic Impact Fee Program, the project should pay a fee toward the cost of the planned future improvements to SR 29.

Vehicle Miles Traveled

Senate Bill (SB) 743 established a change in the metric to be applied for determining traffic impacts associated with development projects. Rather than the delay-based criteria associated with a Level of Service analysis, the increase in Vehicle Miles Traveled (VMT) because of a project will be the basis for determining impacts. The City of American Canyon has not yet established thresholds of significance related to VMT. The Napa County travel demand model is not currently available for use as a source for VMT analysis. In lieu of an established local methodology, the project-related VMT impacts were quantitatively assessed based on guidance provided by the California Governor’s Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory, 2018* and approved by City of American Canyon staff.

Based on a review of established policies currently used by OPR, Sacramento County and the City of San Jose, a VMT impact would be identified at an industrial project if the project VMT per employee is higher than the regional average VMT per employee. For this study, the regional average VMT is defined as the nine county Bay Area average. As reported by the City of Vallejo in their *CEQA Transportation Impact Analysis Guidelines* (dated October 2020), the Nine-County Bay Area Average VMT per employee is 23.00 miles per employee. According to Statewide Travel Demand Model estimates, this project is located within a Traffic Analysis Zone (TAZ) with a projected VMT per employee of 16.24 miles. Because this per capita VMT rate is lower than the significance threshold of 23.0 miles, the project would be considered to have a less-than-significant VMT impact. A summary of the VMT findings is provided in Table 10.

Table 10 – Vehicle Miles Traveled Analysis Summary

VMT Metric	Regional Average/ Significance Threshold	Project VMT Rate	Resulting Significance
Employment VMT per Capita	23.00	16.24	Less-Than-Significant

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

Finding – The project would be expected to have a less-than-significant transportation impact on vehicle miles traveled.

Transportation Demand Management (TDM) Measures

The following section describes a potential Transportation Demand Management (TDM) program for employees of the logistics center. While the project’s potential impact is expected to be less than significant, implementation of a TDM program would potentially lower the vehicle miles traveled associated with this project and thus have a regional benefit.

According to SB 1128, adopted in 2016, all employers with 50 or more full-time employees within the nine-county Bay Area are subject to SB 1128, which requires employers to offer their employees one of four options – pre-tax benefits, transit or vanpool subsidies, employer-provided transit, or an alternative benefit of equal effectiveness. The following TDM program would fulfill this legislative requirement.

Ridesharing Program

Carpooling is one of the most common and cost-effective alternative modes of transportation and one that commuters can adopt part-time. Given the delivery station’s auto-oriented location, it can also be one of the most effective alternatives to driving alone. There are numerous benefits to ridesharing. Carpooling can reduce peak-period vehicle trips and increase commuters’ travel choices. Further, it reduces congestion, road and parking facility costs and pollution emissions. Carpooling tends to have the lowest cost per passenger-mile of any

motorized mode of transportation since it makes use of a vehicle seat that would otherwise be empty. Carpooling also provides financial savings for the consumer by decreasing fuel and parking costs. Financial incentives can be an effective way to encourage employees to carpool. The tenant should provide a monetary incentive to employees who agree to carpool to work a minimum of 50 percent of the time. This program should be offered to all employees of the project.

Ridematching

The greatest barrier to workplace carpooling is often simply being able to identify and travel with other employees who live nearby. There are many services that can assist in pairing employees within the same organization or across organizations. The most basic publicly available service is 511.org's free ridematching service, *Merge*. There are also various private ridematching providers (e.g. Zimride, RideAmigos, Via, Scoop) that can effectively create carpool networks while making them safe and convenient for their users. Information on a variety of programs is offered through 511.org.

Recommendation: The tenant should market the *Merge* program to employees and assist on an as-needed basis with ridematching questions or concerns. A monetary incentive may also be offered to employees who carpool to and from work.

Vanpooling

Employer-provided vans can provide several advantages. Vans are defined as vehicles able to carry at least six adults and can reduce the cost of commuting for employees by removing the need for workers to put mileage on their own vehicles and, depending on the level of subsidy, they may not need to pay for gas. For tax purposes, employers may be able to deduct the costs of vans as a "qualified transportation fringe benefit."

Recommendation: The tenant should market the vanpool program to all employees. Identify which employees would be the most suitable to participate in vanpools based on their home locations and reach out directly to those employees to determine if vanpools of at least six persons each are feasible. If so, provide one or more fully subsidized vans for those employees with the condition that they must use it for their commute.

Priority Parking

An easy way of promoting ridesharing is to designate priority employee parking spaces for carpools and vanpools. The cost of this improvement is limited to the paint or sign used and can help market ridesharing as a priority in the organization.

Recommendation: Up to five parking spaces for rideshare vehicles should be designated on the plans for the project.

Electric Vehicle Charging Stations

While the provision of dedicated parking for Electric Vehicles (EVs) and charging stations do not result in trip or VMT reductions, they can help reduce the total GHG emissions of a project.

Recommendation: Electric vehicle parking stalls and charging stations consistent with California Green (Cal Green) building standards should be provided for each building.

Guaranteed Ride Home (GRH)

Guaranteed Ride Home (GRH) is a program that provides a "back-up" ride to employees who use transit, carpool, biking/walking, or other alternatives as their commute mode; in Napa County, it is provided by the NVTA via their V-Commute Program. If an employee who carpools to work, so does not have their own vehicle, needs to leave work for an emergency, such as a sick child or other unexpected need, they will be redeemed for up to four GRH

trips per calendar year. This is an important supportive measure to encourage employees to not drive alone to work and often goes as a welcome, but unused benefit.

Recommendation: The tenant should market the GRH program to employees and assist with sign-ups as needed.

Bicycle Benefits

Bicycle Parking and Maintenance Tools

The provision of both short-term and long-term bicycle parking is important. Secure long-term parking (e.g. bike lockers) is a critical component in encouraging employees to bike to work as the lack of secure parking is often cited by employees as a deterrent. Short-term parking (e.g. bike racks) can be used by employees or visitors.

In addition to providing bicycle parking, some businesses are now encouraging bicycle use by providing employees with the basic tools necessary to maintain their bicycles and on-site shower and clothes locker facilities. Often, these tools can be kept in bicycle storage areas and include simple items such as a bike pump and tire patches that are essential for bike travel, but also inexpensive.

Financial incentives can also be an effective way to encourage employees to ride a bicycle to reach the site. In addition to those who carpool, the applicant should provide a monetary incentive to employees who agree to walk or bicycle to work a minimum of 50 percent of the time.

Recommendation: The tenant should provide both short-term and long-term bicycle parking as well as basic bicycle maintenance tools and on-site shower facilities. Offer a monetary incentive to employees who walk or ride a bicycle to work.

Education, Outreach & Marketing

Welcome Packet for New Employees

New employees should be provided with a welcome packet containing relevant transportation information. The packet should include information on all available TDM measures as well as information from Vine Transit, the Napa County Bicycle Coalition and material regarding 511.org ride-matching services.

Monitor Performance

It is important to continually monitor the performance of a TDM program and adjust measures as necessary to ensure its success. The tenant should conduct mode split and vehicle miles traveled (VMT) surveys each year both to determine if adjustments are needed and to use as marketing material. Employee satisfaction surveys are also an effective way of ensuring a quality TDM program.

Transportation Coordinator

The presence of a staff person dedicated part-time to overseeing and managing the TDM program would be helpful in ensuring the ongoing success of these programs. This would not be a distinct position, but instead would be a role that is integrated into the duties of an on-site manager. The duties can include:

- Create and distribute resident transportation information welcome packets
- Maintain and update the transportation information kiosk board
- Distribute Napa Bicycle Coalition maps
- Monitor bicycle parking to ensure that there is sufficient space
- Assist in selling or distributing transit passes
- Market the TDM program and transit service
- Advertise the unbundled parking program

- Promote 511.org’s ride-matching program

Recommendation: An on-site manager for each company occupying the buildings or a representative of the property management organization should be designated as the Transportation Coordinator and tasked with providing appropriate information to employees and both monitoring and tailoring the TDM program as necessary.

Summary of TDM Reductions

The expected VMT reductions associated with the various TDM measures were estimated based on information published in the California Air Pollution Officers Association (CAPCOA) report *Quantifying Greenhouse Gas Mitigation Measures*, CAPCOA, 2010, the location of the project site, and knowledge of transportation characteristics of the area. Packaged together as a required commute trip reduction program, the TDM strategies listed above are projected to result in a VMT reduction potential of 12.0 percent. The estimated VMT reduction calculations are summarized in Table 11.

Table 11 – Estimated Employee VMT Reduction	
TDM Measure	VMT Reduction (%) Project Estimate
Ridesharing Program	8.5
Education, Outreach, and Marketing	4.0
Bicycle Benefits	Supportive
Emergency Ride Home	Supportive
Total Potential VMT Reduction ¹	12.0

Notes: VMT = vehicle miles travelled; TDM = transportation demand management

¹ The reductions shown consider the relative effectiveness of reductions when individual TDM strategies are paired with each other, which is not the sum of the individual measures.

Finding – Successful implementation of the TDM measures identified in this report, such as use of a ridesharing program, offering secure bicycle parking, and providing educational materials strategies, have the potential to reduce project-related travel by 12.0 percent.

Alternative Modes

Pedestrian Facilities

Given the nature of the study area and the surrounding industrial land use, it is reasonable to assume that very few project patrons and employees will desire to walk to reach the project site. There may, however, be a desire by employees to walk in the area for recreational purposes during break times or to reach nearby buildings. Upon completion of the project, sidewalks will be provided along Devlin Road between Green Island Road to South Kelly Road. The project also includes the construction of a multi-modal path along Green Island Road which would be available for use by pedestrians.

Finding – Pedestrian facilities serving the project site are adequate and would be further improved upon completion of the sidewalks along Delvin Road and the multi-modal path along Green Island Road.

Bicycle Facilities

Existing bicycle facilities, including Class II bike lanes on Devlin Road between Middleton Way and South Kelly Road together with shared use of minor streets provide adequate access for bicyclists. The project would include bicycle lanes along the Devlin Road extension and a multi-modal path along the north side of Green Island Road. The planned Class I and II bicycle facilities on South Kelly Road and Green Island Road, as well as the Napa Valley Vine Trail along Devlin Road, would improve bicycle connectivity near the project site.

Finding – Bicycle facilities serving the project site are adequate and would be further improved upon completion of the planned bicycle facilities in the study area.

Bicycle Storage

The project site plan does not identify the provision of bicycle parking or storage facilities.

Finding – The adequacy of the bicycle parking facilities at the site are deemed to be inconclusive since the current site plan does not include a sufficient level of detail.

Recommendation – Bicycle parking serving the project site should be designed to comply with City of American Canyon municipal code requirements and to support the TDM Plan for the project.

Transit

Existing stops are not within an acceptable walking distance of the site. Should an employee need to use transit, they could ride a bicycle along Devlin Road to the nearest transit stop at the intersection of Airport Boulevard/Devlin Road.

Finding – The lack of existing transit service within an acceptable walking distance of the project site is typical for such remote locations and is therefore considered acceptable, though employees could use a bicycle to reach nearby transit stops.

Access and Circulation

Site Access

Vehicular access to Phase 1 would be provided via four driveways on Green Island Road and four driveways on the future extension of Devlin Road. Access to Phase 2 is anticipated to be provided via numerous full access driveways with connections to the Devlin Road extension. All driveways and internal roadways would be designed to current City standards to accommodate heavy vehicles and so can be expected to accommodate the access requirements for both emergency and passenger vehicles.

Sight Distance

A substantially clear line of sight should be maintained between the driver of a vehicle waiting at a driveway and the driver of an approaching vehicle. Sight distances along Green Island Road from the project driveways were evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for driveway approaches is based on stopping sight distance using the approach travel speed as the basis for determining the recommended sight distance. Based on the posted speed limit of 40 mph, the minimum stopping sight distance required is 300 feet; a review in the field shows that sight distances at the project driveway locations on Green Island Road would be adequate, provided any vegetation or buildings are sited to ensure maintenance of adequate sight lines. The sight lines for driveways on the Devlin Road connection are expected to be adequate based on a review of the site plans.

Finding – Adequate sight distance would be available at each driveway to accommodate all turns leaving the site. To maintain minimum sight distance standards, it is recommended that vegetation along Green Island Road and the Devlin Road extension be trimmed and maintained by the property management firm.

Parking

The *City of American Canyon Municipal Code, Chapter 19.21.030; Vehicle parking requirements*, states that warehousing and storage projects are required to provide one parking space per 1,000 square feet of gross floor area for the first 20,000 square feet of space, plus one parking space per each 2,000 square feet of gross floor area thereafter. Phase 1 of the project includes two buildings totaling 1,069,904 square feet of warehouse space with 858 parking spaces (428 at Building A and 430 at Building B). The site plan for Phase 2 is currently under development and the size and arrangement of the buildings as well as the specific number of parking spaces has not yet been established. Assuming a conservative total project size of 2,400,000 square feet, Phase 2 would be comprised of approximately 1,330,100 square feet of warehouse. Based on these parameters, the project would be required to provide a total of 1,230 parking spaces (555 with Phase 1 and 675 with Phase 2). Phase 1 of the project as proposed would provide 858 parking spaces, which is greater than the City requirement for that portion of the project and represents a 303-parking space surplus. A summary of the City parking requirements and proposed supply is provided in Table 12.

Table 12 – Parking Analysis Summary

Land Use	Units (ksf)	Supply (Parking Spaces)	City Code Requirements	
			Rate	Parking Spaces Required
Warehousing and Storage (Phase 1 – Building A)	601.4	428	1 per 1,000 square feet for the first 20,000 square feet, plus 1 per 2,000 square feet thereafter	311
Warehousing and Storage (Phase 1 – Building B)	468.5	430		244
Warehousing and Storage (Phase 2)	1,330.1	TBD		675
Total	2,400.0	TBD		1,230

Notes: ksf = 1,000 square feet; TBD = To Be Determined;

Finding – Based upon City requirements and a maximum project size of 2.4 million square feet, the project would be required to provide 1,230 parking spaces.

CEQA Checklist

This section details discussion and results of the analysis of issues identified in the CEQA checklist for potential transportation/traffic impacts. The results are contained in Table 13 below and a discussion of each criterion follows.

Table 13 – XVII. TRANSPORTATION/TRAFFIC				
Would the Project:	Potentially Significant Impact	Less than Significant Impact with Mitigation	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?			X	
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?			X	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
d) Result in inadequate emergency access?			X	

Discussion of Results

a. *Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*

According to the *City of American Canyon General Plan*, numerous objectives, policies, and programs have been established supporting the need for all modes of travel to be accommodated by the transportation system. This is demonstrated through the following General Plan Guiding Policies.

- **Policy 1.6 Achieve and maintain a Multimodal LOS D or better for roadways and intersections during peak hours where possible and as long as possible.** The locations that may not achieve or maintain LOS D are as follows and will be exempt from the LOS D policy: State Route 29 through the City, American Canyon Road from SR 29 to Flosden Road-Newell Drive, and Flosden Road south of American Canyon Road.
- **Policy 1.9 Use of existing facilities.** Make efficient use of existing transportation facilities and improve these facilities as necessary in accordance with the Circulation Map.
- **Policy 1.11 Reduce Vehicle Miles Traveled.** Through layout of land uses, improved alternate modes, and provision of more direct routes, strive to reduce the total vehicle miles traveled by City residents.
- **Policy 2.1 Promote walking and bicycling.** Promote walking and bike riding for transportation, recreation, and improvement of public and environmental health.
- **Policy 3.1 Promote safe, efficient, and convenient public transportation.** Promote the use of public transportation for daily trips, including to schools and workplaces, as well as other purposes.

Roadway Facilities

The proposed project would not cause any study intersections to which it applies to operate below the City's standard of LOS D. The project's roadway impacts would therefore be less-than-significant, and no mitigation measures are required. It should be noted that while SR 29/South Kelly Road would operate at LOS F under Future Conditions without or with the project, this intersection is exempt from the City's LOS standard and Caltrans no longer has an operational standard.

Pedestrian Facilities

The proposed project would provide pedestrian connectivity infrastructure on-site as well as sidewalks along Devlin Road. With these improvements, pedestrian impacts would be reduced to less-than-significant.

Bicycle Facilities

Shared use of minor streets combined with the Class II facility on Devlin Road provides adequate access for bicyclists. Therefore, bicycle impacts would be less-than-significant.

Transit Facilities

The Valley Intercity Neighborhood Express (VINE) Transit provides fixed route bus service in American Canyon. VINE does not currently serve any bus stops within an acceptable walking distance of the site. Should an employee wish to use transit, they could ride a bicycle along Devlin Road to the nearest transit stop north of the project at Airport Boulevard. The lack of transit service within an acceptable walking distance of the project is typical within this area and would therefore be considered a less-than-significant impact.

b. Would the Project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

CEQA Guidelines §15064.3, Subdivision (b) indicates that land use projects would have a significant impact if the project resulted in vehicle miles traveled (VMT) exceeding an applicable threshold of significance. It further notes that if existing models or methods are not available to estimate the VMT for the project being considered, a lead agency may analyze the project's VMT qualitatively. The City of American Canyon currently has no thresholds of significance related to VMT, and as of the date of the analysis, a regional travel demand model for Napa County is under development but not yet available for VMT analysis. The project was assessed quantitatively using the Statewide Travel Demand Model and determined to have a less-than-significant VMT impact.

c. Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

As part of the project, a new segment of Devlin Road would be constructed resulting in a continuous section of roadway running between South Kelly Road and Green Island Road. The project itself as well as the new segment of roadway would be designed and constructed to meet currently applicable codes and requirements, so would not be expected to result in any increased hazards. Project driveways would be expected to have adequate sight lines. The project is therefore expected to have a less-than-significant impact regarding geometric design features or incompatible uses.

d. Would the Project result in inadequate emergency access?

The project site would have adequate emergency access and would improve emergency access and response times to the area near Devlin Road with the provision of a new street connection; therefore, the project would result in a less-than-significant and in fact beneficial impact related to emergency access.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 3,888 passenger-car equivalent trips per day, including 240 trips during the weekday a.m. peak hour and 264 during the p.m. peak hour.
- Under Existing Conditions all study intersections operate acceptably, and they are expected to continue doing so upon the addition of project-related traffic.
- Under anticipated Future volumes the unsignalized study intersections are expected to operate acceptably without or with the addition of project-related traffic. SR 29/South Kelly Road would operate at LOS F either without or with project traffic, which was considered acceptable since SR 29 is exempt from the City's LOS policy.
- The proposed project would have a less-than-significant transportation impact on vehicle miles traveled. Successful operation of the recommended Transportation Demand Management Plan is expected to further lower project-related VMT.
- Pedestrian access would be adequate upon completion of the sidewalks and trail that are part of the proposed project.
- The shared use of minor streets along with the planned facilities outlined in the Napa Countywide Bicycle Plan would provide adequate access for bicyclists, though the project site plan does not identify the provision of bicycle parking.
- The lack of existing transit service within an acceptable walking distance of the project site is typical for this location and is therefore considered acceptable, though employees could use a bicycle to reach nearby transit stops.
- The project's driveways and internal roadways should be designed to current City standards and are therefore expected to accommodate the access requirements for both emergency and passenger vehicles.
- Although sight lines at the project driveways are or would be adequate for the approach speeds, it is recommended that vegetation be trimmed and maintained along Green Island Road and the Devlin Road extension to maintain the minimum sight distance requirements.
- Based upon City requirements, the project is required to provide 1,230 parking spaces.

Recommendations

- As required by the City in their Traffic Impact Fee Program, the project should pay a fee toward the cost of the planned future improvements to SR 29.
- Landscaping, buildings, and signage along the project frontage should be sited to ensure that adequate sight lines are maintained.
- The project should incorporate TDM measures such as a ridesharing program, offering secure bicycle parking, and educational materials to further reduce their carbon footprint.
- Secure bicycle storage should be provided, if not already planned as part of on-site amenities.

Study Participants and References

Study Participants

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Traffic Engineer	Kenny Jeong, PE
Assistant Engineer	Kimberly Tellez
Graphics	Cameron Wong
Editing/Formatting	Hannah Yung-Boxdell, Cameron Wong
Quality Control	Dalene J. Whitlock, PE, PTOE

References

- 2016 Collision Data on California State Highways*, California Department of Transportation, 2018
- American Canyon Municipal Code*, Quality Code Publishing, 2017
- City of American Canyon – Broadway District Specific Plan Draft EIR*, First Carbon Solutions, 2017
- City of American Canyon General Plan Circulation Element*, City of American Canyon, 2018
- City of San Jose Transportation Analysis Handbook*, City of San Jose 2018
- City of Vallejo CEQA Transportation Impact Analysis Guidelines*, City of Vallejo, 2020
- Transportation Analysis Guidelines*, County of Sacramento, 2020
- Highway Capacity Manual*, 6th Edition, Transportation Research Board, 2018
- Highway Design Manual*, 6th Edition, California Department of Transportation, 2017
- Napa Countywide Bicycle Plan*, Napa Valley Transportation Authority, 2019
- Napa Junction III Transportation Impact Analysis Report*, Omni-Means, 2011
- Watson Ranch Specific Plan Environmental Impact Report*, September 2018
- Quantifying Greenhouse Gas Mitigation Measures*, California Air Pollution Control Officers Association (CAPCOA), 2010
- Statewide Integrated Traffic Records System (SWITRS)*, California Highway Patrol, 2015-2020
- Technical Advisory on Evaluating Transportation Impacts in CEQA*, Governor's Office of Planning and Research, 2018
- Trip Generation Manual*, 10th Edition, Institute of Transportation Engineers, 2017
- Vehicle Miles Traveled-Focused Transportation Impact Study Guide*, California Department of Transportation, 2020
- VINE Transit, <http://www.ridethevine.com>

ACA033



Appendix A

Collision Rate Calculations



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Intersection Collision Rate Worksheet

Giovannoni Logistics Center TIS

Intersection # 1: SR 29 & South Kelly Road
Date of Count: Wednesday, May 29, 2019

Number of Collisions: 48
Number of Injuries: 23
Number of Fatalities: 1
Average Daily Traffic (ADT): 31900
Start Date: October 1, 2015
End Date: September 30, 2020
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Rural

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

$$\text{Collision Rate} = \frac{48}{31,900} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.82 c/mve	2.1%	47.9%
Statewide Average*	0.58 c/mve	1.0%	38.0%

Notes

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2016 Collision Data on California State Highways, Caltrans

Intersection # 2: Devlin Road & South Kelly Road
Date of Count: Tuesday, November 05, 2019

Number of Collisions: 2
Number of Injuries: 0
Number of Fatalities: 0
Average Daily Traffic (ADT): 3400
Start Date: October 1, 2015
End Date: September 30, 2020
Number of Years: 5

Intersection Type: Four-Legged
Control Type: 4 Way Stop
Area: Rural

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

$$\text{Collision Rate} = \frac{2}{3,400} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.32 c/mve	0.0%	0.0%
Statewide Average*	0.55 c/mve	0.8%	33.2%

Notes

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2016 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

Giovannoni Logistics Center TIS

Intersection # 4: Green Island Road & Paoli Loop Road

Date of Count: Thursday, February 21, 2019

Number of Collisions: 2

Number of Injuries: 0

Number of Fatalities: 0

Average Daily Traffic (ADT): 5600

Start Date: October 1, 2015

End Date: September 30, 2020

Number of Years: 5

Intersection Type: Tee

Control Type: Stop & Yield Controls

Area: Rural

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

$$\text{Collision Rate} = \frac{2}{5,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.20 c/mve	0.0%	0.0%
Statewide Average*	0.16 c/mve	1.8%	39.5%

Notes

ADT = average daily total vehicles entering intersection
 c/mve = collisions per million vehicles entering intersection
 * 2016 Collision Data on California State Highways, Caltrans

Appendix B

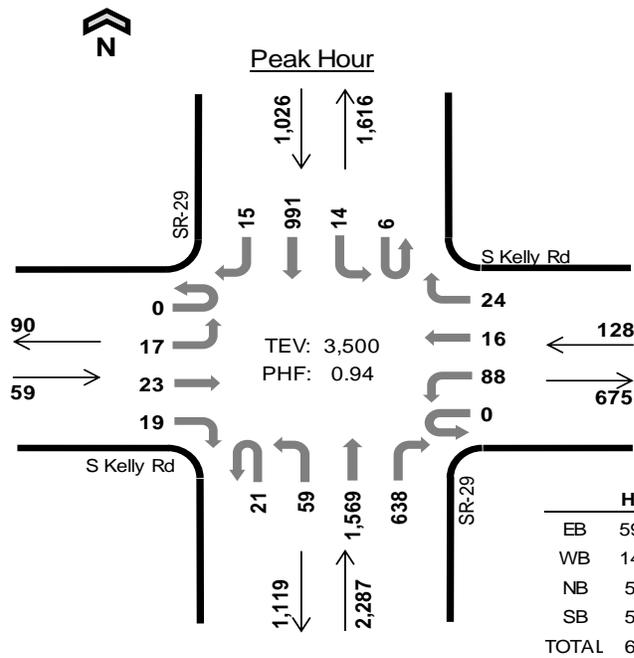
Traffic Count Data



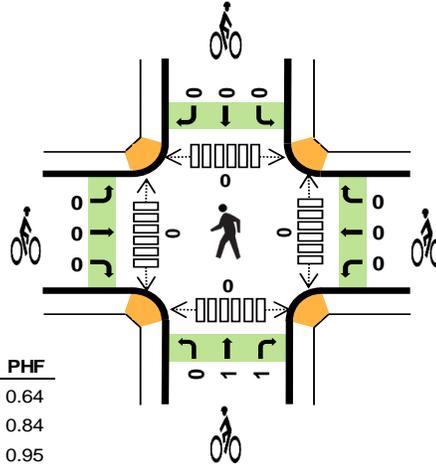


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SR-29 S Kelly Rd



Date: 05-29-2019
 Count Period: 7:00 AM to 9:00 AM
 Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	59.3%	0.64
WB	14.8%	0.84
NB	5.5%	0.95
SB	5.8%	0.91
TOTAL	6.8%	0.94

Two-Hour Count Summaries

Interval Start	S Kelly Rd Eastbound				S Kelly Rd Westbound				SR-29 Northbound				SR-29 Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	7	2	7	0	21	4	3	9	7	420	125	2	4	232	2	845	0	
7:15 AM	0	2	3	5	0	27	6	0	2	13	393	192	2	5	271	5	926	0	
7:30 AM	0	1	8	1	0	18	4	7	6	19	399	179	1	4	241	6	894	0	
7:45 AM	0	7	10	6	0	22	2	14	4	20	357	142	1	1	247	2	835	3,500	
8:00 AM	0	7	8	3	0	17	2	1	2	13	370	118	2	0	262	2	807	3,462	
8:15 AM	0	12	6	12	0	16	7	0	3	13	328	114	3	1	234	5	754	3,290	
8:30 AM	0	8	6	10	0	15	7	0	8	11	349	78	5	6	250	8	761	3,157	
8:45 AM	0	7	8	18	0	14	4	1	3	15	300	78	3	1	216	6	674	2,996	
Count Total	0	51	51	62	0	150	36	26	37	111	2,916	1,026	19	22	1,953	36	6,496	0	
Peak Hour	All	0	17	23	19	0	88	16	24	21	59	1,569	638	6	14	991	15	3,500	0
	HV	0	11	16	8	0	10	7	2	1	17	85	22	0	2	53	4	238	0
	HV%	-	65%	70%	42%	-	11%	44%	8%	5%	29%	5%	3%	0%	14%	5%	27%	7%	0

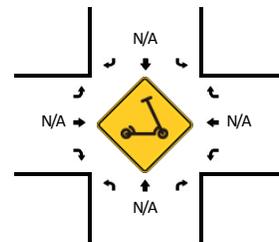
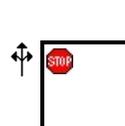
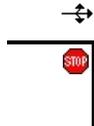
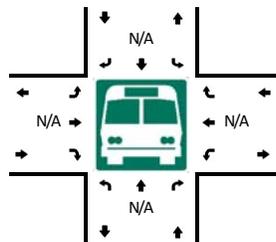
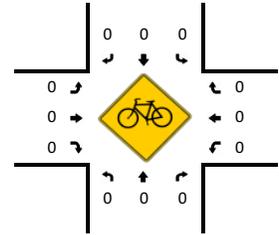
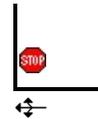
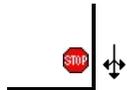
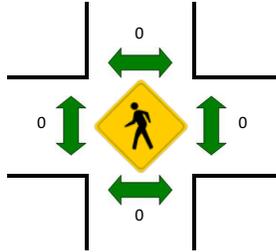
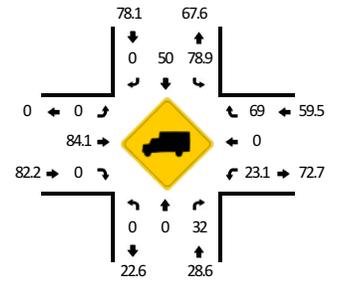
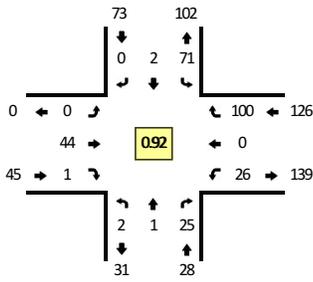
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	8	8	37	18	71	0	0	0	0	0	0	0	0	0	0
7:15 AM	5	6	30	14	55	0	0	0	0	0	0	0	0	0	0
7:30 AM	7	2	29	12	50	0	0	1	0	1	0	0	0	0	0
7:45 AM	15	3	29	15	62	0	0	1	0	1	0	0	0	0	0
8:00 AM	11	6	31	15	63	0	0	0	0	0	0	0	0	0	0
8:15 AM	12	6	36	20	74	0	0	0	0	0	0	0	0	0	0
8:30 AM	11	7	29	25	72	0	0	0	0	0	0	0	0	0	0
8:45 AM	14	8	36	25	83	0	0	0	0	0	0	0	0	0	0
Count Total	83	46	257	144	530	0	0	2	0	2	0	0	0	0	0
Peak Hour	35	19	125	59	238	0	0	2	0	2	0	0	0	0	0

LOCATION: Devlin Rd -- S Kelly Rd
CITY/STATE: Napa, CA

QC JOB #: 15107125
DATE: Tue, Nov 5 2019

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



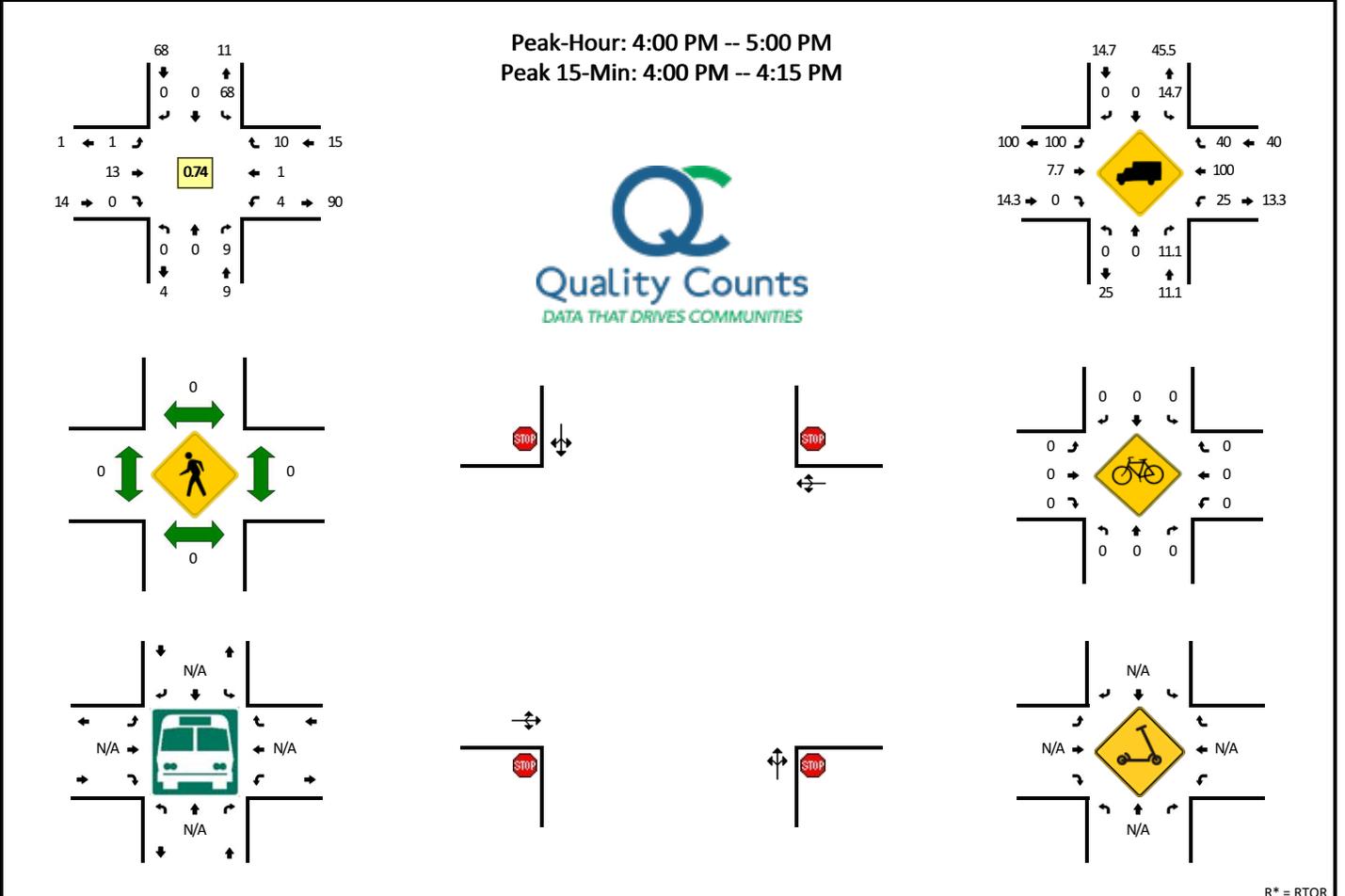
R* = RTOR

15-Min Count Period Beginning At	Devlin Rd (Northbound)					Devlin Rd (Southbound)					S Kelly Rd (Eastbound)					S Kelly Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
6:00 AM	0	0	0	0	0	15	0	0	1	0	0	1	0	0	0	11	0	18	0	0	46	
6:15 AM	0	0	0	0	0	13	0	0	0	0	1	10	0	0	0	15	0	8	0	0	47	
6:30 AM	0	0	2	0	0	7	0	0	0	0	1	3	1	0	0	15	0	19	0	0	48	
6:45 AM	0	1	1	0	0	3	1	0	1	0	0	6	0	0	0	8	0	18	0	0	39	180
7:00 AM	0	0	2	0	0	8	0	0	0	0	0	4	0	0	0	5	0	10	0	0	29	163
7:15 AM	0	0	0	0	0	15	0	0	0	0	1	7	0	0	0	6	0	20	0	0	49	165
7:30 AM	0	0	3	0	0	20	0	0	0	0	0	6	0	0	0	8	0	22	0	0	59	176
7:45 AM	0	0	1	0	0	7	0	0	0	0	1	7	0	0	0	12	0	17	0	0	45	182
8:00 AM	0	0	1	1	0	15	0	0	0	0	0	6	0	0	0	9	0	34	0	0	66	219
8:15 AM	0	0	5	0	0	16	0	0	0	0	0	11	0	0	0	8	0	19	0	0	59	229
8:30 AM	0	0	10	0	0	17	2	0	1	0	0	14	1	0	0	4	0	24	0	0	73	243
8:45 AM	0	1	9	1	0	22	0	0	0	0	0	13	0	0	0	5	0	23	0	0	74	272
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	0	4	36	4	0	88	0	0	0	0	0	52	0	0	0	20	0	92	0	0	296	
Heavy Trucks	0	0	12			72	0	0			0	44	0			0	0	48			176	
Buses																					0	
Pedestrians			0					0					0					0			0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Scoters																					0	

Comments:

LOCATION: Devlin Rd -- S Kelly Rd
CITY/STATE: Napa, CA

QC JOB #: 15107126
DATE: Tue, Nov 5 2019



R* = RTOR

15-Min Count Period Beginning At	Devlin Rd (Northbound)					Devlin Rd (Southbound)					S Kelly Rd (Eastbound)					S Kelly Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	2	0	0	21	0	0	0	0	1	5	0	0	0	0	1	6	0	0	36	
4:15 PM	0	0	2	0	0	18	0	0	0	0	0	2	0	0	0	1	0	3	0	0	26	
4:30 PM	0	0	4	0	0	17	0	0	0	0	0	3	0	0	0	2	0	0	0	0	26	
4:45 PM	0	0	1	0	0	12	0	0	0	0	0	3	0	0	0	1	0	1	0	0	18	106
5:00 PM	0	1	10	0	0	10	1	0	1	0	0	3	0	0	0	1	0	2	1	0	30	100
5:15 PM	0	0	3	0	0	15	0	0	0	0	0	1	0	0	0	5	0	2	0	0	26	100
5:30 PM	0	0	2	0	0	9	0	0	0	0	0	0	0	0	0	7	0	1	0	0	19	93
5:45 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	5	80
6:00 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	4	54
6:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	31
6:30 PM	0	0	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	18
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	16
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	0	0	8	0	0	84	0	0	0	0	4	20	0	0	0	0	4	24	0	0	144	
Heavy Trucks	0	0	0			12	0	0			4	4	0			0	4	8			32	
Buses																					0	
Pedestrians		0					0					0					0				0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Scoters																					0	

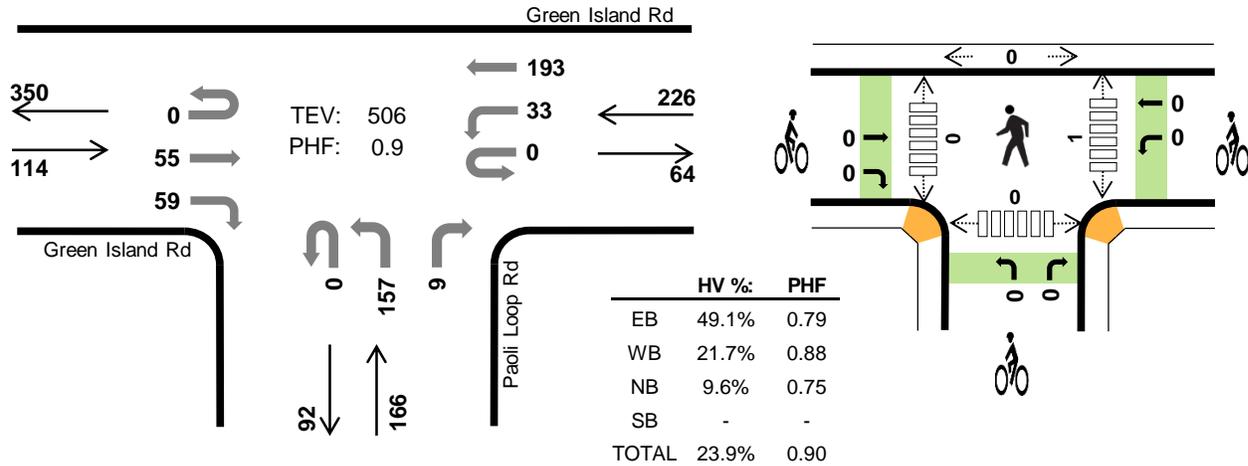
Comments:

Paoli Loop Rd Green Island Rd



Peak Hour

Date: 02-21-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



Two-Hour Count Summaries

Interval Start	Green Island Rd				Green Island Rd				Paoli Loop Rd				0				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		Southbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	24	17	0	9	38	0	0	31	0	2	0	0	0	0	121	0
7:15 AM	0	0	13	18	0	6	38	0	0	25	0	2	0	0	0	0	102	0
7:30 AM	0	0	10	13	0	9	35	0	0	45	0	0	0	0	0	0	112	0
7:45 AM	0	0	11	10	0	12	52	0	0	53	0	2	0	0	0	0	140	475
8:00 AM	0	0	13	12	0	8	49	0	0	35	0	0	0	0	0	0	117	471
8:15 AM	0	0	15	21	0	9	49	0	0	29	0	3	0	0	0	0	126	495
8:30 AM	0	0	16	16	0	4	43	0	0	40	0	4	0	0	0	0	123	506
8:45 AM	0	0	9	12	0	10	33	0	0	26	0	4	0	0	0	0	94	460
Count Total	0	0	111	119	0	67	337	0	0	284	0	17	0	0	0	0	935	0
Peak Hour	All	0	0	55	59	0	33	193	0	0	157	0	9	0	0	0	506	0
	HV	0	0	18	38	0	7	42	0	0	16	0	0	0	0	0	121	0
	HV%	-	-	33%	64%	-	21%	22%	-	-	10%	-	0%	-	-	-	24%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	10	5	1	0	16	0	0	0	0	0	0	0	0	0	0
7:15 AM	13	10	3	0	26	0	0	0	0	0	0	0	0	0	0
7:30 AM	13	11	4	0	28	0	0	0	0	0	0	0	0	0	0
7:45 AM	8	9	0	0	17	0	0	0	0	0	0	0	0	0	0
8:00 AM	13	17	6	0	36	0	0	0	0	0	0	0	0	0	0
8:15 AM	17	12	7	0	36	0	0	0	0	0	0	0	0	0	0
8:30 AM	18	11	3	0	32	0	0	0	0	0	1	0	0	0	1
8:45 AM	12	10	3	0	25	0	0	0	0	0	0	0	0	0	0
Count Total	104	85	27	0	216	0	0	0	0	0	1	0	0	0	1
Peak Hr	56	49	16	0	121	0	0	0	0	0	1	0	0	0	1

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Green Island Rd				Green Island Rd				Paoli Loop Rd				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	8	0	0	5	0	0	0	0	1	0	0	0	0	16	0
7:15 AM	0	0	2	11	0	1	9	0	0	1	0	2	0	0	0	0	26	0
7:30 AM	0	0	5	8	0	1	10	0	0	4	0	0	0	0	0	0	28	0
7:45 AM	0	0	0	8	0	2	7	0	0	0	0	0	0	0	0	0	17	87
8:00 AM	0	0	5	8	0	1	16	0	0	6	0	0	0	0	0	0	36	107
8:15 AM	0	0	5	12	0	3	9	0	0	7	0	0	0	0	0	0	36	117
8:30 AM	0	0	8	10	0	1	10	0	0	3	0	0	0	0	0	0	32	121
8:45 AM	0	0	5	7	0	4	6	0	0	2	0	1	0	0	0	0	25	129
Count Total	0	0	32	72	0	13	72	0	0	23	0	4	0	0	0	0	216	0
Peak Hour	0	0	18	38	0	7	42	0	0	16	0	0	0	0	0	0	121	0

Two-Hour Count Summaries - Bikes

Interval Start	Green Island Rd			Green Island Rd			Paoli Loop Rd			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

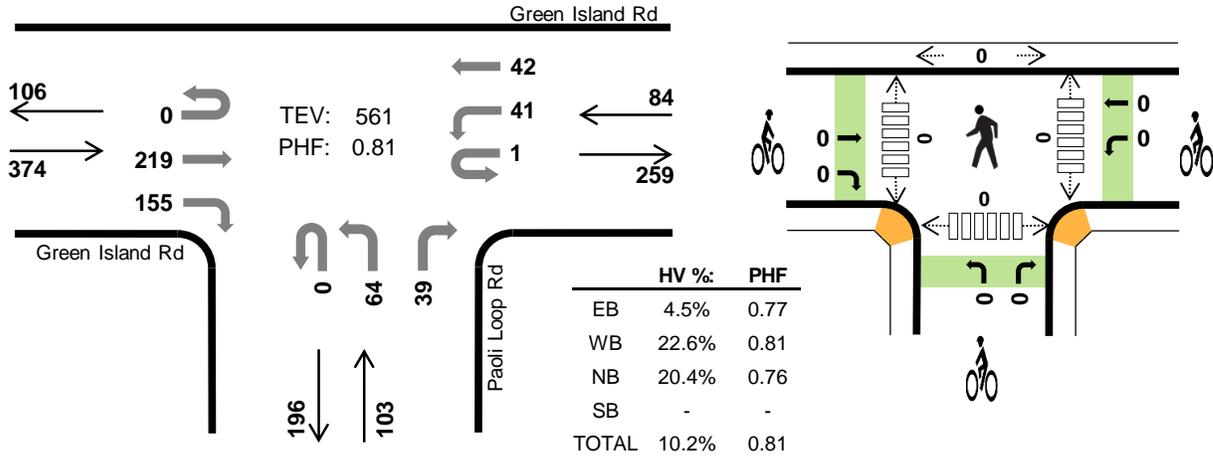
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Paoli Loop Rd Green Island Rd



Peak Hour

Date: 02-21-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



Two-Hour Count Summaries

Interval Start	Green Island Rd				Green Island Rd				Paoli Loop Rd				0				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT				
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	49	43	1	10	11	0	0	20	0	6	0	0	0	0	140	0	
4:15 PM	0	0	55	39	0	7	12	0	0	11	0	7	0	0	0	0	131	0	
4:30 PM	0	0	80	42	0	11	6	0	0	16	0	18	0	0	0	0	173	0	
4:45 PM	0	0	35	31	0	13	13	0	0	17	0	8	0	0	0	0	117	561	
5:00 PM	0	0	46	31	0	8	6	0	0	14	0	6	0	0	0	0	111	532	
5:15 PM	0	0	17	14	0	4	9	0	0	6	0	6	0	0	0	0	56	457	
5:30 PM	0	0	38	23	0	8	6	0	0	10	0	6	0	0	0	0	91	375	
5:45 PM	0	0	32	11	0	4	10	0	0	8	0	1	0	0	0	0	66	324	
Count Total	0	0	352	234	1	65	73	0	0	102	0	58	0	0	0	0	885	0	
Peak Hour	All	0	0	219	155	1	41	42	0	0	64	0	39	0	0	0	0	561	0
	HV	0	0	6	11	0	4	15	0	0	20	0	1	0	0	0	0	57	0
	HV%	-	-	3%	7%	0%	10%	36%	-	-	31%	-	3%	-	-	-	-	10%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	5	5	8	0	18	0	0	0	0	0	0	0	0	0	0
4:15 PM	4	8	2	0	14	0	0	0	0	0	0	0	0	0	0
4:30 PM	6	1	5	0	12	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	5	6	0	13	0	0	0	0	0	0	0	0	0	0
5:00 PM	5	4	2	0	11	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	3	3	0	7	0	0	0	0	0	0	0	0	0	0
5:30 PM	5	4	2	0	11	0	0	0	0	0	0	0	0	0	0
5:45 PM	4	4	1	0	9	0	0	0	0	0	0	0	0	0	0
Count Total	32	34	29	0	95	0	0	0	0	0	0	0	0	0	0
Peak Hr	17	19	21	0	57	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Green Island Rd				Green Island Rd				Paoli Loop Rd				0				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	3	0	0	5	0	0	8	0	0	0	0	0	0	18	0
4:15 PM	0	0	2	2	0	3	5	0	0	2	0	0	0	0	0	0	14	0
4:30 PM	0	0	2	4	0	1	0	0	0	4	0	1	0	0	0	0	12	0
4:45 PM	0	0	0	2	0	0	5	0	0	6	0	0	0	0	0	0	13	57
5:00 PM	0	0	3	2	0	0	4	0	0	2	0	0	0	0	0	0	11	50
5:15 PM	0	0	1	0	0	0	3	0	0	3	0	0	0	0	0	0	7	43
5:30 PM	0	0	2	3	0	1	3	0	0	2	0	0	0	0	0	0	11	42
5:45 PM	0	0	1	3	0	0	4	0	0	1	0	0	0	0	0	0	9	38
Count Total	0	0	13	19	0	5	29	0	0	28	0	1	0	0	0	0	95	0
Peak Hour	0	0	6	11	0	4	15	0	0	20	0	1	0	0	0	0	57	0

Two-Hour Count Summaries - Bikes

Interval Start	Green Island Rd			Green Island Rd			Paoli Loop Rd			0			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Tuesday
Date: 6/22/2021City: American Canyon
Project #: CA21_080110_001n**North Bound**

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	2	0	0	0	0	0	0	1	0	0	0	0	3
05:00	0	1	0	0	0	1	0	0	0	0	0	0	0	2
06:00	0	3	1	0	2	2	0	0	2	0	0	0	0	10
07:00	0	1	3	1	1	0	0	0	4	0	0	0	0	10
08:00	0	4	8	1	7	0	0	0	1	0	0	0	0	21
09:00	0	3	15	1	8	0	0	0	3	0	0	0	0	30
10:00	0	7	7	0	4	0	0	1	5	0	0	0	0	24
11:00	0	8	7	0	2	0	0	0	3	0	0	0	0	20
12:00 PM	1	53	11	0	0	0	0	0	4	0	0	0	0	69
13:00	0	9	14	0	2	0	0	0	0	0	0	0	0	25
14:00	0	15	12	0	2	1	0	1	1	0	0	0	0	32
15:00	0	15	3	0	1	0	0	0	1	0	0	0	0	20
16:00	1	9	6	0	2	0	0	0	2	0	0	0	0	20
17:00	0	19	9	0	1	0	0	0	0	0	0	0	0	29
18:00	0	11	0	0	0	0	0	0	1	0	0	0	0	12
19:00	0	3	0	0	0	0	0	0	1	0	0	0	0	4
20:00	0	6	1	0	0	0	0	0	1	0	0	0	0	8
21:00	0	34	6	0	0	0	0	0	0	0	0	0	0	40
22:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Totals	2	204	103	3	33	4		2	31					382
% of Totals	1%	53%	27%	1%	9%	1%		1%	8%					100%

AM Volumes	0	29	41	3	24	3	0	1	20	0	0	0	0	121	
% AM		8%	11%	1%	6%	1%		0%	5%					32%	
AM Peak Hour		11:00	09:00	07:00	09:00	06:00		10:00	10:00					09:00	
Volume		8	15	1	8	2		1	5					30	
PM Volumes	2	175	62	0	9	1	0	1	11	0	0	0	0	261	
% PM	1%	46%	16%		2%	0%		0%	3%					68%	
PM Peak Hour	12:00	12:00	13:00		13:00	14:00		14:00	12:00					12:00	
Volume	1	53	14		2	1		1	4					69	
Directional Peak Periods															
All Classes															
		AM 7-9				NOON 12-2				PM 4-6			Off Peak Volumes		
		Volume		%		Volume		%		Volume		%	Volume	%	
		31	↔	8%		94	↔	25%		49	↔	13%	208	↔	54%

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Tuesday
Date: 6/22/2021City: American Canyon
Project #: CA21_080110_001s**South Bound**

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
03:00	1	37	2	0	0	0	0	0	1	0	0	0	0	41
04:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
05:00	0	17	12	0	4	1	0	0	1	0	0	0	0	35
06:00	0	15	11	0	3	2	0	0	3	0	0	0	0	34
07:00	0	12	10	0	11	0	0	0	2	0	0	0	0	35
08:00	0	8	8	1	6	0	0	0	1	0	0	0	0	24
09:00	0	13	5	0	4	0	0	1	4	0	0	0	0	27
10:00	0	8	5	0	1	0	0	0	4	0	0	0	0	18
11:00	0	9	10	0	3	0	0	0	3	0	0	0	0	25
12:00 PM	0	42	15	0	1	0	0	0	2	0	0	0	0	60
13:00	0	3	4	0	5	1	0	0	1	0	0	0	0	14
14:00	0	1	2	1	2	0	0	0	0	0	0	0	0	6
15:00	0	7	5	0	2	0	0	0	2	0	0	0	0	16
16:00	1	4	4	0	3	0	0	0	1	0	0	0	0	13
17:00	0	6	3	1	1	0	0	0	1	0	0	0	0	12
18:00	0	2	0	0	1	0	0	0	1	0	0	0	0	4
19:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
20:00	0	4	0	0	0	0	0	0	1	0	0	0	0	5
21:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Totals	2	201	98	3	48	4		1	30					387
% of Totals	1%	52%	25%	1%	12%	1%		0%	8%					100%

AM Volumes	1	127	63	1	32	3	0	1	21	0	0	0	0	249
% AM	0%	33%	16%	0%	8%	1%		0%	5%					64%
AM Peak Hour		03:00	05:00	08:00	07:00	06:00		09:00	09:00					03:00
Volume		37	12	1	11	2		1	4					41
PM Volumes	1	74	35	2	16	1	0	0	9	0	0	0	0	138
% PM	0%	19%	9%	1%	4%	0%			2%					36%
PM Peak Hour	16:00	12:00	12:00	14:00	13:00	13:00			12:00					12:00
Volume	1	42	15	1	5	1			2					60
Directional Peak Periods		AM 7-9				NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes		Volume		%	Volume		%	Volume		%	Volume		%	
		59	↔	15%	74	↔	19%	25	↔	6%	229	↔	59%	

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Wednesday

Date: 6/23/2021

City: American Canyon

Project #: CA21_080110_001n

North Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	1	0	1	0	0	0	0	1	0	0	0	0	3
06:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
07:00	0	1	1	0	1	0	0	0	3	0	0	0	0	6
08:00	0	8	7	1	6	4	0	0	2	0	0	0	0	28
09:00	0	1	13	3	13	0	0	0	5	0	1	0	0	36
10:00	0	2	9	0	1	0	0	0	0	0	0	0	0	12
11:00	0	11	8	0	1	3	0	0	3	0	0	0	0	26
12:00 PM	1	60	10	1	1	1	1	0	2	0	0	0	0	77
13:00	0	13	11	0	1	2	0	0	3	0	0	0	0	30
14:00	0	17	15	0	3	2	0	0	3	0	0	0	0	40
15:00	0	16	3	0	0	2	0	0	3	0	0	0	0	24
16:00	1	10	6	1	3	0	0	0	0	0	0	0	0	21
17:00	0	13	5	1	0	0	0	0	0	0	0	0	0	19
18:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
19:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
20:00	0	6	0	0	0	0	0	0	1	0	0	0	0	7
21:00	0	48	9	0	0	0	0	0	0	0	0	0	0	57
22:00	0	1	0	0	0	0	0	0	1	0	0	0	0	2
23:00	0	1	1	0	0	0	0	0	1	0	0	0	0	3
Totals	2	216	100	8	31	14	1		28		1			401
% of Totals	0%	54%	25%	2%	8%	3%	0%		7%		0%			100%

AM Volumes	0	26	39	5	23	7	0	0	14	0	1	0	0	115
% AM		6%	10%	1%	6%	2%			3%		0%			29%
AM Peak Hour		11:00	09:00	09:00	09:00	08:00			09:00		09:00			09:00
Volume		11	13	3	13	4			5		1			36
PM Volumes	2	190	61	3	8	7	1	0	14	0	0	0	0	286
% PM	0%	47%	15%	1%	2%	2%	0%		3%					71%
PM Peak Hour	12:00	12:00	14:00	12:00	14:00	13:00	12:00		13:00					12:00
Volume	1	60	15	1	3	2	1		3					77
Directional Peak Periods														
All Classes														
AM 7-9														
Volume														
34														
%														
8%														
NOON 12-2														
Volume														
107														
%														
27%														
PM 4-6														
Volume														
40														
%														
10%														
Off Peak Volumes														
Volume														
220														
%														
55%														

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Wednesday

Date: 6/23/2021

City: American Canyon

Project #: CA21_080110_001s

South Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	1	43	2	0	0	0	0	0	0	0	0	0	0	46
04:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
05:00	0	17	10	0	3	0	0	0	1	0	0	0	0	31
06:00	0	14	7	1	4	0	0	0	1	0	0	0	0	27
07:00	1	12	18	0	8	2	2	0	4	0	0	0	0	47
08:00	0	10	2	3	12	2	2	0	4	0	0	0	0	35
09:00	0	8	3	0	5	2	2	0	3	0	0	0	0	23
10:00	0	8	7	0	5	2	2	0	2	0	0	0	0	26
11:00	0	12	8	0	1	3	2	0	2	0	0	0	0	28
12:00 PM	0	48	10	1	2	3	2	0	3	0	0	0	0	69
13:00	0	4	8	0	1	4	1	0	3	0	0	0	0	21
14:00	0	5	1	0	1	2	1	0	3	0	0	0	0	13
15:00	1	5	3	2	2	2	2	0	0	0	0	0	0	17
16:00	0	6	1	1	1	0	0	1	0	0	0	0	0	10
17:00	0	5	4	1	0	0	0	0	0	0	0	0	0	10
18:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
19:00	0	0	0	0	0	0	0	0	2	0	0	0	0	2
20:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
21:00	0	6	0	0	1	0	0	1	1	0	0	0	0	9
22:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
23:00	0	1	1	0	0	0	0	0	2	0	0	0	0	4
Totals	3	213	90	9	46	22	16	2	31					432
% of Totals	1%	49%	21%	2%	11%	5%	4%	0%	7%					100%

AM Volumes	2	128	59	4	38	11	10	0	17	0	0	0	0	269
% AM	0%	30%	14%	1%	9%	3%	2%		4%					62%
AM Peak Hour	07:00	03:00	07:00	08:00	08:00	11:00	07:00		07:00					07:00
Volume	1	43	18	3	12	3	2		4					47
PM Volumes	1	85	31	5	8	11	6	2	14	0	0	0	0	163
% PM	0%	20%	7%	1%	2%	3%	1%	0%	3%					38%
PM Peak Hour	15:00	12:00	12:00	15:00	12:00	13:00	12:00	16:00	12:00					12:00
Volume	1	48	10	2	2	4	2	1	3					69
Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes							
All Classes	Volume		%	Volume		%	Volume		%	Volume		%		
	82	↔	19%	90	↔	21%	20	↔	5%	240	↔	56%		

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Thursday

Date: 6/24/2021

City: American Canyon

Project #: CA21_080110_001n

North Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	2	0	0	0	0	0	0	2	0	0	0	0	4
06:00	0	3	2	1	1	0	0	0	0	0	0	0	0	7
07:00	0	1	2	0	0	0	0	0	0	0	2	0	0	5
08:00	0	14	9	0	5	0	0	0	1	0	0	0	0	29
09:00	0	5	14	1	8	0	0	0	0	0	0	0	0	28
10:00	0	2	8	1	3	0	0	0	2	0	2	0	0	18
11:00	0	14	7	0	1	0	0	0	4	0	0	0	0	26
12:00 PM	0	67	6	0	2	0	0	0	2	0	1	0	0	78
13:00	0	5	12	1	2	0	0	0	3	0	2	0	0	25
14:00	0	23	15	0	4	0	0	0	1	0	0	0	0	43
15:00	0	10	6	1	0	2	0	0	0	0	0	0	0	19
16:00	1	9	6	0	2	0	0	0	1	0	0	0	0	19
17:00	0	9	3	0	0	0	0	0	3	0	0	0	0	15
18:00	0	9	5	0	0	0	0	0	1	0	0	0	0	15
19:00	0	3	2	0	0	0	0	0	1	0	0	0	0	6
20:00	0	6	1	0	0	0	0	0	1	0	0	0	0	8
21:00	0	47	9	0	0	0	0	0	0	0	0	0	0	56
22:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	1	229	108	5	28	2			22		7			402
% of Totals	0%	57%	27%	1%	7%	0%			5%		2%			100%

AM Volumes	0	41	42	3	18	0	0	0	9	0	4	0	0	117
% AM		10%	10%	1%	4%				2%		1%			29%
AM Peak Hour		08:00	09:00	06:00	09:00				11:00		07:00			08:00
Volume		14	14	1	8				4		2			29
PM Volumes	1	188	66	2	10	2	0	0	13	0	3	0	0	285
% PM	0%	47%	16%	0%	2%	0%			3%		1%			71%
PM Peak Hour	16:00	12:00	14:00	13:00	14:00	15:00			13:00		13:00			12:00
Volume	1	67	15	1	4	2			3		2			78
Directional Peak Periods		AM 7-9				NOON 12-2			PM 4-6			Off Peak Volumes		
All Classes		Volume		%		Volume		%	Volume		%	Volume		%
		34	↔	8%		103	↔	26%	34	↔	8%	231	↔	57%

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

CLASSIFICATION

Delvin Rd Bet. Kelly Rd & Middleton Wy

Day: Thursday

Date: 6/24/2021

City: American Canyon

Project #: CA21_080110_001s

South Bound

Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total
00:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	45	3	0	0	0	0	0	0	0	0	0	0	48
04:00	1	8	0	0	0	0	0	0	0	0	0	0	0	9
05:00	0	16	10	0	3	0	0	0	0	0	0	0	0	29
06:00	0	15	6	0	4	0	0	0	0	0	0	0	0	25
07:00	0	13	15	1	8	0	0	0	1	0	2	0	0	40
08:00	0	17	12	0	6	0	0	0	1	0	0	0	0	36
09:00	1	9	4	0	6	0	0	0	3	0	0	0	0	23
10:00	1	6	4	0	2	0	0	0	1	0	2	0	0	16
11:00	0	11	2	0	3	0	0	0	2	0	1	0	0	19
12:00 PM	0	53	7	1	3	0	0	0	3	0	0	0	0	67
13:00	0	1	11	0	3	1	0	0	2	0	2	0	0	20
14:00	0	7	12	0	4	0	0	0	1	0	0	0	0	24
15:00	0	4	4	1	1	0	0	0	1	0	0	0	0	11
16:00	0	4	1	0	1	0	0	0	2	0	0	0	0	8
17:00	0	3	4	0	1	0	0	0	3	0	0	0	0	11
18:00	0	3	2	1	0	1	0	0	0	0	0	0	0	7
19:00	0	4	2	1	0	0	0	0	0	0	0	0	0	7
20:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
21:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
22:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	3	226	100	5	45	2			21		7			409
% of Totals	1%	55%	24%	1%	11%	0%			5%		2%			100%

AM Volumes	3	140	56	1	32	0	0	0	8	0	5	0	0	245		
% AM	1%	34%	14%	0%	8%				2%		1%			60%		
AM Peak Hour	04:00	03:00	07:00	07:00	07:00				09:00		07:00			03:00		
Volume	1	45	15	1	8				3		2			48		
PM Volumes	0	86	44	4	13	2	0	0	13	0	2	0	0	164		
% PM		21%	11%	1%	3%	0%			3%		0%			40%		
PM Peak Hour		12:00	14:00	12:00	14:00	13:00			12:00		13:00			12:00		
Volume		53	12	1	4	1			3		2			67		
Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes									
All Classes	Volume		%		Volume		%		Volume		%		Volume		%	
	76		19%		87		21%		19		5%		227		56%	

Classification Definitions

1 Motorcycles	4 Buses	7 >=4-Axle Single Units	10 >=6-Axle Single Trailers	13 >=7-Axle Multi-Trailers
2 Passenger Cars	5 2-Axle, 6-Tire Single Units	8 <=4-Axle Single Trailers	11 <=5-Axle Multi-Trailers	
3 2-Axle, 4-Tire Single Units	6 3-Axle Single Units	9 5-Axle Single Trailers	12 6-Axle Multi-Trailers	

Truck Proportion Comparison

Description	Category	Vehicle Volumes/Percentages		
		Daily	AM Pk Hr	PM Pk Hr
Project Trip Generation	Total Number of Vehicles	3,360	192	240
	Number of Trucks	528	48	24
	Percent Trucks	15.7%	25.0%	10.0%
June 22-24, 2021 Comparison Counts on Devlin Road	Avg Number of Vehicles	804.3	372.0	432.3
	Avg of Trucks	159.7	59.7	11.3
	Percent Trucks	19.9%	16.0%	2.6%



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Appendix C

Intersection Level of Service Calculations





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Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 34.6
Level Of Service: C
Volume to Capacity (v/c): 0.809

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200,00	100,00	100,00	200,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	55,00			55,00			30,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
Base Volume Input [veh/h]	80	1569	638	20	991	15	17	23	19	88	16	24
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	1569	638	20	991	15	17	23	19	88	16	24
Peak Hour Factor	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	21	417	170	5	264	4	5	6	5	23	4	6
Total Analysis Volume [veh/h]	85	1669	679	21	1054	16	18	24	20	94	17	26
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0,0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3,7	5,5	0,0	3,7	5,5	0,0	0,0	4,4	0,0	0,0	4,4	0,0
All red [s]	1,0	1,0	0,0	1,0	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0
Split [s]	9	44	0	11	42	0	0	37	0	0	37	0
Vehicle Extension [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No			No			No		
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,7	4,5	0,0	2,7	4,5	0,0	0,0	3,4	0,0	0,0	3,4	0,0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	106	106	106	106	106	106	106	106	106	106
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,50	4,50	2,70	4,50	4,50	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	6	70	70	3	74	74	13	13	13	13
g / C, Green / Cycle	0,06	0,66	0,66	0,03	0,69	0,69	0,13	0,13	0,13	0,13
(v / s)_j Volume / Saturation Flow Rate	0,05	0,63	0,69	0,01	0,29	0,29	0,01	0,03	0,07	0,03
s, saturation flow rate [veh/h]	1781	1870	1697	1781	1870	1860	1363	1731	1362	1690
c, Capacity [veh/h]	107	1230	1116	46	1294	1287	182	218	181	213
d1, Uniform Delay [s]	49,26	16,71	18,17	50,98	7,07	7,07	45,20	41,62	47,91	41,62
k, delay calibration	0,04	0,40	0,49	0,04	0,04	0,04	0,04	0,04	0,04	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	4,96	14,50	41,36	2,58	0,08	0,08	0,09	0,17	0,85	0,17
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,80	0,95	1,05	0,46	0,41	0,41	0,10	0,20	0,52	0,20
d, Delay for Lane Group [s/veh]	54,22	31,21	59,53	53,56	7,15	7,15	45,29	41,79	48,76	41,80
Lane Group LOS	D	C	F	D	A	A	D	D	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	2,27	24,19	32,71	0,56	3,85	3,83	0,45	1,05	2,39	0,98
50th-Percentile Queue Length [ft/m]	56,66	604,79	817,73	13,98	96,36	95,87	11,14	26,13	59,82	24,54
95th-Percentile Queue Length [veh/m]	4,08	32,26	43,99	1,01	6,94	6,90	0,80	1,88	4,31	1,77
95th-Percentile Queue Length [ft/m]	102,00	806,45	1099,6	25,16	173,45	172,57	20,05	47,04	107,67	44,18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54,22	39,61	59,53	53,56	7,15	7,15	45,29	41,79	41,79	48,76	41,80	41,80
Movement LOS	D	D	E	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	45,68		8,04		42,81		46,57					
Approach LOS	D		A		D		D					
d_I, Intersection Delay [s/veh]	34,64											
Intersection LOS	C											
Intersection VIC	0,809											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	34,67	34,67	34,67
I_p,int, Pedestrian LOS Score for Intersection	0,000	3,327	1,998	2,406
Crosswalk LOS	F	C	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	789	702	702
d_b, Bicycle Delay [s]	15,31	16,50	18,95	18,95
I_b,int, Bicycle LOS Score for Intersection	3,567	2,460	1,662	1,786
Bicycle LOS	D	B	A	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 7.8
 Level Of Service: A
 Volume to Capacity (v/c): 0.146

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	2	1	25	71	2	0	0	44	1	26	0	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1	25	71	2	0	0	44	1	26	0	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	7	19	1	0	0	12	0	7	0	27
Total Analysis Volume [veh/h]	2	1	27	77	2	0	0	48	1	28	0	109
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	898	661	727	830	938
Degree of Utilization, x	0.03	0.12	0.00	0.06	0.15

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0,10	0,39	0,01	0,19	0,51
95th-Percentile Queue Length [ft]	2,59	9,84	0,21	4,70	12,75
Approach Delay [s/veh]	7,15	8,84		7,61	7,49
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	7,84				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type:	Two-way stop	Delay (sec / veh):	0,0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,004

Intersection Setup

Name	Devlin Rd		Green Island Rd		Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd		Westbound	
Base Volume Input [veh/h]	0	0	0	114	350	0
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	114	350	0
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	0	0	0	29	88	0
Total Analysis Volume [veh/h]	0	0	0	114	350	0
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,00	0,00	0,00	0,00	0,00	0,00
d_M, Delay for Movement [s/veh]	11,47	10,19	7,98	0,00	0,00	0,00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0,00	0,00	0,00	0,00	0,00	0,00
95th-Percentile Queue Length [ft/ln]	0,00	0,00	0,00	0,00	0,00	0,00
d_A, Approach Delay [s/veh]	10,83		0,00		0,00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]			0,00			
Intersection LOS			A			



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.289

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	157	9	55	59	33	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	9	55	59	33	193
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	3	15	16	9	54
Total Analysis Volume [veh/h]	174	10	61	66	37	214
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.01	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	13.45	11.22	0.00	0.00	7.53	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.25	1.25	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	31.29	31.29	0.00	0.00	1.95	1.95
d_A, Approach Delay [s/veh]	13.33		0.00		1.11	
Approach LOS	B		A		A	
d_J, Intersection Delay [s/veh]	4.86					
Intersection LOS	B					



Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 15.9
Level Of Service: B
Volume to Capacity (v/c): 0.593

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Base Volume Input [veh/h]	11	1064	89	27	1773	6	45	18	57	95	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	1064	89	27	1773	6	45	18	57	95	1	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	280	23	7	467	2	12	5	15	25	0	1
Total Analysis Volume [veh/h]	12	1120	94	28	1866	6	47	19	60	100	1	5
Presence of On-Street Parking	No	No	No	No	No	No	No	No	No	No	No	No
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3.7	5.5	0.0	3.7	5.5	0.0	0.0	4.4	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	44	0	11	42	0	0	37	0	0	37	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.7	4.5	0.0	2.7	4.5	0.0	0.0	3.4	0.0	0.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,60	4,60	2,70	4,60	4,60	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	1	34	34	2	33	33	12	12	12	12
g / C, Green / Cycle	0,01	0,54	0,54	0,04	0,52	0,52	0,18	0,18	0,18	0,18
(v / s)_j Volume / Saturation Flow Rate	0,01	0,33	0,33	0,02	0,50	0,50	0,03	0,05	0,08	0,00
s, saturation flow rate [veh/h]	1781	1870	1820	1781	1870	1868	1410	1649	1320	1630
c, Capacity [veh/h]	22	1016	988	66	969	968	324	302	260	299
d1, Uniform Delay [s]	31,17	9,87	9,88	29,89	14,75	14,77	23,76	22,24	27,15	21,25
k, delay calibration	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	7,94	0,22	0,22	1,58	3,45	3,53	0,08	0,17	0,35	0,01
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,55	0,61	0,61	0,42	0,97	0,97	0,15	0,26	0,39	0,02
d, Delay for Lane Group [s/veh]	39,11	10,08	10,10	31,47	18,21	18,30	23,84	22,41	27,50	21,26
Lane Group LOS	D	B	B	C	B	B	C	C	C	C
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	0,21	3,75	3,66	0,40	9,30	9,33	0,59	0,97	1,31	0,06
50th-Percentile Queue Length [ft/m]	5,23	93,73	91,50	9,92	232,52	233,20	14,86	24,19	32,70	1,61
95th-Percentile Queue Length [veh/m]	0,38	6,75	6,59	0,71	14,30	14,34	1,07	1,74	2,35	0,12
95th-Percentile Queue Length [ft/m]	9,42	168,72	164,70	17,86	357,55	358,43	26,75	43,54	58,86	2,90



Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39,11	10,09	10,10	31,47	18,25	18,30	23,84	22,41	22,41	27,50	21,26	21,26
Movement LOS	D	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10,38		18,45		22,94		27,15					
Approach LOS	B		B		C		C					
d_I, Intersection Delay [s/veh]	15,94											
Intersection LOS	B											
Intersection VIC	0,593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	34,67	34,67	34,67
I_p,int, Pedestrian LOS Score for Intersection	0,000	3,464	1,987	2,073
Crosswalk LOS	F	C	A	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	789	702	702
d_b, Bicycle Delay [s]	15,31	16,50	18,95	18,95
I_b,int, Bicycle LOS Score for Intersection	2,571	3,127	1,768	1,735
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 8.0
Level Of Service: A
Volume to Capacity (v/c): 0.131

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	0	0	9	68	0	0	1	13	0	4	1	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	9	68	0	0	1	13	0	4	1	10
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	23	0	0	0	4	0	1	0	3
Total Analysis Volume [veh/h]	0	0	12	92	0	0	1	18	0	5	1	14
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes					
Capacity per Entry Lane [veh/h]	993	703	779	849	933
Degree of Utilization, x	0.01	0.13	0.00	0.02	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0,04	0,45	0,00	0,07	0,07
95th-Percentile Queue Length [ft]	0,92	11,24	0,00	1,72	1,64
Approach Delay [s/veh]	6,67	8,60		7,34	6,94
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	8,04				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 0,0
 Level Of Service: A
 Volume to Capacity (v/c): 0,004

Intersection Setup

Name	Devlin Rd		Green Island Rd		Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd		Westbound	
Base Volume Input [veh/h]	0	0	0	374	106	0
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	374	106	0
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	0	0	0	94	27	0
Total Analysis Volume [veh/h]	0	0	0	374	106	0
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]		0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,00	0,00	0,00	0,00	0,00	0,00
d_M, Delay for Movement [s/veh]	11,61	8,80	7,42	0,00	0,00	0,00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0,00	0,00	0,00	0,00	0,00	0,00
95th-Percentile Queue Length [ft/ln]	0,00	0,00	0,00	0,00	0,00	0,00
d_A, Approach Delay [s/veh]	10,20		0,00		0,00	
Approach LOS	B		A		A	
d_J, Intersection Delay [s/veh]			0,00			
Intersection LOS			A			



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.161

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	64	39	219	155	42	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	39	219	155	42	42
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	12	68	48	13	13
Total Analysis Volume [veh/h]	79	48	270	191	52	52
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.07	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	14.31	12.27	0.00	0.00	8.43	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.89	0.89	0.00	0.00	0.15	0.15
95th-Percentile Queue Length [ft/ln]	22.25	22.25	0.00	0.00	3.72	3.72
d_A, Approach Delay [s/veh]	13.54		0.00		4.22	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]			3.12			
Intersection LOS			B			



Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 107.4
Level Of Service: F
Volume to Capacity (v/c): 1.136

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
	Northbound			Southbound			Eastbound			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200,00	100,00	100,00	200,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	55,00			55,00			30,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
	125	2451	996	31	1548	23	27	36	30	137	25	37
Base Volume Input [veh/h]	125	2451	996	31	1548	23	27	36	30	137	25	37
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	2451	996	31	1548	23	27	36	30	137	25	37
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	31	613	249	8	387	6	7	9	8	34	6	9
Total Analysis Volume [veh/h]	125	2451	996	31	1548	23	27	36	30	137	25	37
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0,0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	1,0	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0
Split [s]	33	186	0	9	162	0	0	45	0	0	45	0
Vehicle Extension [s]	3,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	36	0	0	10	0	0	36	0
Rest In Walk	No			No				No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	240	240	240	240	240	240	240	240	240	240
L, Total Lost Time per Cycle [s]	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
g_j, Effective Green Time [s]	19	186	186	5	172	172	37	37	37	37
g / C, Green / Cycle	0,08	0,77	0,77	0,02	0,72	0,72	0,16	0,16	0,16	0,16
(v / s_j) Volume / Saturation Flow Rate	0,07	0,92	1,02	0,02	0,42	0,42	0,02	0,04	0,10	0,04
s, saturation flow rate [veh/h]	1781	1870	1697	1781	1870	1860	1340	1731	1335	1692
c, Capacity [veh/h]	140	1446	1312	37	1338	1332	181	270	178	263
d1, Uniform Delay [s]	109,59	27,19	27,19	117,08	16,73	16,76	96,46	88,92	105,65	88,78
k, delay calibration	0,13	0,50	0,50	0,11	0,50	0,50	0,11	0,11	0,16	0,11
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	19,80	93,41	146,49	35,78	1,90	1,92	0,38	0,47	10,06	0,45
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,89	1,19	1,31	0,84	0,59	0,59	0,15	0,24	0,77	0,24
d, Delay for Lane Group [s/veh]	129,39	120,60	173,67	152,86	18,63	18,68	96,84	89,38	115,70	89,23
Lane Group LOS	F	F	F	F	B	B	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	8,49	108,17	117,51	2,30	20,95	20,93	1,57	3,70	8,97	3,41
50th-Percentile Queue Length [ft/m]	212,17	2704,1	2937,6	57,54	523,87	523,23	39,26	92,50	224,21	85,31
95th-Percentile Queue Length [veh/m]	13,26	146,61	169,24	4,14	28,46	28,43	2,83	6,66	13,88	6,14
95th-Percentile Queue Length [ft/m]	331,61	3665,1	4230,9	103,57	711,55	710,80	70,66	166,50	346,99	153,56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	129,39	136,35	173,67	152,86	18,65	18,68	96,84	89,38	89,38	115,70	89,23	89,23
Movement LOS	F	F	F	F	B	B	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	146,51			21,25			91,55			107,46		
Approach LOS	F			C			F			F		F
d_I, Intersection Delay [s/veh]							107,44					
Intersection LOS							F					
Intersection VIC							1,136					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0		9,0		9,0		9,0		9,0	
M_corner, Corner Circulation Area [ft ² /ped]	0,00		0,00		0,00		0,00		0,00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0,00		0,00		0,00		0,00		0,00	
d_p, Pedestrian Delay [s]	0,00		111,17		111,17		111,17		111,17	
I_p.int, Pedestrian LOS Score for Intersection	0,000		3,856		2,073		2,670		2,670	
Crosswalk LOS	F		D		B		B		B	
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000		2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	1517		1317		342		342		342	
d_b, Bicycle Delay [s]	7,01		14,01		82,50		82,50		82,50	
I_b.int, Bicycle LOS Score for Intersection	4,507		2,881		1,713		1,888		1,888	
Bicycle LOS	E		C		A		A		A	

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 8.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.165

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	3	2	31	86	3	0	0	54	2	32	0	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	2	31	86	3	0	0	54	2	32	0	121
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	8	22	1	0	0	14	1	8	0	30
Total Analysis Volume [veh/h]	3	2	31	86	3	0	0	54	2	32	0	121
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	877	653	719	820	925
Degree of Utilization, x	0.04	0.13	0.00	0.07	0.17

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.13	0.45	0.01	0.22	0.59
95th-Percentile Queue Length [ft]	3.21	11.30	0.31	5.49	14.77
Approach Delay [s/veh]	7.28	9.00		7.71	7.66
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	7.99				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type:	Two-way stop	Delay (sec / veh):	0,0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Devlin Rd		Green Island Rd		Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd		Westbound	
Base Volume Input [veh/h]	0	0	0	138	424	0
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	138	424	0
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	0	0	0	35	106	0
Total Analysis Volume [veh/h]	0	0	0	138	424	0
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]		0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,00	0,00	0,00	0,00	0,00	0,00
d_M, Delay for Movement [s/veh]	12,37	10,71	8,17	0,00	0,00	0,00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0,00	0,00	0,00	0,00	0,00	0,00
95th-Percentile Queue Length [ft/ln]	0,00	0,00	0,00	0,00	0,00	0,00
d_A, Approach Delay [s/veh]	11,54		0,00		0,00	
Approach LOS	B		A		A	
d_J, Intersection Delay [s/veh]			0,00			
Intersection LOS			A			



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.331

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	190	11	67	72	40	234
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	11	67	72	40	234
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	17	18	10	59
Total Analysis Volume [veh/h]	190	11	67	72	40	234
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.01	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	14.45	11.95	0.00	0.00	7.56	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.52	1.52	0.00	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	37.94	37.94	0.00	0.00	2.13	2.13
d_A, Approach Delay [s/veh]	14.31		0.00		1.10	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]			5.18			
Intersection LOS			B			



Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 84.3
Level Of Service: F
Volume to Capacity (v/c): 0.959

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
Base Volume Input [veh/h]	19	1800	151	46	3000	10	76	30	96	161	2	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	1800	151	46	3000	10	76	30	96	161	2	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	450	38	12	750	3	19	8	24	40	1	2
Total Analysis Volume [veh/h]	19	1800	151	46	3000	10	76	30	96	161	2	8
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	104
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3.7	5.5	0.0	3.7	5.5	0.0	0.0	4.4	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	52	0	12	49	0	0	43	0	0	43	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.7	4.5	0.0	2.7	4.5	0.0	0.0	3.4	0.0	0.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	107	107	107	107	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,60	4,60	2,70	4,60	4,60	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	2	73	73	4	70	70	16	16	16	16
g / C, Green / Cycle	0,02	0,68	0,68	0,04	0,65	0,65	0,15	0,15	0,15	0,15
(v / s)_j Volume / Saturation Flow Rate	0,01	0,52	0,54	0,03	0,80	0,81	0,05	0,08	0,13	0,01
s, saturation flow rate [veh/h]	1781	1870	1820	1781	1870	1868	1405	1648	1264	1639
c, Capacity [veh/h]	29	1270	1236	74	1222	1221	244	247	144	245
d1, Uniform Delay [s]	52,33	11,51	11,86	50,41	18,53	18,53	43,22	41,88	51,74	38,91
k, delay calibration	0,04	0,27	0,29	0,04	0,50	0,50	0,04	0,04	0,23	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	9,36	2,47	3,04	3,10	111,51	112,13	0,27	0,61	85,09	0,02
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,66	0,77	0,79	0,62	1,23	1,23	0,31	0,51	1,12	0,04
d, Delay for Lane Group [s/veh]	61,69	13,98	14,90	53,52	130,04	130,66	43,49	42,49	136,83	38,94
Lane Group LOS	E	B	B	D	F	F	D	D	F	D
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	0,56	12,11	12,63	1,22	59,98	60,13	1,87	3,10	7,16	0,22
50th-Percentile Queue Length [ft/m]	13,97	302,85	315,80	30,48	1499,6	1503,1	46,87	77,43	178,90	5,45
95th-Percentile Queue Length [veh/m]	1,01	17,82	18,46	2,19	85,74	85,99	3,37	5,58	12,07	0,39
95th-Percentile Queue Length [ft/m]	25,15	445,55	461,53	54,86	2143,5	2149,8	84,36	139,38	301,86	9,81

Movement, Approach, & Intersection Results

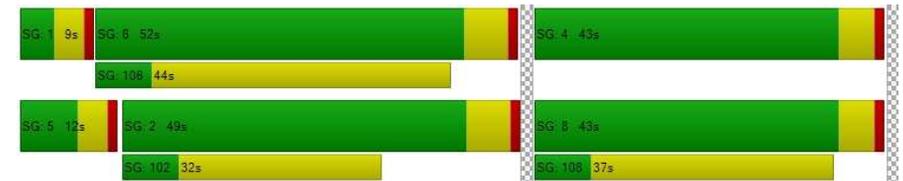
d_M, Delay for Movement [s/veh]	61,69	14,40	14,90	53,52	130,35	130,66	43,49	42,49	42,49	136,83	38,94	38,94
Movement LOS	E	B	B	D	F	F	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	14,90			129,19				42,86			131,11	
Approach LOS	B			F				D			F	
d_I, Intersection Delay [s/veh]	84,32											
Intersection LOS	F											
Intersection VIC	0,959											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	41,58	41,58	41,58
I_p,int, Pedestrian LOS Score for Intersection	0,000	4,181	2,023	2,163
Crosswalk LOS	F	D	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	875	817	723	723
d_b, Bicycle Delay [s]	16,45	18,18	21,20	21,20
I_b,int, Bicycle LOS Score for Intersection	3,185	4,081	1,893	1,842
Bicycle LOS	C	D	A	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 8.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.118

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	0	0	11	83	0	0	2	16	0	5	2	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	11	83	0	0	2	16	0	5	2	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	3	21	0	0	1	4	0	1	1	3
Total Analysis Volume [veh/h]	0	0	11	83	0	0	2	16	0	5	2	13
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	996	703	779	853	933
Degree of Utilization, x	0.01	0.12	0.00	0.02	0.02

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0,03	0,40	0,00	0,06	0,07
95th-Percentile Queue Length [ft]	0,84	9,99	0,00	1,62	1,64
Approach Delay [s/veh]	6,65	8,51		7,31	6,94
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	7,95				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 0,0
 Level Of Service: A
 Volume to Capacity (v/c): 0,005

Intersection Setup

Name	Devlin Rd		Green Island Rd			
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd			
Base Volume Input [veh/h]	0	0	0	453	129	0
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	453	129	0
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	0	0	0	113	32	0
Total Analysis Volume [veh/h]	0	0	0	453	129	0
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,00	0,00	0,00	0,00	0,00	0,00
d_M, Delay for Movement [s/veh]	12,58	8,91	7,47	0,00	0,00	0,00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0,00	0,00	0,00	0,00	0,00	0,00
95th-Percentile Queue Length [ft/ln]	0,00	0,00	0,00	0,00	0,00	0,00
d_A, Approach Delay [s/veh]	10,74		0,00		0,00	
Approach LOS	B		A		A	
d_J, Intersection Delay [s/veh]			0,00			
Intersection LOS			A			



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.157

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	78	48	265	188	51	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	48	265	188	51	51
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	12	66	47	13	13
Total Analysis Volume [veh/h]	78	48	265	188	51	51
Pedestrian Volume [ped/h]	0	0	0	0	0	0



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.07	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	14.13	12.15	0.00	0.00	8.41	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.87	0.87	0.00	0.00	0.14	0.14
95th-Percentile Queue Length [ft/ln]	21.67	21.67	0.00	0.00	3.62	3.62
d_A, Approach Delay [s/veh]	13.38		0.00		4.20	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]			3.10			
Intersection LOS			B			



Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 34.7
Level Of Service: C
Volume to Capacity (v/c): 0.811

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200,00	100,00	100,00	200,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	55,00			55,00			30,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
Base Volume Input [veh/h]	80	1576	638	20	1014	86	38	23	19	88	16	24
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	1576	638	20	1014	86	38	23	19	88	16	24
Peak Hour Factor	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400	0,9400
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	21	419	170	5	270	23	10	6	5	23	4	6
Total Analysis Volume [veh/h]	85	1677	679	21	1079	91	40	24	20	94	17	26
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0,0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3,7	5,5	0,0	3,7	5,5	0,0	0,0	4,4	0,0	0,0	4,4	0,0
All red [s]	1,0	1,0	0,0	1,0	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0
Split [s]	9	44	0	11	42	0	0	37	0	0	37	0
Vehicle Extension [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No			No			No		
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,7	4,5	0,0	2,7	4,5	0,0	0,0	3,4	0,0	0,0	3,4	0,0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	106	106	106	106	106	106	106	106	106	106
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,50	4,50	2,70	4,50	4,50	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	6	70	70	3	74	74	13	13	13	13
g / C, Green / Cycle	0,06	0,66	0,66	0,03	0,69	0,69	0,13	0,13	0,13	0,13
(v / s_j) Volume / Saturation Flow Rate	0,05	0,63	0,69	0,01	0,32	0,32	0,03	0,03	0,07	0,03
s, saturation flow rate [veh/h]	1781	1870	1697	1781	1870	1819	1363	1731	1362	1690
c, Capacity [veh/h]	107	1230	1116	46	1294	1259	182	218	181	213
d1, Uniform Delay [s]	49,26	16,81	18,17	50,98	7,38	7,39	45,96	41,62	47,91	41,62
k, delay calibration	0,04	0,41	0,49	0,04	0,04	0,04	0,04	0,04	0,04	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	4,96	15,04	42,49	2,58	0,09	0,10	0,22	0,17	0,85	0,17
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,80	0,96	1,06	0,46	0,46	0,46	0,22	0,20	0,52	0,20
d, Delay for Lane Group [s/veh]	54,22	31,85	60,67	53,56	7,47	7,48	46,18	41,79	48,76	41,80
Lane Group LOS	D	C	F	D	A	A	D	D	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	2,27	24,56	33,07	0,56	4,45	4,34	1,01	1,05	2,39	0,98
50th-Percentile Queue Length [ft/m]	56,66	613,88	826,77	13,98	111,18	108,41	25,20	26,13	59,82	24,54
95th-Percentile Queue Length [veh/m]	4,08	32,68	44,54	1,01	7,91	7,75	1,81	1,88	4,31	1,77
95th-Percentile Queue Length [ft/m]	102,00	817,05	1113,3	25,16	197,64	193,79	45,35	47,04	107,67	44,18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54,22	40,43	60,67	53,56	7,48	7,48	46,18	41,79	41,79	48,76	41,80	41,80
Movement LOS	D	D	E	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	46,54		8,29		43,88		46,57					
Approach LOS	D		A		D		D					
d_I, Intersection Delay [s/veh]	34,66											
Intersection LOS	C											
Intersection VIC	0,811											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	34,67	34,67	34,67
I_p,int, Pedestrian LOS Score for Intersection	0,000	3,405	2,030	2,406
Crosswalk LOS	F	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	789	702	702
d_b, Bicycle Delay [s]	15,31	16,50	18,95	18,95
I_b,int, Bicycle LOS Score for Intersection	3,573	2,542	1,698	1,786
Bicycle LOS	D	B	A	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 8.4
Level Of Service: A
Volume to Capacity (v/c): 0.245

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	2	1	46	71	2	0	0	44	1	97	0	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	1	46	71	2	0	0	44	1	97	0	100
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	13	19	1	0	0	12	0	26	0	27
Total Analysis Volume [veh/h]	2	1	50	77	2	0	0	48	1	105	0	109
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	861	635	697	802	872
Degree of Utilization, x	0.06	0.12	0.00	0.06	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.20	0.41	0.01	0.19	0.96
95th-Percentile Queue Length [ft]	4.91	10.28	0.22	4.87	24.10
Approach Delay [s/veh]	7.45	9.12		7.78	8.46
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	8.37				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 12.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.040

Intersection Setup

Name	Devlin Rd		Green Island Rd		Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd		Westbound	
Base Volume Input [veh/h]	21	0	0	114	350	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	0	114	350	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	0	29	88	18
Total Analysis Volume [veh/h]	21	0	0	114	350	71
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]		0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.06	10.72	8.16	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.12	0.12	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.08	3.08	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.06		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]				0.46		
Intersection LOS	B					



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 18,0
 Level Of Service: C
 Volume to Capacity (v/c): 0,501

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	250	9	83	66	33	216
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	9	83	66	33	216
Peak Hour Factor	0,9000	0,9000	0,9000	0,9000	0,9000	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	69	3	23	18	9	60
Total Analysis Volume [veh/h]	278	10	92	73	37	240
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,50	0,01	0,00	0,00	0,03	0,00
d_M, Delay for Movement [s/veh]	17,99	15,41	0,00	0,00	7,62	0,00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2,90	2,90	0,00	0,00	0,08	0,08
95th-Percentile Queue Length [ft/ln]	72,43	72,43	0,00	0,00	2,02	2,02
d_A, Approach Delay [s/veh]	17,90		0,00		1,02	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]			7,45			
Intersection LOS			C			

Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 16.7
Level Of Service: B
Volume to Capacity (v/c): 0.623

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
Base Volume Input [veh/h]	11	1091	89	27	1784	37	123	18	57	95	1	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	1091	89	27	1784	37	123	18	57	95	1	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	287	23	7	469	10	32	5	15	25	0	1
Total Analysis Volume [veh/h]	12	1148	94	28	1878	39	129	19	60	100	1	5
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3.7	5.5	0.0	3.7	5.5	0.0	0.0	4.4	0.0	0.0	4.4	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	44	0	11	42	0	0	37	0	0	37	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No				No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.7	4.5	0.0	2.7	4.5	0.0	0.0	3.4	0.0	0.0	3.4	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	68	68	68	68	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,50	4,50	2,70	4,50	4,50	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	1	38	38	2	36	36	13	13	13	13
g / C, Green / Cycle	0,01	0,56	0,56	0,04	0,53	0,53	0,19	0,19	0,19	0,19
(v / s)_j Volume / Saturation Flow Rate	0,01	0,34	0,34	0,02	0,51	0,52	0,09	0,05	0,08	0,00
s, saturation flow rate [veh/h]	1781	1870	1821	1781	1870	1857	1410	1649	1320	1630
c, Capacity [veh/h]	22	1040	1013	65	994	987	325	309	260	306
d1, Uniform Delay [s]	33,41	10,09	10,10	32,06	15,30	15,41	26,70	23,57	28,68	22,53
k, delay calibration	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	8,05	0,21	0,22	1,65	3,23	3,78	0,29	0,16	0,34	0,01
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,56	0,60	0,61	0,43	0,96	0,97	0,40	0,26	0,38	0,02
d, Delay for Lane Group [s/veh]	41,46	10,30	10,32	33,71	18,53	19,20	26,99	23,73	29,02	22,54
Lane Group LOS	D	B	B	C	B	B	C	C	C	C
Critical Lane Group	No	No	No	Yes	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/m]	0,22	4,19	4,09	0,43	10,37	10,59	1,88	1,05	1,42	0,07
50th-Percentile Queue Length [ft/m]	5,62	104,72	102,34	10,81	259,31	264,69	46,96	26,14	35,40	1,76
95th-Percentile Queue Length [veh/m]	0,40	7,54	7,37	0,78	15,85	15,92	3,38	1,88	2,55	0,13
95th-Percentile Queue Length [ft/m]	10,11	188,49	184,22	19,46	391,36	398,10	84,52	47,05	63,73	3,16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41,46	10,31	10,32	33,71	18,86	19,20	26,99	23,73	23,73	29,02	22,54	22,54
Movement LOS	D	B	B	C	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10,61		19,08		25,75		28,66					
Approach LOS	B		B		C		C					
d_I, Intersection Delay [s/veh]	16,74											
Intersection LOS	B											
Intersection VIC	0,623											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	34,67	34,67	34,67
I_p,int, Pedestrian LOS Score for Intersection	0,000	3,637	2,024	2,073
Crosswalk LOS	F	D	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	789	702	702
d_b, Bicycle Delay [s]	15,31	16,50	18,95	18,95
I_b,int, Bicycle LOS Score for Intersection	2,594	3,164	1,903	1,735
Bicycle LOS	B	C	A	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 7.9
Level Of Service: A
Volume to Capacity (v/c): 0.136

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	0	0	87	68	0	0	1	13	0	35	1	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	87	68	0	0	1	13	0	35	1	10
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	29	23	0	0	0	4	0	12	0	3
Total Analysis Volume [veh/h]	0	0	118	92	0	0	1	18	0	47	1	14
Pedestrian Volume [ped/h]	0			0			0			0		



Intersection Settings

Lanes					
Capacity per Entry Lane [veh/h]	962	679	750	799	807
Degree of Utilization, x	0.12	0.14	0.00	0.02	0.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.47	0.00	0.07	0.25
95th-Percentile Queue Length [ft]	10.45	11.68	0.00	1.83	6.23
Approach Delay [s/veh]	7.27	8.83		7.62	7.83
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	7.91				
Intersection LOS	A				



Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 12.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.121

Intersection Setup

Name	Devlin Rd		Green Island Rd			
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd			
Base Volume Input [veh/h]	65	0	0	374	106	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	0	0	374	106	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	0	94	27	7
Total Analysis Volume [veh/h]	65	0	0	374	106	26
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]		0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.65	9.79	7.48	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.41	0.41	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.29	10.29	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.65		0.00		0.00	
Approach LOS	B		A		A	
d_J, Intersection Delay [s/veh]				1.44		
Intersection LOS	B					



Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	18,8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.299

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	98	39	305	182	42	53
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	39	305	182	42	53
Peak Hour Factor	0,8100	0,8100	0,8100	0,8100	0,8100	0,8100
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	30	12	94	56	13	16
Total Analysis Volume [veh/h]	121	48	377	225	52	65
Pedestrian Volume [ped/h]	0		0		0	



Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,30	0,08	0,00	0,00	0,05	0,00
d_M, Delay for Movement [s/veh]	18,82	16,15	0,00	0,00	8,90	0,00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1,76	1,76	0,00	0,00	0,17	0,17
95th-Percentile Queue Length [ft/ln]	44,02	44,02	0,00	0,00	4,22	4,22
d_A, Approach Delay [s/veh]	18,06		0,00		3,95	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]			3,96			
Intersection LOS			C			



Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 107.0
Level Of Service: F
Volume to Capacity (v/c): 1.138

Intersection Setup

Name	SR 29			Southbound			S Kelly Rd			Westbound		
	Northbound			Eastbound			Westbound			Eastbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200,00	100,00	100,00	200,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	55,00			55,00			30,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
	125	2458	996	31	1571	94	48	36	30	137	25	37
Base Volume Input [veh/h]	125	2458	996	31	1571	94	48	36	30	137	25	37
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	2458	996	31	1571	94	48	36	30	137	25	37
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	31	615	249	8	393	24	12	9	8	34	6	9
Total Analysis Volume [veh/h]	125	2458	996	31	1571	94	48	36	30	137	25	37
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [1/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0,0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	1,0	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0
Split [s]	33	186	0	9	162	0	0	45	0	0	45	0
Vehicle Extension [s]	3,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	31	0	0	36	0	0	10	0	0	36	0
Rest In Walk	No	No		No	No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	240	240	240	240	240	240	240	240	240	240
L, Total Lost Time per Cycle [s]	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
g_j, Effective Green Time [s]	19	186	186	5	172	172	37	37	37	37
g / C, Green / Cycle	0,08	0,77	0,77	0,02	0,72	0,72	0,16	0,16	0,16	0,16
(v / s)_j Volume / Saturation Flow Rate	0,07	0,92	1,02	0,02	0,45	0,45	0,04	0,04	0,10	0,04
s, saturation flow rate [veh/h]	1781	1870	1697	1781	1870	1833	1340	1731	1335	1692
c, Capacity [veh/h]	140	1446	1313	37	1338	1312	181	270	178	263
d1, Uniform Delay [s]	109,59	27,19	27,19	117,08	17,54	17,69	98,03	88,92	105,65	88,78
k, delay calibration	0,13	0,50	0,50	0,11	0,50	0,50	0,11	0,11	0,16	0,11
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	19,80	94,43	147,54	35,78	2,21	2,32	0,78	0,47	10,06	0,45
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,89	1,19	1,32	0,84	0,62	0,63	0,27	0,24	0,77	0,24
d, Delay for Lane Group [s/veh]	129,39	121,62	174,73	152,86	19,75	20,01	98,80	89,38	115,70	89,23
Lane Group LOS	F	F	F	F	B	C	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	8,49	108,58	117,91	2,30	23,38	23,40	2,84	3,70	8,97	3,41
50th-Percentile Queue Length [ft/m]	212,17	2714,4	2947,8	57,54	584,43	585,01	71,04	92,50	224,21	85,31
95th-Percentile Queue Length [veh/m]	13,26	147,35	169,99	4,14	31,31	31,33	5,12	6,66	13,88	6,14
95th-Percentile Queue Length [ft/m]	331,61	3683,8	4249,6	103,57	782,67	783,34	127,88	166,50	346,99	153,56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	129,39	137,42	174,73	152,86	19,87	20,01	98,80	89,38	89,38	115,70	89,23	89,23
Movement LOS	F	F	F	F	B	C	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	147,52			22,31				93,35				107,46
Approach LOS	F			C				F				F
d_I, Intersection Delay [s/veh]							106,99					
Intersection LOS							F					
Intersection VIC							1,138					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0		9,0		9,0					9,0		
M_corner, Corner Circulation Area [ft ² /ped]	0,00		0,00		0,00					0,00		0,00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0,00		0,00		0,00					0,00		0,00
d_p, Pedestrian Delay [s]	0,00				111,17					111,17		111,17
I_p,int, Pedestrian LOS Score for Intersection	0,000				3,930					2,103		2,670
Crosswalk LOS	F				D					B		B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000				2000					2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	1517				1317					342		342
d_b, Bicycle Delay [s]	7,01				14,01					82,50		82,50
I_b,int, Bicycle LOS Score for Intersection	4,512				2,959					1,748		1,888
Bicycle LOS	E				C					A		A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 8.5
Level Of Service: A
Volume to Capacity (v/c): 0.258

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	3	2	52	86	3	0	0	54	2	103	0	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	2	52	86	3	0	0	54	2	103	0	121
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	13	22	1	0	0	14	1	26	0	30
Total Analysis Volume [veh/h]	3	2	52	86	3	0	0	54	2	103	0	121
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	845	630	691	794	968
Degree of Utilization, x	0.07	0.14	0.00	0.07	0.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0,22	0,47	0,01	0,23	1,03
95th-Percentile Queue Length [ft]	5,41	11,77	0,33	5,68	25,79
Approach Delay [s/veh]	7,57	9,27		7,88	8,59
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	8,50				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.045

Intersection Setup

Name	Devlin Rd		Green Island Rd			
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd			
Base Volume Input [veh/h]	21	0	0	138	424	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	0	0	138	424	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	0	35	106	18
Total Analysis Volume [veh/h]	21	0	0	138	424	71
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.10	11.35	8.37	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.14	0.14	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.53	3.53	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.10		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 19,4
 Level Of Service: C
 Volume to Capacity (v/c): 0,531

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12,00	12,00	12,00	12,00	12,00	12,00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	30,00		40,00		40,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	283	11	95	79	40	257
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	283	11	95	79	40	257
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	71	3	24	20	10	64
Total Analysis Volume [veh/h]	283	11	95	79	40	257
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0,53	0,01	0,00	0,00	0,03	0,00
d_M, Delay for Movement [s/veh]	19,40	16,57	0,00	0,00	7,64	0,00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3,23	3,23	0,00	0,00	0,09	0,09
95th-Percentile Queue Length [ft/ln]	80,81	80,81	0,00	0,00	2,20	2,20
d_A, Approach Delay [s/veh]	19,29		0,00		1,03	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]			7,81			
Intersection LOS			C			

Intersection Level Of Service Report
Intersection 1: SR29/South Kelly Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes
Delay (sec / veh): 88.7
Level Of Service: F
Volume to Capacity (v/c): 0.973

Intersection Setup

Name	SR 29						S Kelly Rd					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	200,00	100,00	100,00	200,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
Speed [mph]	55,00			55,00			30,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	SR 29						S Kelly Rd					
Base Volume Input [veh/h]	19	1827	151	46	3011	41	154	30	96	161	2	8
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
Growth Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	1827	151	46	3011	41	154	30	96	161	2	8
Peak Hour Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	5	457	38	12	753	10	39	8	24	40	1	2
Total Analysis Volume [veh/h]	19	1827	151	46	3011	41	154	30	96	161	2	8
Presence of On-Street Parking	No	No	No	No	No	No						
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	104
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0,0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis							
Signal Group	1	6	0	5	2	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	11	0	6	11	0	0	13	0	0	13	0
Maximum Green [s]	10	70	0	16	70	0	0	16	0	0	16	0
Amber [s]	3,7	5,5	0,0	3,7	5,5	0,0	0,0	4,4	0,0	0,0	4,4	0,0
All red [s]	1,0	1,0	0,0	1,0	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0
Split [s]	9	52	0	12	49	0	0	43	0	0	43	0
Vehicle Extension [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	37	0	0	25	0	0	0	0	0	30	0
Rest In Walk	No			No				No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,7	4,5	0,0	2,7	4,5	0,0	0,0	3,4	0,0	0,0	3,4	0,0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [ft]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	107	107	107	107	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	4,70	6,50	6,50	4,70	6,50	6,50	5,40	5,40	5,40	5,40
I1_p, Permitted Start-Up Lost Time [s]	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	2,00	0,00
I2, Clearance Lost Time [s]	2,70	4,50	4,50	2,70	4,50	4,50	3,40	3,40	3,40	3,40
g_j, Effective Green Time [s]	2	73	73	4	70	70	16	16	16	16
g / C, Green / Cycle	0,02	0,68	0,68	0,04	0,65	0,65	0,15	0,15	0,15	0,15
(v / s)_j Volume / Saturation Flow Rate	0,01	0,53	0,54	0,03	0,82	0,82	0,11	0,08	0,13	0,01
s, saturation flow rate [veh/h]	1781	1870	1821	1781	1870	1861	1405	1648	1264	1639
c, Capacity [veh/h]	29	1270	1237	74	1222	1216	244	247	144	245
d1, Uniform Delay [s]	52,33	11,69	12,05	50,41	18,53	18,53	45,91	41,88	51,74	38,91
k, delay calibration	0,04	0,28	0,30	0,04	0,50	0,50	0,14	0,04	0,23	0,04
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	9,36	2,71	3,33	3,10	118,88	121,46	3,38	0,61	85,09	0,02
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,66	0,78	0,80	0,62	1,25	1,25	0,63	0,51	1,12	0,04
d, Delay for Lane Group [s/veh]	61,69	14,39	15,38	53,52	137,41	139,99	49,29	42,49	136,83	38,94
Lane Group LOS	E	B	B	D	F	F	D	D	F	D
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/m]	0,56	12,53	13,08	1,22	62,49	63,07	4,23	3,10	7,16	0,22
50th-Percentile Queue Length [ft/m]	13,97	313,20	326,99	30,48	1562,2	1576,6	105,64	77,43	178,90	5,45
95th-Percentile Queue Length [veh/m]	1,01	18,33	19,01	2,19	89,83	90,87	7,60	5,58	12,07	0,39
95th-Percentile Queue Length [ft/m]	25,15	458,32	475,28	54,86	2245,7	2271,6	189,92	139,38	301,86	9,81

Movement, Approach, & Intersection Results

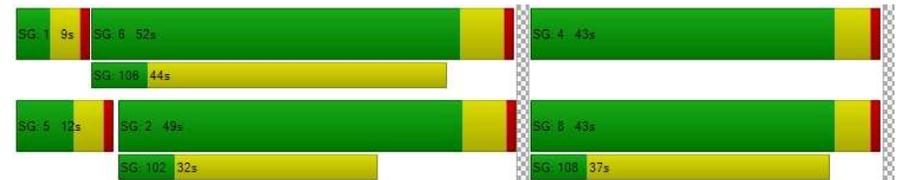
d_M, Delay for Movement [s/veh]	61,69	14,85	15,38	53,52	138,68	139,99	49,29	42,49	42,49	136,83	38,94	38,94
Movement LOS	E	B	B	D	F	F	D	D	D	F	D	D
d_A, Approach Delay [s/veh]	15,33			137,44			46,23			131,11		
Approach LOS	B			F			D			F		
d_I, Intersection Delay [s/veh]	88,67											
Intersection LOS	F											
Intersection VIC	0,973											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	11,0	11,0	11,0
M_corner, Corner Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	41,58	41,58	41,58
I_p,int, Pedestrian LOS Score for Intersection	0,000	4,344	2,058	2,163
Crosswalk LOS	F	E	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	875	817	723	723
d_b, Bicycle Delay [s]	16,45	18,18	21,20	21,20
I_b,int, Bicycle LOS Score for Intersection	3,207	4,115	2,022	1,842
Bicycle LOS	C	D	B	A

Sequence

Ring 1	1	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Devlin Rd/S Kelly Rd

Control Type: All-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 7.8
 Level Of Service: A
 Volume to Capacity (v/c): 0.121

Intersection Setup

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right									
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	130.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	40.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Devlin Rd			Southbound			S Kelly Rd			S Kelly Rd		
Base Volume Input [veh/h]	0	0	89	83	0	0	2	16	0	36	2	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	89	83	0	0	2	16	0	36	2	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	22	21	0	0	1	4	0	9	1	3
Total Analysis Volume [veh/h]	0	0	89	83	0	0	2	16	0	36	2	13
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	973	686	758	815	828
Degree of Utilization, x	0.09	0.12	0.00	0.02	0.06

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0,30	0,41	0,00	0,07	0,20
95th-Percentile Queue Length [ft]	7,53	10,27	0,00	1,69	4,91
Approach Delay [s/veh]	7,07	8,67		7,52	7,63
Approach LOS	A	A		A	A
Intersection Delay [s/veh]	7,77				
Intersection LOS	A				

Intersection Level Of Service Report
Intersection 3: Devlin Rd/Green Island Rd

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes
 Delay (sec / veh): 14.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.139

Intersection Setup

Name	Devlin Rd		Green Island Rd			
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Devlin Rd		Green Island Rd			
Base Volume Input [veh/h]	65	0	0	453	129	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	0	0	453	129	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	0	113	32	7
Total Analysis Volume [veh/h]	65	0	0	453	129	26
Pedestrian Volume [ped/h]	0	0	0	0	0	0

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]		0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.95	10.22	7.53	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.48	0.48	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.01	12.01	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.95		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]			1.35			
Intersection LOS			B			

Intersection Level Of Service Report
Intersection 4: Green Island Rd/Paoli Loop Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.263

Intersection Setup

Name	Paoli Loop Rd				Green Island Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	T		T		T	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Paoli Loop Rd				Green Island Rd	
Base Volume Input [veh/h]	112	48	351	215	51	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	48	351	215	51	62
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	12	88	54	13	16
Total Analysis Volume [veh/h]	112	48	351	215	51	62
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.08	0.00	0.00	0.05	0.00
d_M, Delay for Movement [s/veh]	17.40	14.93	0.00	0.00	8.77	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.50	1.50	0.00	0.00	0.16	0.16
95th-Percentile Queue Length [ft/ln]	37.57	37.57	0.00	0.00	4.00	4.00
d_A, Approach Delay [s/veh]	16.66		0.00		3.96	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]			3.71			
Intersection LOS			C			