Traffic Impact Study for Aviara Apartments

Prepared for the City of Santa Rosa

Submitted by
W-Trans

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Executive Summary

The project as proposed would construct 136 affordable multi-family residential units at 1385 West College Avenue in Santa Rosa, including 84 two-bedroom units and 52 three-bedroom units. The project site would be accessed via two driveways, one on West College Avenue and the other on Kowell Lane. Three existing structures on the site would be demolished as part of the project.

The project is expected to generate an average of 740 new daily trips, including 49 a.m. peak hour trips and 60 p.m. peak hour trips.

Under Existing conditions, all seven study intersections operate at an acceptable Level of Service (LOS) of D or better during both the a.m. and p.m. peak hours and would continue to do so upon the addition of project-generated traffic. Under Future conditions, all intersections are expected to operate acceptably with the exception of the College Avenue/Dutton Avenue intersection, which is expected to be at LOS E during the p.m. peak hour. The project would increase future delays at this intersection by 1.9 seconds, which is not considered a significant impact per the City's criteria. With future improvements at this intersection identified in the 2007 *Downtown Station Area Specific Plan*, the intersection would operate acceptably at LOS D both without and with the project.

With respect to multimodal circulation, the site is served by Santa Rosa CityBus routes and facilities for transit riders are adequate. There are gaps in the sidewalk network in the vicinity of the project, though the project will provide new sidewalks along both of its street frontages and continuous sidewalks will connect the site to nearby transit stops, schools, parks, and retail despite the remaining gaps, which are expected to be eliminated in conjunction with future development. Bicycle facilities are available in the project area, with bike lanes on West College Avenue to the west of the project site. The segment of College Avenue to the east of the project has been identified in the City's bike plan for future study to determine the feasibility of constructing bicycle facilities; sufficient width exists along the project's West College Avenue frontage to implement an extension of bike lanes to the east should the City decide to proceed with such a project in the future.

Sight distances along West College Avenue and Kowell Lane are adequate from the proposed project's driveways, a two-way left-turn lane on West College Avenue serves both Kowell Lane and the project driveway, and access is expected to be adequate.

The proposed project would provide 174 parking spaces, which is more than the 136 spaces required under the Santa Rosa Municipal Code. All units will have a balcony or patio with closet that can accommodate bicycle parking.

Introduction

This report presents an analysis of the potential traffic impacts that would be associated with development of 136 affordable multifamily apartment units at 1385 West College Avenue in the City of Santa Rosa. The traffic study was completed in accordance with the criteria established by the City of Santa Rosa, reflects a scope of work reviewed and approved by City staff, and is consistent with standard traffic engineering techniques. The *Traffic Impact Study for the West College Avenue Apartments*, W-Trans, 2020 was prepared for a previously approved 117-unit apartment development at the project site. This report reflects an update to the 2020 study.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated 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 existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The project as proposed would result in the construction of 136 affordable multifamily apartment units at 1385 West College Avenue. The site is currently in use as an orchard. The project site would be accessed by an existing driveway on West College Avenue and a new driveway on Kowell Lane. Three existing structures on the site would be demolished. The location of the project site is shown in Figure 1.

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Traffic Impact Study for the Aviara Apartments

Figure 1 – Study Area and Existing Lane Configurations

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Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. West College Avenue/Stony Point Road-Marlow Road
2. West College Avenue/Kowell Lane
3. West College Avenue/Clover Drive
4. College Avenue/Dutton Avenue
5. College Avenue/Cleveland Avenue
6. College Avenue/US 101 South Ramps
7. College Avenue/US 101 North Ramps

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

Study Intersections

West College Avenue/Stony Point Road-Marlow Road is a four-legged signalized intersection including crosswalks and bike lanes as well as protected left-turn phasing and pedestrian phasing on all legs.

West College Avenue/Kowell Lane is a three-legged unsignalized intersection with a marked crosswalk with a rapid rectangular flashing beacon (RRFB) on the west leg and stop controls on Kowell Lane.

West College Avenue/Clover Drive is a four-legged signalized intersection with marked crosswalks on all legs. The signal operates with protected-permitted left-turn phasing on West College Avenue and permitted phasing on Clover Drive.

College Avenue/Dutton Avenue is a four-legged signalized intersection with marked crosswalks and protected left-turn phasing on all legs.

College Avenue/Cleveland Avenue is a four-legged signalized intersection with marked crosswalks on the north, south, and west legs. All four legs operate with protected left-turn phasing and a right-turn overlap phase is present on the westbound approach.

College Avenue/US 101 South Ramps is a four-legged intersection with marked crosswalks on the north and south legs and bike lanes on College Avenue. The westbound approach has protected left-turn phasing onto the US 101 South on-ramp.

College Avenue/US 101 North Ramps is a four-legged intersection with marked crosswalks on the north and south legs and bike lanes on College Avenue. The eastbound approach has protected left-turn phasing onto the US 101 North on-ramp.

College Avenue runs under an adaptive signal timing system in the study area between US 101 and Dutton Avenue. The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadways

West College Avenue is an east-west arterial approximately 60 feet in width. The roadway is generally characterized by four eleven-foot wide travel lanes including two in each direction, together with a center two-way left-turn lane. Class II bike lanes extend to the west of the project site including along the western portion of the site itself. The roadway has a posted speed limit of 40 miles per hour. College Avenue runs on adaptive signal timing from Dutton Avenue to the east, with a maximum cycle length of 120 seconds.

Stony Point Road-Marlow Road is a north-south arterial with an approximate 76-foot width in the project vicinity that includes four travel lanes as well as a center median or a two-way left-turn lane in some locations. The roadway has thirteen-foot travel lanes, Class II bike lanes, and a posted speed limit of 40 miles per hour. Adaptive signal coordination is used on the corridor with a maximum cycle length of 140 seconds.

Kowell Lane is a north-south local street approximately 36 feet wide with on-street parking only along a short segment in the southbound direction. The street is a cul-de-sac, and the northern portion of the street is privately owned. Sidewalks are present along most of the eastern frontage along the Safeway retail center. It has a speed limit of 25 mph.

Clover Drive is a primarily east-west local street that runs north-south at the intersection with West College Avenue. The roadway has two travel lanes and on-street parking, with no sidewalks. It has a posted speed limit of 25 mph.

Dutton Avenue is a north-south arterial approximately 64 feet wide with four 12-foot travel lanes and a two-way left turn lane. There are bike lanes to the north of West College Avenue and on-street parking south of West College Avenue on the east side of the street. The posted speed limit along Dutton Avenue is 40 mph north of West College Avenue and 35 mph to the south.

Cleveland Avenue is a north-south arterial with different characteristics north and south of College Avenue. South of College Avenue it is approximately 36 feet wide with a 10-foot wide travel lane and on-street parking in the northbound direction, an 18-foot travel lane in the southbound direction near College Avenue, and a posted speed of 30 mph. North of College Avenue, Cleveland Avenue is approximately 50 feet wide with two southbound lanes, one northbound lane, and a two-way left turn lane, with no on-street parking. Lanes are approximately 12 feet wide. The posted speed limit north of College Avenue is 35 mph.

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 April 1, 2015 through March 31, 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 indicated in *2016 Collision Data on California State Highways*, California Department of Transportation (Caltrans). Note that collision rates are not presented for the US 101 freeway ramps at College Avenue, since the SWITRS data coding makes it difficult to determine whether some of the collisions occurred at the College Avenue intersections themselves or on the mainline freeway. Of the five study intersections evaluated, West College Avenue/Stony Point Road-Marlow Road, West College Avenue/Kowell

Lane, and West College/Clover Driver had collision rates below the statewide average for similar facilities. The collision rate calculations are summarized in Table 1 and copies of the spreadsheets are provided in Appendix A.

Table 1 – Collision Rates at the Study Intersections

Study Intersection	Number of Collisions (2015-2020)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. W College Ave/Stony Point Rd-Marlow Rd	15	0.22	0.24
2. W College Ave/Kowell Ln	5	**0.17**	0.08
3. W College Ave/Clover Dr	8	0.22	0.24
4. College Ave/Dutton Ave	24	**0.35**	0.34
5. College Ave/Cleveland Ave	31	**0.45**	0.24

Note: c/mve = collisions per million vehicles entering; **bold text** indicates a collision rate that exceeds the statewide average for similar facilities

The collision rate at West College Avenue/Kowell Lane is above the statewide average. Of the five reported collisions, two were broadside, two were hit object, and one was a rear-end. The two "hit object" collisions were in opposite directions of travel so do not appear to be associated with a common factor. The primary cause for the broadside and hit object collisions were right-of-way violation and improper turning. Only one of the collisions was associated with a right-of-way violation involving left-turns. The primary collision factor for the rear-end collision was identified as unsafe speed. Based on review of the collisions, there does not appear to be a discernible pattern in collision types or existing safety deficiency at the intersection that the proposed project would exacerbate.

The collision rate at College Avenue/Dutton Avenue is slightly above the statewide average. Of the 24 reported collisions, 11 were rear-ends, eight were broadsides, three were sideswipes, one was a head-on, and one was a hit object. More than half of the rear-end collisions had a primary collision factor of unsafe speed, and of the eight broadside collisions, the primary collision factor involved drivers disobeying traffic signals (such as red-light running). There were also six collisions where driving under the influence (DUI) was identified as the primary collision factor. The intersection had an injury rate of 71 percent, which is higher than the statewide average of 42 percent. Increased enforcement at this location could potentially reduce the frequency of collisions involving unsafe speeding and the incidence of DUI. An increased red clearance interval may be appropriate to reduce red-light running.

The collision rate at College Avenue/Cleveland Avenue is also higher than the statewide average. Of the 31 reported collisions, 11 were rear-end collisions, mostly attributed to unsafe speeds, and with more than half occurring on the southbound Cleveland Avenue approach. The remaining collisions included 13 broadsides, four sideswipes, two head-on, and one involving a pedestrian. Ten of the 13 broadside collisions involved drivers disobeying traffic signals. As with the intersection at College Avenue/Dutton Avenue, the prevalence of collisions involving unsafe speed and drivers disobeying traffic signals could potentially be reduced with increased enforcement and/or changes to the red clearance interval.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide adequate access for pedestrians in the vicinity of the proposed project; however,

sidewalk gaps can be found along some of the roadways connecting to 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.

Sidewalks are present along at least one side of West College Avenue in the vicinity of the project. West of the project site, there are continuous sidewalks along the south side of the street, but there are gaps along the north side. East of the project site, sidewalks are continuous only along the north side of the street. There is a marked crosswalk adjacent to the project with a rectangular rapid flashing beacon (RRFB) on the west leg of the West College Avenue/Kowell Lane intersection, and two additional crosswalks provide access to the shopping center east of the project. Generally, curb ramps with detectable warnings are present at intersections. Street lighting is present in the project vicinity along West College Avenue.

On Kowell Lane, sidewalks are provided along most of the Safeway site frontage, although no sidewalks are present along the project frontage. As noted above, there is a marked crosswalk with an RRFB on the west leg of the West College Avenue/Kowell Lane intersection.

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, the Santa Rosa Creek Trail is approximately one mile from the project site. The trail includes access points to arterials and local streets within the project vicinity. Class II bike lanes exist on Marlow Road-Stony Point, Guerneville Road, West College Avenue, and West 9th Street. Bicyclists ride in the roadway and/or on sidewalks along all other streets in the study area. Table 2 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the *City of Santa Rosa Bicycle & Pedestrian Master Plan Update 2018*, City of Santa Rosa, 2018.

Table 2 – Bicycle Facility Summary				
Status **Facility**	**Class**	**Length (miles)**	**Begin Point**	**End Point**
Existing				
Santa Rosa Creek Trail	I	2.14	Willowside Rd	Prince Memorial Greenway
Marlow Rd-Stony Point Rd	II	3.14	Piner Rd	Rose Ave
Guerneville Rd	II	2.31	City Limits	Steele Wy
W College Ave	II	1.45	Fulton Rd	West of Kowell Rd
W 9th St	II	1.10	Stony Pont Rd	Wilson St
Planned				
W College Ave	II	1.61	Link Ln	4th St
Jennings Ave	III	1.30	Gamay St	SMART Trail
Putney Dr/Exeter Dr	III	0.40	W College Ave	Jennings Ave
Clover Dr	III	0.75	Link Ln	Jennings Ave

Source: *City of Santa Rosa Bicycle & Pedestrian Master Plan Update 2018*, City of Santa Rosa, 2018

Transit Facilities

The Santa Rosa CityBus provides fixed route bus service in Santa Rosa. City Bus Route 9 provides loop service to destinations throughout the City and stops on Stony Point Road, Guerneville Road, and West College Avenue. Route 9 operates Monday through Friday with approximately one-half-hour headways between 6:00 a.m. and 8:00 p.m. Saturday service operates with approximately 60-minute headways between 6:45 a.m. and 7:45 p.m.

Route 15 serves stops along Stony Point Road, Marlow Road, and Guerneville Road approximately 0.4 miles from the project site. Route 15 operates Monday through Friday with approximately 60-minute headways between 6:00 a.m. and 8:00 p.m. The route operates with approximately 60-minute headways on weekends as well. On Saturdays the route operates between 8:00 a.m. and 8:30 p.m. while on Sunday's service occurs between the hours of 10:00 a.m. and 5:30 p.m.

Route 19 provides service along Fulton Road, Guerneville Road, and West College Avenue within the project vicinity, terminating near the location of the Fountaingrove Village Shopping Center. The route operates Monday through Friday between 8:00 a.m. and 5:30 p.m. with headways of approximately 60 minutes.

Two bicycles can be carried on most Santa Rosa CityBus vehicles. Bike rack space is available on a first come, first served basis. Additional bicycles are allowed on transit vehicles at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Santa Rosa CityBus Paratransit is designed to serve the needs of individuals with disabilities within Santa Rosa and the greater 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), Transportation Research Board, 2010. 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 West College Avenue/Kowell Lane intersection has side-street stop controls and was analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The remaining intersections are controlled by traffic signals and were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using signal timing obtained from the City of Santa Rosa. For those signals operating under an adaptive coordination scheme, delays were calculated using optimized signal timing as the phasing splits vary depending on the demand encountered on the corridor and at the intersection. The current maximum cycle lengths for signals operating under adaptive timing were maintained in all scenarios.

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

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

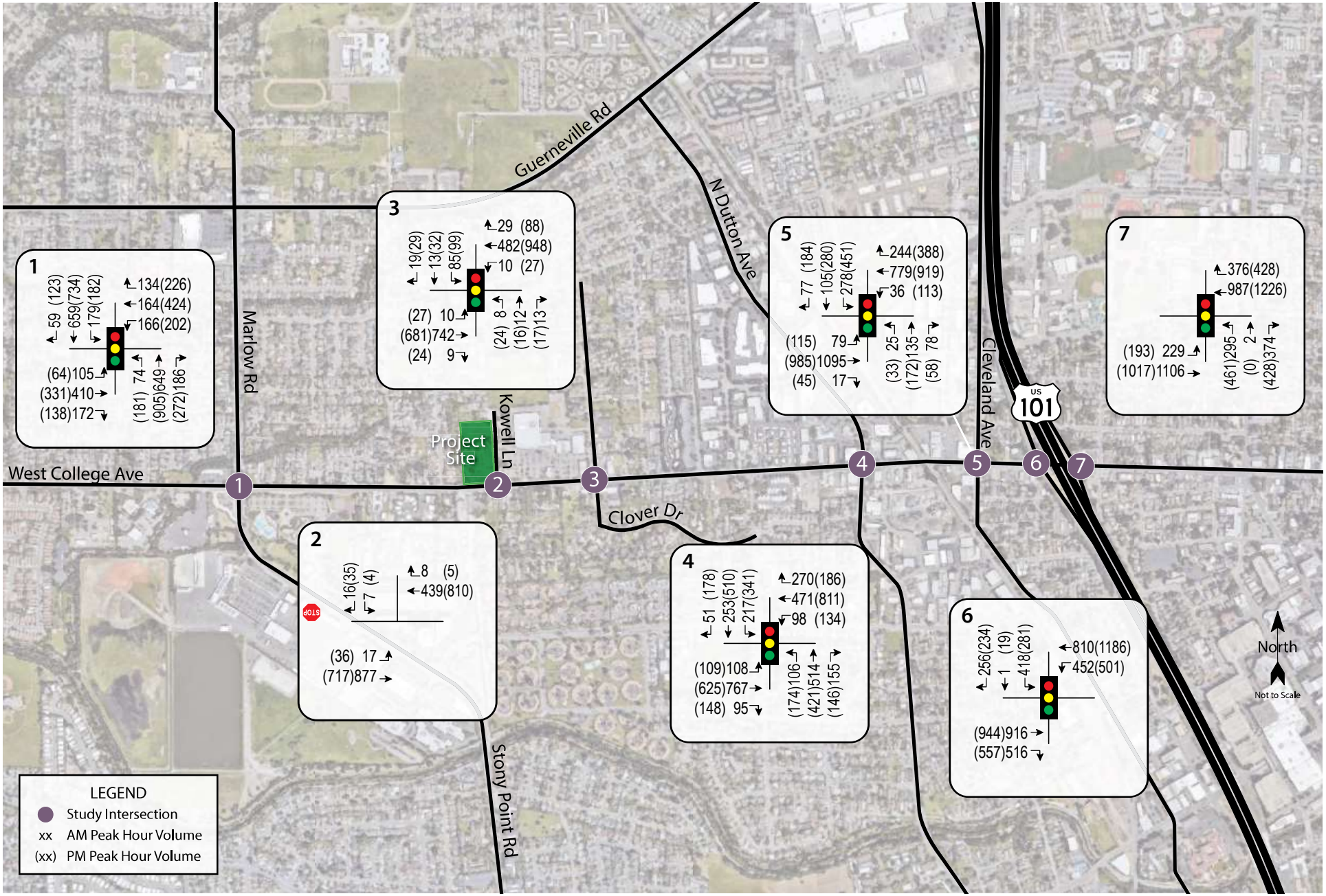
Traffic Operation Standards

City of Santa Rosa

The City of Santa Rosa's adopted Level of Service (LOS) Standard is contained in *Santa Rosa General Plan 2035*. Policy TD-1 states that the City will try to maintain LOS D or better along all major corridors. Exceptions to meeting this standard are allowed where attainment would result in significant environmental degradation; where topography or environmental impacts make the improvement impossible; or where attainment would ensure loss of an area's unique character. Policy TD-2 calls for monitoring level of service at intersections. The City's *Traffic Operational Analysis Guidelines*, July 2019, indicate that a project would have a significant intersection impact if it causes the LOS to degrade from LOS D or better to LOS E or F, or the project causes an intersection already operating at LOS E or F to incur increased average vehicle delays of greater than five seconds.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected at the signalized study intersections along College Avenue in May 2018, and at the West College Avenue/Kowell Lane intersection in October 2019 while local schools were in session. Given the reductions in traffic volumes occurring as a result of the COVID-19 pandemic, the 2018 and 2019 volumes were conservatively used instead of collecting new counts. Under these existing volumes, which are shown in Figure 2, all the study intersections are operating acceptably, as summarized in Table 4. Copies of the Level of Service calculations are provided in Appendix B.



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Traffic Impact Study for the Aviara Apartments

Figure 2 – Existing Traffic Volumes

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Table 4 – Existing Peak Hour Intersection Levels of Service					
Study Intersection *Approach*		**AM Peak**		**PM Peak**	
		Delay	**LOS**	**Delay**	**LOS**
1.	W College Ave/Stony Point Rd-Marlow Rd	50.2	D	49.2	D
2.	W College Ave/Kowell Ln	0.3	A	0.6	A
	Southbound Approach	*11.7*	*B*	*13.3*	*B*
3.	W College Ave/Clover Dr	7.2	A	8.0	A
4.	College Ave/Dutton Ave	43.9	D	52.0	D
5.	College Ave/Cleveland Ave	26.8	C	35.7	D
6.	College Ave/US 101 South Ramps	20.5	C	14.6	B
7.	College Ave/US 101 North Ramps	13.3	B	22.5	C

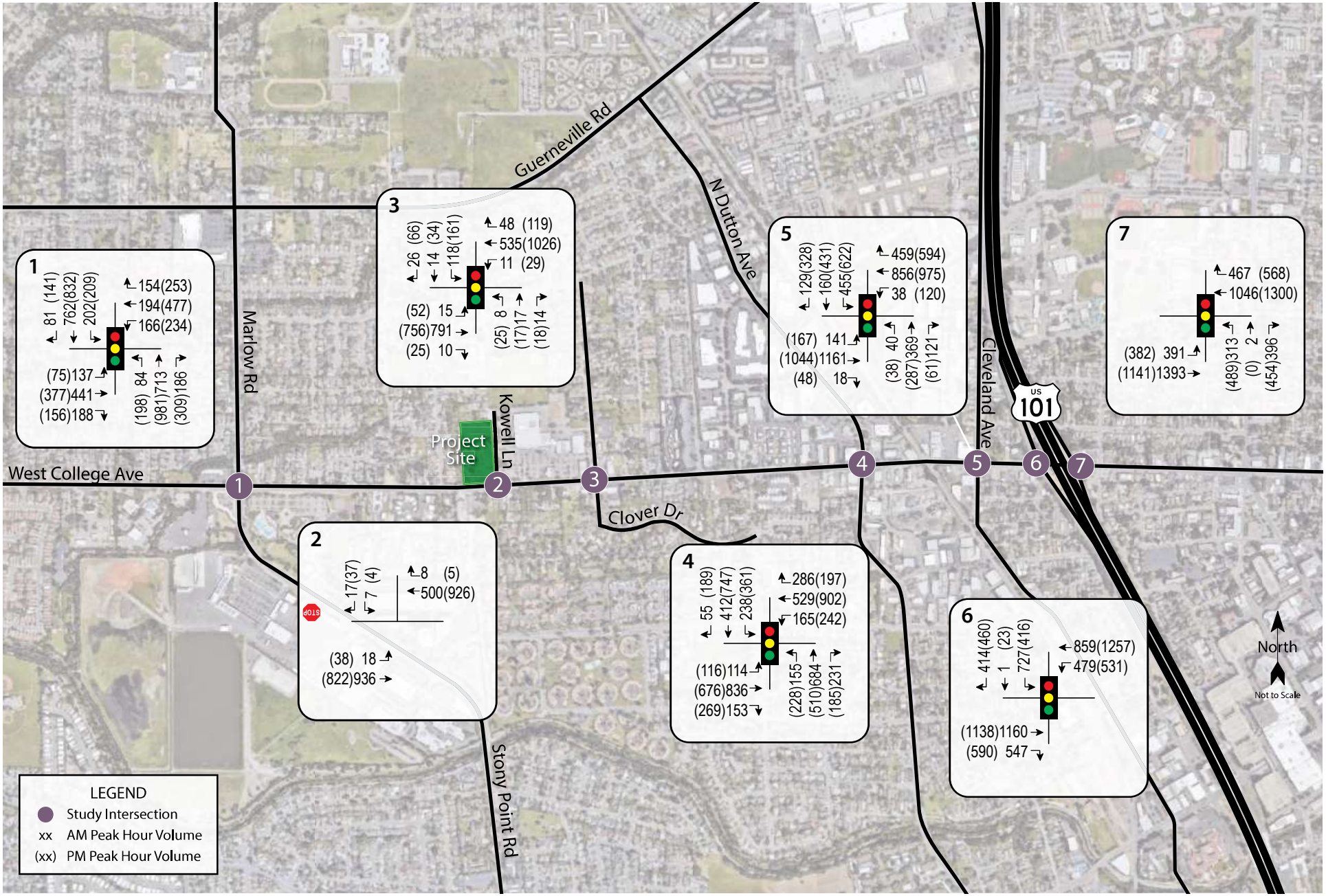
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Future Conditions

Segment volumes for the horizon year of 2040 were obtained from the countywide travel demand model, which is maintained by the Sonoma County Transportation Authority (SCTA) and translated to turning movement volumes at each of the study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turn movement data, existing link volumes and future link volumes to project likely turning future movement volumes at intersections.

Under the anticipated Future volumes, six of the seven study intersections are expected to operate acceptably. The intersection at College Avenue/Dutton Avenue is projected to operate unacceptably at LOS E during the p.m. peak hour. This condition is consistent with the findings of the 2007 *Downtown Station Area Specific Plan Program EIR*, and the related *Downtown Station Area Specific Plan*, 2007, both of which identify the need for a future northbound right-turn lane with accompanying overlap signal phase at the intersection to improve operation.

Future volumes are shown in Figure 3 and operating conditions are summarized in Table 5.



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Traffic Impact Study for the Aviara Apartments

Figure 3 – Future Traffic Volumes

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Table 5 – Future Peak Hour Intersection Levels of Service					
Study Intersection *Approach*		**AM Peak**		**PM Peak**	
		Delay	**LOS**	**Delay**	**LOS**
1.	W College Ave/Stony Point Rd-Marlow Rd	52.1	D	52.3	D
2.	W College Ave/Kowell Ln	0.3	A	0.5	A
	Southbound Approach	*11.9*	*B*	*13.3*	*B*
3.	W College Ave/Clover Dr	7.5	A	9.1	A
4.	College Ave/Dutton Ave	52.0	D	**66.1**	**E**
5.	College Ave/Cleveland Ave	48.3	D	51.4	D
6.	College Ave/US 101 South Ramps	20.5	C	19.1	B
7.	College Ave/US 101 North Ramps	18.7	B	25.7	C

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*; **Bold** values do not meet LOS standard

Project Description

The project as proposed would result in the construction of 136 affordable multifamily apartment units on the site previously occupied by an orchard and a residential building. The project includes 84 two-bedroom units and 52 three-bedroom units. The project would be accessed via new driveways on West College Avenue and on Kowell Lane. The proposed project site plan is shown in Figure 4.

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 "Multi-Family Housing (Mid-Rise)", Land Use 221. This category was chosen to reflect the proposal that the buildings would have three floors, which is within the range specified for the "mid-rise" land use category. Since the existing use is as an orchard, no deduction for trips associated with current activities were considered.

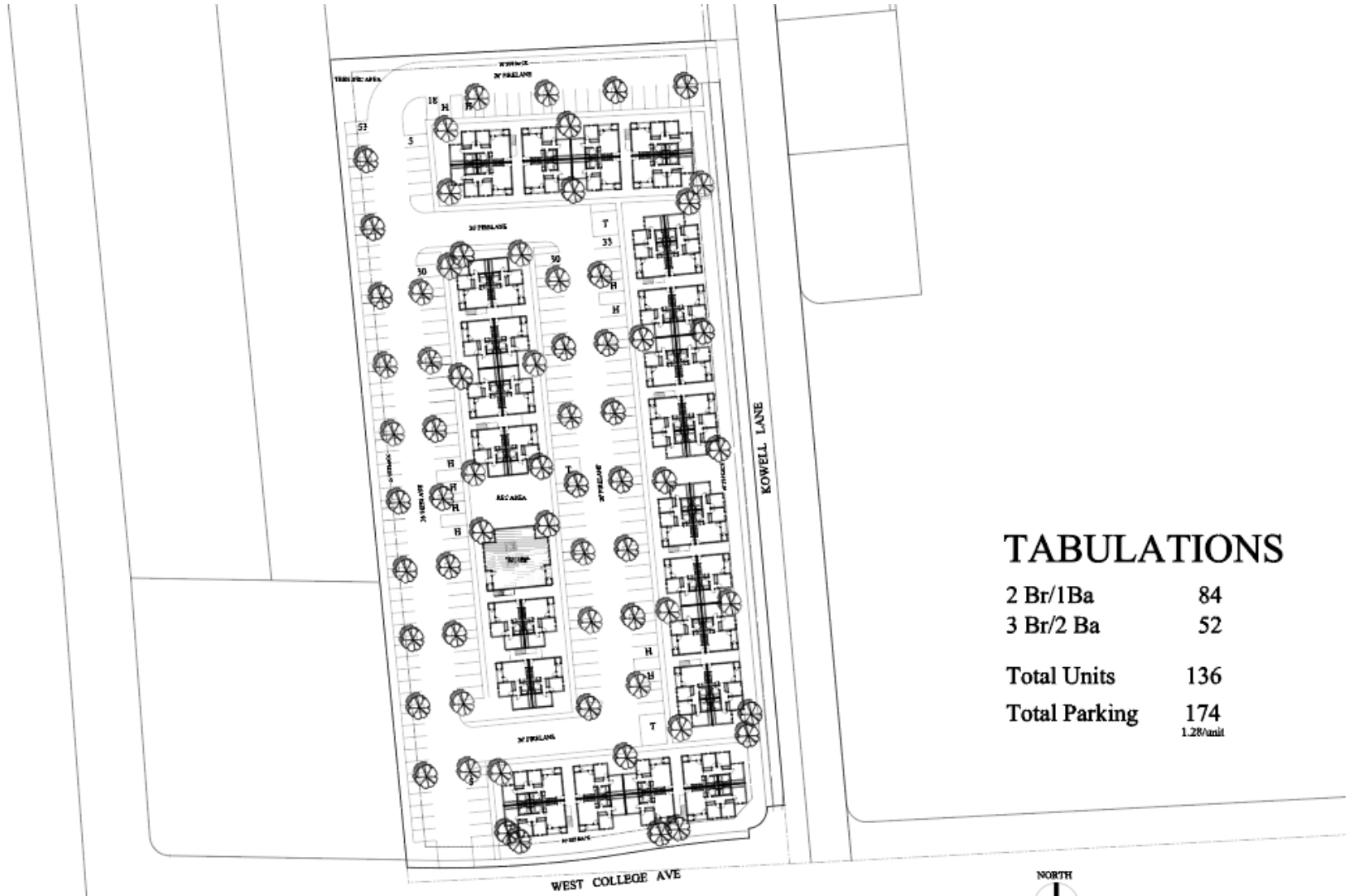
Based on application of these rates, the proposed project is expected to generate an average of 740 trips per day, including 49 a.m. peak hour trips and 60 trips during the p.m. peak hour. These results are summarized in Table 6.

Table 6 – Trip Generation Summary											
Land Use	**Units**	**Daily**		**AM Peak Hour**				**PM Peak Hour**			
		Rate	**Trips**	**Rate**	**Trips**	**In**	**Out**	**Rate**	**Trips**	**In**	**Out**
Multi-Family Housing	136 du	5.44	740	0.36	49	13	36	0.44	60	37	23

Note: du = dwelling unit

Trip Distribution

The pattern used to allocate new project trips to the street network was determined in consideration of journey to work data included in the 2010 census, familiarity of the study area including nearby attractors, and review of existing traffic patterns in the vicinity. The applied distribution assumptions and resulting trips are shown in Table 7.



Source: McKinley Associates, inc 5/21

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Figure 4 – Site Plan

Table 7 – Trip Distribution Assumptions				
Route	**Percent**	**Daily Trips**	**AM Trips**	**PM Trips**
US 101 South	22%	163	11	13
US 101 North	16%	118	8	10
Stony Point Rd (south of College Ave)	12%	89	6	7
Cleveland Ave (south of College Ave)	12%	89	6	7
Cleveland Ave (north of College Ave)	8%	59	4	5
College Ave (west of Marlow Rd)	8%	59	4	5
Marlow Rd (north of College Ave)	8%	59	4	5
Dutton Ave (south of College Ave)	6%	44	3	4
Dutton Ave (north of College Ave)	4%	30	2	2
College Ave (east of US 101)	4%	30	2	2
TOTAL	**100%**	**740**	**49**	**60**

Vehicles Miles Traveled

Senate Bill (SB) 743 established a change in the metric for determining transportation impacts associated with development projects under the California Environmental Quality Act (CEQA). Rather than the delay-based criteria associated with a Level of Service (LOS) analysis, the change in Vehicle Miles Traveled (VMT) as a result of a project is now the basis for determining transportation and traffic impacts. In establishing its thresholds of significance for VMT analysis, the City relied upon 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. The City's standards are outlined in the *Vehicle Miles Traveled Guidelines Final Draft*, June 2020. With respect to assessing VMT for residential projects, the final draft guidelines indicate that projects generating VMT per capita that is 15 or more percent below the countywide average are presumed to have a less-than-significant transportation impact.

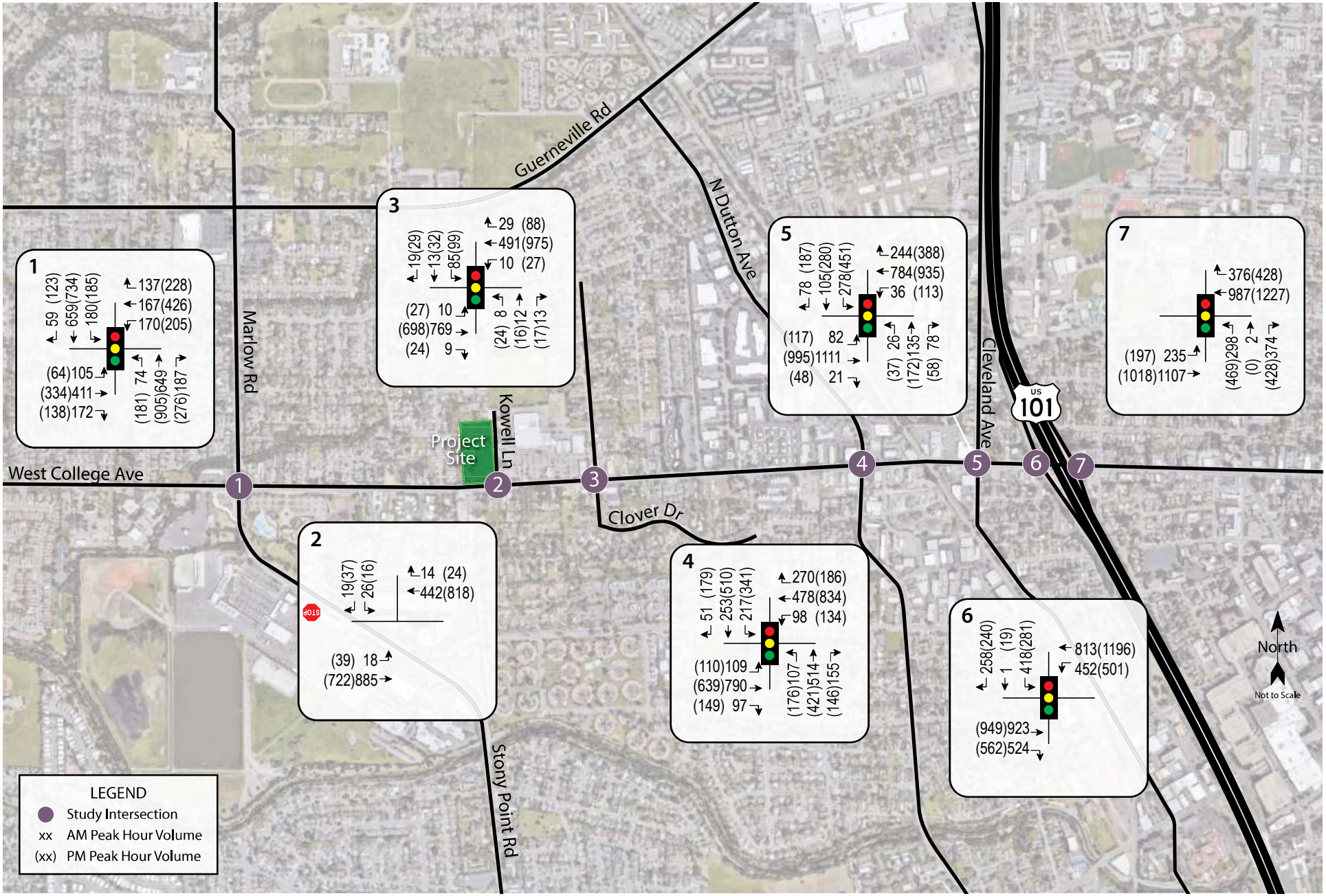
Based on data from the version of the Sonoma County Transportation Authority (SCTA) travel demand model released in October 2020, the County of Sonoma has a baseline average residential VMT of 16.53 miles per capita. A residential project generating a VMT that is 15 percent or more below this value, or 14.05 miles per capita or less, would have a less-than-significant VMT impact. The SCTA model includes traffic analysis zones (TAZ) covering geographic areas throughout Sonoma County. The project site is located within TAZ 546, which has a baseline VMT per capita of 13.59 miles. Because this per capita VMT ratio is below the significance threshold of 14.05 miles, the project would be considered to have a less-than-significant VMT impact.

The City's VMT guidelines and OPR Technical Advisory also include screening criteria which identify certain types of projects that may be presumed to have a less than significant VMT impact, including developments comprised of 100 percent affordable housing. The proposed Aviara Apartments project would qualify for this screening criteria in addition to falling below the VMT per capita significance threshold.

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the existing volumes, the study intersections are expected to operate acceptably during both the a.m. and p.m. peak hours. Existing plus Project volumes are shown in Figure 5 and these results are summarized in Table 8.



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Traffic Impact Study for the Aviara Apartments

Figure 5 – Existing plus Project Traffic Volumes

Table 8 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection *Approach*		Existing Conditions				Existing plus Project			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	W College Ave/Stony Point Rd-Marlow Rd	50.2	D	50.2	D	50.9	D	49.3	D
2.	W College Ave/Kowell Ln	0.3	A	0.6	A	0.6	A	0.7	A
	Southbound Approach	*11.7*	*B*	*13.3*	*B*	*13.9*	*B*	*16.2*	*C*
3.	W College Ave/Clover Dr	7.2	A	8.0	A	7.2	A	8.0	A
4.	College Ave/Dutton Ave	43.9	D	52.0	D	43.9	D	52.9	D
5.	College Ave/Cleveland Ave	26.8	C	35.7	D	27.0	C	35.8	D
6.	College Ave/US 101 South Ramps	20.5	C	14.6	B	20.5	C	14.7	B
7.	College Ave/US 101 North Ramps	13.3	B	22.5	C	13.4	B	22.6	C

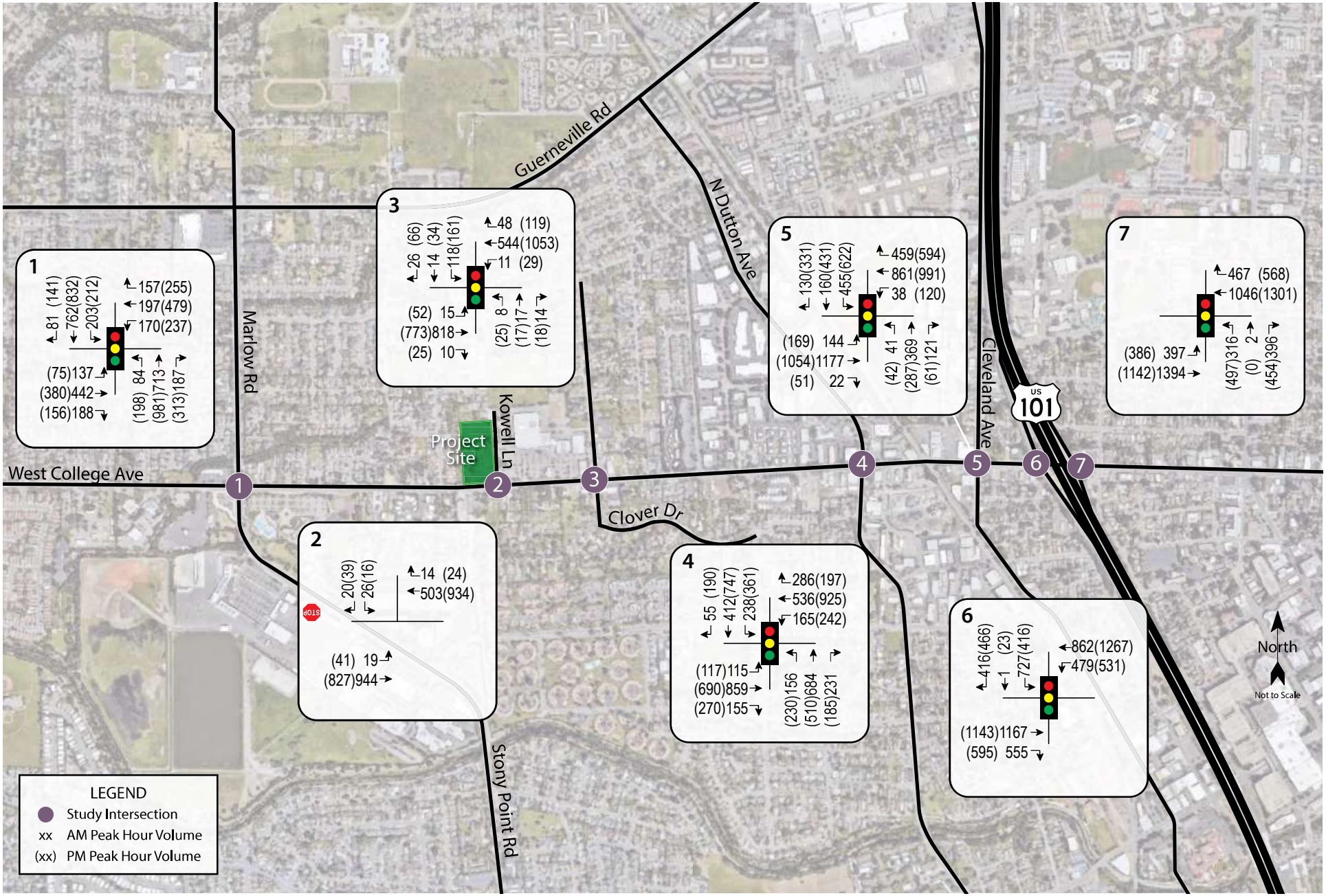
Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Finding – The study intersections are expected to continue operating acceptably at the same overall levels of service upon the addition of project-generated traffic to existing volumes.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes, six of the study intersections are expected to operate acceptably. The intersection at College Avenue/Dutton Avenue would continue to operate at an unacceptable LOS E, with an increase in delay attributable to the proposed project of 1.9 seconds. This is less than the five-second increase in delay established by the City to determine whether an impact is considered significant. Note that with the addition of a northbound right-turn lane and overlap signal phase at the intersection as identified in the 2007 *Downtown Station Area Plan*, the intersection would be expected to operate acceptably at LOS D both with and without the proposed project.

Future plus Project volumes are shown in Figure 6. The Future plus Project operating conditions are summarized in Table 9.



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Traffic Impact Study for the Aviara Apartments

Figure 6 – Future plus Project Traffic Volumes

W-Trans

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.	W College Ave/Stony Point Rd-Marlow Rd	52.1	D	52.3	D	52.8	D	52.8	D
2.	W College Ave/Kowell Ln	0.3	A	0.5	A	0.6	A	0.7	A
	Southbound Approach	*11.9*	*B*	*13.3*	*B*	*14.1*	*B*	*15.9*	*C*
3.	W College Ave/Clover Dr	7.5	A	9.1	A	7.5	A	9.2	A
4.	College Ave/Dutton Ave	52.0	D	**66.1**	**E**	52.7	D	**68.0**	**E**
	With added NB right-turn lane and overlap	41.8	D	53.4	D	41.9	D	54.6	D
5.	College Ave/Cleveland Ave	48.3	D	51.4	D	49.0	D	52.5	D
6.	College Ave/US 101 South Ramps	20.5	C	19.1	B	20.5	C	19.4	B
7.	College Ave/US 101 North Ramps	18.7	B	25.7	C	18.8	B	25.8	C

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*; NB=Northbound; **Bold** values do not meet LOS standard; shaded cells reflect conditions with improvements identified in the 2007 *Downtown Station Area Specific Plan*

Finding – Six of the seven study intersections would continue operating acceptably with project traffic added to Future volumes and at the same Levels of Service as without it. The project would increase average delays at the College Avenue/Dutton Avenue intersection during the p.m. peak hour by 1.9 seconds, with the intersection operating unacceptably at LOS E; this is deemed a less than significant impact under the City's criteria. With future improvements identified in the 2007 *Downtown Station Area Specific Plan*, the intersection would operate acceptably at LOS D both without and with the project.

Alternative Modes

Pedestrian Facilities

Given the proximity of the Safeway and other retail just east of the site; Helen M. Lehman Elementary School north of the site; the Finley Aquatic Center, Community Park, and Finley Community Center west of the site; and bus stops along West College Avenue, it is reasonable to assume that some residents will want to walk and bicycle for trips from and to the proposed residential units.

The project would include new sidewalks along its frontages on West College Avenue and Kowell Lane. West College Avenue has intermittent sidewalks, although there are complete sidewalk connections to the Safeway shopping center, Finley Aquatic Center, Community Park, Community Center, and nearby bus stops. There is a marked crosswalk on the west leg of the West College Avenue/Kowell Lane intersection, with curb ramps and detectable warning at both ends of the crosswalk, and a rectangular rapid flashing beacon (RRFB). There are crosswalks at two entrances to the Safeway shopping center east of the project.

The northern end of Kowell Lane is privately owned, so there is no direct access from the street to Jennings Park or the adjoining elementary school. Residents would still have the ability to access the school and park via existing continuous sidewalks (and those to be constructed as part of the project) on West College Avenue, Manhattan Way, and New York Drive.

Finding – The project would provide new sidewalks along its street frontages and have continuous sidewalk connectivity to nearby destinations including transit stops, the neighboring shopping center, Lehman Elementary School, and nearby parks. Pedestrian facilities are therefore considered to be adequate.

Bicycle Facilities

West College Avenue currently has bike lanes only along the western half of the project frontage. From the point where the bike lanes begin eastward to Morgan Street, West College Avenue has been identified in the City's bike plan as a study segment for future bicycle facilities; the specific type of facility has not yet been identified. While West College Avenue along the project frontage is sufficiently wide to accommodate bike lanes while retaining the same number of vehicle lanes, implementation of future bike lanes to the east of Kowell Lane and the project site would likely require widening on the south side of the street. The project would not preclude implementation of these future facilities should the City proceed in the future.

Existing bicycle facilities, including existing Class II bike lanes west of the site together with shared use of minor streets provide adequate access for bicyclists.

Finding – Bicycle facilities serving the project site are adequate. Bike lanes currently exist on West College Avenue on the western portion of the project frontage, and sufficient width exists along the eastern project frontage for the City to extend bike lanes eastward in the future.

Transit

Existing transit routes are adequate to accommodate project-generated transit trips. Existing bus stops are located within an acceptable walking distance of the project site. The nearest bus stops can be accessed via existing sidewalks, and the RRFB at the West College Avenue/Kowell Lane intersection would assist transit users crossing West College Avenue from the project site.

Finding – Transit facilities serving the project site are adequate.

Access and Circulation

Site Access

Access to the project site is provided by an existing stop-controlled driveway on West College Avenue and a proposed new driveway on Kowell Lane. Both driveways would be approximately 26 feet wide. Driveways of this width would be expected to provide ample space to allow an emergency vehicle to enter and exit the project site safely.

Sight Distance

Sight distance along West College Avenue at project driveway was 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 and uses the approach travel speed as the basis for determining the recommended sight distance.

The stopping sight distance was field measured and applied to the driveway location for evaluation purposes. For a roadway with a design speed of 40 mph, the minimum stopping sight distance is 300 feet. The roadway has a slight curve east of the proposed project driveway, but is generally straight and on-street parking is prohibited. As a result, with the removal of existing vegetation and structures as proposed, sight lines would be clear for over 400 feet and therefore exceed the minimum requirements. In the westbound direction, sight lines would be clear for approximately 300 feet once the existing vegetation is removed in accordance with the site plan. Note that the landscaping plans depict trees set back from driveways by more than 30 feet to preserve sight distance, with 30-foot tree spacing away from driveways as required by zoning code. Tree canopies should still be maintained to provide ample sight distance.

The project will be constructing a driveway on Kowell Lane as well as sidewalk along the project frontage. Kowell Lane is a cul-de-sac that terminates less than 200 feet to the north of the proposed driveway. The street is straight and flat, and sight distance is clear to the end of the street. Given the lack of demand for left-turning vehicles exiting the project driveway and the slow speeds anticipated along the street, sight distance on Kowell Lane is adequate.

Finding – Based on field observations and the site plan, sight distances along West College Avenue and Kowell Lane at the project driveways are adequate.

Recommendation – To maintain a clear line of sight from the project driveways, it is recommended that any landscaping be low-lying or have tree canopies at least seven feet from the height of the roadway.

Access

There is an existing two-way left turn lane along West College Avenue which would accommodate access both at Kowell Lane and the project's driveway. The two-way left-turn lane is anticipated to function as intended, with no major intersections or driveways in proximity to the project access that could create conflicts.

Finding – Access to the site is anticipated to be acceptable.

Parking

The project was analyzed to determine whether the proposed parking supply would be sufficient for the anticipated parking demand. The project site as proposed would provide a total of 174 parking spaces for the 136 units, a ratio of 1.28 parking spaces per unit.

Jurisdiction parking supply requirements are based on the City of Santa Rosa Municipal Code, Chapter 20-36.040; Number of Parking Spaces Required. The municipal code requires affordable multifamily apartment buildings located within the boundary of the North Santa Rosa Station Area to provide parking at a rate of 1.0 spaces per unit. Under the City's code, 136 spaces would be required for the project.

The proposed parking supply exceeds the number of parking spaces required. The proposed parking supply and City of Santa Rosa requirements are shown in Table 10.

Table 10 – Parking Analysis Summary

Land Use	Units	Supply (spaces)	City Requirements	
			Rate	Spaces Required
Affordable multifamily attached residential	136	174	1.0	136

Finding – The proposed parking supply for the 136 residential units exceeds the number of spaces required under the City's code.

Bicycle Parking

The City of Santa Rosa's Municipal Code Section 20-36.040 stipulates the City's bicycle parking requirements for new developments. For properties within the boundaries of the North Santa Rosa Station Area Specific Plan, bicycle parking is required for multifamily residential developments at a ratio of one space per four residential units if the residential units do not have a private garage or private storage space for bicycles. All units in the proposed project would include a patio or balcony including closet where bicycle parking could be accommodated.

Finding – Bicycle storage would be adequate.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate an average of 740 trips per day, including 49 a.m. peak hour trips and 60 p.m. peak hour trips.
- The study intersections operate acceptably overall during both peak hours under existing conditions.
- Under Future volumes, six of the seven study intersections are expected to operate acceptably during the a.m. and p.m. peak hours at LOS D or better. The College Avenue/Dutton Avenue intersection is expected to operate at LOS E during the p.m. peak hour.
- Upon adding project-generated trips to Existing volumes, the study intersections are expected to continue operating acceptably.
- Upon adding project-generated trips to Future volumes, all study intersections are expected to operate acceptably with the exception of the College Avenue/Dutton Avenue intersection, which is expected to continue operating at LOS E during the p.m. peak hour. The project traffic would result in an increase in delay of 1.9 seconds, which is less than five seconds and therefore a less-than-significant impact.
- Access to the project site via transit is adequate given the proximity of transit routes and the availability of pedestrian infrastructure to access transit stops.
- Pedestrian facilities would provide adequate access to the project site with the completion of the sidewalks along West College Avenue and Kowell Lane that would be constructed as part of the project.
- Bicycle access to the site would be adequate. The City's bicycle plan has identified the segment of College Avenue from Kowell Lane to Morgan Street – east of the project site – for study to determine the appropriate bicycle facilities. West College Avenue currently has bike lanes along the western portion of the site frontage and is sufficiently wide along the eastern portion of the project site to accommodate future bike lanes should the City proceed with such a project along the corridor in the future.
- Sight distance at the project driveways would be adequate.
- The parking supply exceeds the minimum number of spaces required under the City's code.
- Bicycle parking requirements would be met by the patio or balcony associated with each unit.

Recommendations

- To maintain a clear line of sight from the project driveways, it is recommended that any landscaping be low-lying or have tree canopies at least seven feet from the height of the roadway.

Study Participants and References

Study Participants

Principal in Charge	Zack Matley, AICP
Senior Planner	Barry Bergman, AICP
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Graphics	Katia Wolfe, Cameron Wong
Editing/Formatting	Alex Scrobonia, Hannah Yung-Boxdell
Quality Control	Dalene J. Whitlock, PE, PTOE

References

2016 Collision Data on California State Highways, California Department of Transportation, 2017
California Manual on Uniform Traffic Control Devices for Streets and Highways, California Department of Transportation, 2014
City of Santa Rosa Bicycle & Pedestrian Master Plan Update 2018, City of Santa Rosa, 2018
Downtown Station Area Specific Plan, Design, Community & Environment, 2007
Downtown Station Area Specific Plan Program EIR, City of Santa Rosa, 2007
Highway Capacity Manual, Transportation Research Board, 2010
Highway Design Manual, 6th Edition, California Department of Transportation, 2017
Santa Rosa CityBus, https://srcity.org/DocumentCenter/View/20514/CityBus-System-Map--LARGE?bidId
Santa Rosa City Code, Quality Code Publishing, 2017
Santa Rosa General Plan 2035, City of Santa Rosa, 2009
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
Traffic Impact Study for the West College Avenue Apartments, W-Trans, 2020
Guidance for the Preparation of Traffic Operational Analysis, City of Santa Rosa, 2019
Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017
Vehicle Miles Traveled (VMT) Guidelines Final Draft, City of Santa Rosa, 2020

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Appendix A

Collision Rate Calculations

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Intersection Collision Rate Worksheet

Traffic Impact Study for 1385 College Avenue Apartments Project

Intersection # 1: West College Ave & Stony Point-Marlow Rd
Date of Count: Thursday, May 10, 2018

Number of Collisions: 15
Number of Injuries: 8
Number of Fatalities: 0
Average Daily Traffic (ADT): 37800
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{15 \times 1{,}000{,}000}{37{,}800 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.22 c/mve**	**0.0%**	**53.3%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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: West College Ave & Kowell Ln
Date of Count: Thursday, October 17, 2019

Number of Collisions: 5
Number of Injuries: 1
Number of Fatalities: 0
Average Daily Traffic (ADT): 16100
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{5 \times 1{,}000{,}000}{16{,}100 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.17 c/mve**	**0.0%**	**20.0%**
Statewide Average*	**0.08 c/mve**	**1.0%**	**45.1%**

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

Traffic Impact Study for 1385 College Avenue Apartments Project

Intersection # 3: West College Ave & Clover Dr
Date of Count: Thursday, May 10, 2018

Number of Collisions: 8
Number of Injuries: 7
Number of Fatalities: 0
Average Daily Traffic (ADT): 20100
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{8 \times 1{,}000{,}000}{20{,}100 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.22 c/mve**	**0.0%**	**87.5%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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 # 4: College Ave & Dutton Ave
Date of Count: Thursday, May 10, 2018

Number of Collisions: 24
Number of Injuries: 15
Number of Fatalities: 0
Average Daily Traffic (ADT): 37800
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{24 \times 1{,}000{,}000}{37{,}800 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.35 c/mve**	**0.0%**	**62.5%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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

Traffic Impact Study for 1385 College Avenue Apartments Project

Intersection # 5: College Ave & Cleveland Ave
Date of Count: Thursday, May 10, 2018

Number of Collisions: 31
Number of Injuries: 18
Number of Fatalities: 0
Average Daily Traffic (ADT): 37400
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{31 \times 1{,}000{,}000}{37{,}400 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.45 c/mve**	**0.0%**	**58.1%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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 # 6: College Ave & US 101 South Ramps
Date of Count: Thursday, May 10, 2018

Number of Collisions: 64
Number of Injuries: 16
Number of Fatalities: 0
Average Daily Traffic (ADT): 37600
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{64 \times 1{,}000{,}000}{37{,}600 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.93 c/mve**	**0.0%**	**25.0%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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

Traffic Impact Study for 1385 College Avenue Apartments Project

Intersection # 7: College Ave & US 101 North Ramps

Date of Count: Thursday, May 10, 2018

Number of Collisions: 65
Number of Injuries: 25
Number of Fatalities: 0
Average Daily Traffic (ADT): 38200
Start Date: April 1, 2015
End Date: March 31, 2020
Number of Years: 5

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

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

$$\text{Collision Rate} = \frac{65 \times 1{,}000{,}000}{38{,}200 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.93 c/mve**	**0.0%**	**38.5%**
Statewide Average*	**0.24 c/mve**	**0.5%**	**44.6%**

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

Intersection Level of Service Calculations

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HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	410	172	166	164	134	74	649	186	179	659	59
Future Volume (veh/h)	105	410	172	166	164	134	74	649	186	179	659	59
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	118	461	174	187	184	136	83	729	209	201	740	59
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	522	195	212	491	341	104	866	566	488	1529	122
Arrive On Green	0.08	0.21	0.21	0.12	0.25	0.25	0.06	0.29	0.24	0.28	0.51	0.46
Sat Flow, veh/h	1774	2499	934	1774	1976	1370	1774	3539	1540	1774	3315	264
Grp Volume(v), veh/h	118	325	310	187	164	156	83	729	209	201	395	404
Grp Sat Flow(s),veh/h/ln	1774	1770	1664	1774	1770	1576	1774	1770	1540	1774	1770	1810
Q Serve(g_s), s	9.2	24.9	25.3	14.5	10.7	11.6	6.5	27.1	5.4	13.0	20.4	20.6
Cycle Q Clear(g_c), s	9.2	24.9	25.3	14.5	10.7	11.6	6.5	27.1	5.4	13.0	20.4	20.6
Prop In Lane	1.00		0.56	1.00		0.87	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	142	370	348	212	440	392	104	866	566	488	816	835
V/C Ratio(X)	0.83	0.88	0.89	0.88	0.37	0.40	0.80	0.84	0.37	0.41	0.48	0.48
Avail Cap(c_a), veh/h	222	413	389	288	479	427	166	1004	626	488	816	835
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	53.7	53.8	60.6	43.5	43.9	65.1	46.9	12.8	41.5	23.6	24.0
Incr Delay (d2), s/veh	14.1	17.8	20.4	20.4	0.5	0.7	13.1	9.7	1.8	0.6	2.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	14.0	13.6	8.3	5.3	5.1	3.6	14.4	3.1	6.4	10.4	10.7
LnGrp Delay(d),s/veh	77.6	71.5	74.2	81.0	44.0	44.5	78.2	56.6	14.7	42.0	25.6	26.0
LnGrp LOS	E	E	E	F	D	D	E	E	B	D	C	C
Approach Vol, veh/h		753			507			1021			1000	
Approach Delay, s/veh		73.5			57.8			49.8			29.1	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.1	34.6	13.5	69.9	16.5	40.1	43.8	39.6
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	22.7	32.7	13.1	50.3	17.5	37.9	23.7	39.7
Max Q Clear Time (g_c+I1), s	16.5	27.3	8.5	22.6	11.2	13.6	15.0	29.1
Green Ext Time (p_c), s	0.3	1.9	0.1	8.2	0.1	2.0	0.3	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	50.2
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	877	439	8	7	16
Future Vol, veh/h	17	877	439	8	7	16
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	974	488	9	8	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	502	0	-	0	1023	254
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	525	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1059	-	-	-	232	745
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	558	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	226	742
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	556	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1055	-	-	-	559
HCM Lane V/C Ratio	0.018	-	-	-	0.046
HCM Control Delay (s)	8.5	-	-	-	11.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	742	9	10	482	29	8	12	13	85	13	19
Future Volume (veh/h)	10	742	9	10	482	29	8	12	13	85	13	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	863	10	12	560	34	9	14	15	99	15	22
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	494	1417	16	397	1338	81	195	212	166	450	74	60
Arrive On Green	0.01	0.40	0.40	0.01	0.40	0.40	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3581	41	1774	3381	205	169	837	656	937	293	237
Grp Volume(v), veh/h	12	426	447	12	293	301	38	0	0	136	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1853	1774	1770	1816	1662	0	0	1467	0	0
Q Serve(g_s), s	0.1	5.6	5.6	0.1	3.5	3.5	0.0	0.0	0.0	1.3	0.0	0.0
Cycle Q Clear(g_c), s	0.1	5.6	5.6	0.1	3.5	3.5	0.5	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.11	0.24		0.39	0.73		0.16
Lane Grp Cap(c), veh/h	494	700	733	397	700	719	573	0	0	584	0	0
V/C Ratio(X)	0.02	0.61	0.61	0.03	0.42	0.42	0.07	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	774	2548	2668	678	2566	2633	1421	0	0	1298	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.4	7.0	7.0	5.7	6.4	6.4	8.3	0.0	0.0	8.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.8	2.9	0.1	1.7	1.8	0.2	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	5.4	7.4	7.3	5.7	6.5	6.5	8.4	0.0	0.0	9.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A			A		
Approach Vol, veh/h		885			606			38			136	
Approach Delay, s/veh		7.3			6.5			8.4			9.0	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.4	15.5		10.4	3.4	15.5		10.4
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.1	7.6		4.1	2.1	5.5		2.5
Green Ext Time (p_c), s	0.0	3.4		0.4	0.0	2.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	767	95	98	471	270	106	514	155	217	253	51
Future Volume (veh/h)	108	767	95	98	471	270	106	514	155	217	253	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	119	843	88	108	518	276	116	565	154	238	278	36
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	1141	119	259	912	485	158	650	177	281	973	125
Arrive On Green	0.09	0.35	0.35	0.15	0.41	0.41	0.09	0.24	0.23	0.16	0.31	0.30
Sat Flow, veh/h	1774	3228	337	1774	2220	1179	1774	2738	744	1774	3149	403
Grp Volume(v), veh/h	119	462	469	108	413	381	116	364	355	238	155	159
Grp Sat Flow(s),veh/h/ln	1774	1770	1796	1774	1770	1630	1774	1770	1712	1774	1770	1782
Q Serve(g_s), s	7.8	27.4	27.4	6.6	21.5	21.7	7.6	23.7	23.9	15.6	8.0	8.1
Cycle Q Clear(g_c), s	7.8	27.4	27.4	6.6	21.5	21.7	7.6	23.7	23.9	15.6	8.0	8.1
Prop In Lane	1.00		0.19	1.00		0.72	1.00		0.43	1.00		0.23
Lane Grp Cap(c), veh/h	161	625	634	259	727	670	158	420	407	281	547	551
V/C Ratio(X)	0.74	0.74	0.74	0.42	0.57	0.57	0.73	0.87	0.87	0.85	0.28	0.29
Avail Cap(c_a), veh/h	192	625	634	259	727	670	242	442	428	355	554	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	34.0	34.0	46.6	27.1	27.3	53.3	43.9	44.1	49.1	31.4	31.5
Incr Delay (d2), s/veh	8.0	4.2	4.1	0.4	3.2	3.5	2.5	16.0	17.0	11.9	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	14.1	14.3	3.3	11.1	10.4	3.8	13.5	13.3	8.6	3.9	4.1
LnGrp Delay(d),s/veh	61.1	38.1	38.1	47.0	30.3	30.8	55.7	59.9	61.1	61.0	31.7	31.8
LnGrp LOS	E	D	D	D	C	C	E	E	E	E	C	C
Approach Vol, veh/h		1050			902			835			552	
Approach Delay, s/veh		40.7			32.5			59.9			44.4	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.8	45.4	13.7	40.1	13.9	52.3	22.3	31.5
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	14.8	* 37	* 15	36.1	* 12	39.5	22.8	* 29
Max Q Clear Time (g_c+I1), s	13.6	29.4	9.6	10.1	9.8	23.7	17.6	25.9
Green Ext Time (p_c), s	0.1	3.1	0.1	1.7	0.0	4.6	0.2	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	1095	17	36	779	244	25	135	78	278	105	77
Future Volume (veh/h)	79	1095	17	36	779	244	25	135	78	278	105	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	86	1190	18	39	847	265	27	147	85	302	114	84
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	1724	26	240	1595	886	57	179	104	405	256	188
Arrive On Green	0.19	0.48	0.48	0.27	0.87	0.87	0.03	0.16	0.16	0.12	0.25	0.24
Sat Flow, veh/h	1774	3567	54	1774	3681	1598	1774	1096	634	3442	1027	757
Grp Volume(v), veh/h	86	590	618	39	847	265	27	0	232	302	0	198
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1840	1598	1774	0	1730	1721	0	1784
Q Serve(g_s), s	5.0	31.0	31.1	2.0	6.8	0.0	1.8	0.0	15.6	10.2	0.0	11.3
Cycle Q Clear(g_c), s	5.0	31.0	31.1	2.0	6.8	0.0	1.8	0.0	15.6	10.2	0.0	11.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.37	1.00		0.42
Lane Grp Cap(c), veh/h	329	855	895	240	1595	886	57	0	283	405	0	444
V/C Ratio(X)	0.26	0.69	0.69	0.16	0.53	0.30	0.47	0.00	0.82	0.75	0.00	0.45
Avail Cap(c_a), veh/h	329	855	895	240	1595	886	92	0	360	516	0	547
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.8	24.0	24.0	38.6	5.0	3.0	57.1	0.0	48.5	51.2	0.0	38.2
Incr Delay (d2), s/veh	0.4	4.5	4.3	0.3	1.2	0.8	5.9	0.0	11.2	4.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	16.2	16.9	1.0	3.3	1.2	1.0	0.0	8.3	5.1	0.0	5.6
LnGrp Delay(d),s/veh	42.3	28.6	28.4	38.9	6.2	3.8	63.0	0.0	59.7	55.6	0.0	38.9
LnGrp LOS	D	C	C	D	A	A	E		E	E		D
Approach Vol, veh/h		1294			1151			259			500	
Approach Delay, s/veh		29.4			6.8			60.1			49.0	
Approach LOS		C			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	61.0	6.9	32.9	25.2	55.0	17.1	22.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	56.5	4.7	35.3	11.5	50.5	16.5	23.5
Max Q Clear Time (g_c+I1), s	4.0	33.1	3.8	13.3	7.0	8.8	12.2	17.6
Green Ext Time (p_c), s	0.0	8.7	0.0	1.1	0.1	8.2	0.4	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	916	516	452	810	0	0	0	0	418	1	256
Future Volume (veh/h)	0	916	516	452	810	0	0	0	0	418	1	256
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1041	586	514	920	0				476	0	291
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2726	832	614	3911	0				777	0	347
Arrive On Green	0.00	0.71	0.71	0.36	1.00	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	5253	1552	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1041	586	514	920	0				476	0	291
Grp Sat Flow(s),veh/h/ln	0	1695	1552	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	9.7	26.1	16.4	0.0	0.0				14.0	0.0	20.3
Cycle Q Clear(g_c), s	0.0	9.7	26.1	16.4	0.0	0.0				14.0	0.0	20.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2726	832	614	3911	0				777	0	347
V/C Ratio(X)	0.00	0.38	0.70	0.84	0.24	0.00				0.61	0.00	0.84
Avail Cap(c_a), veh/h	0	2726	832	889	3911	0				892	0	398
HCM Platoon Ratio	1.00	1.33	1.33	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.75	0.75	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.4	11.7	37.0	0.0	0.0				42.9	0.0	45.4
Incr Delay (d2), s/veh	0.0	0.3	3.8	4.2	0.1	0.0				1.0	0.0	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.6	11.7	8.1	0.0	0.0				7.2	0.0	10.5
LnGrp Delay(d),s/veh	0.0	9.7	15.5	41.2	0.1	0.0				43.9	0.0	58.7
LnGrp LOS		A	B	D	A					D		E
Approach Vol, veh/h		1627			1434						767	
Approach Delay, s/veh		11.8			14.9						49.5	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	67.3		28.3		91.7		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	9.5	49.5		27.5		83.5		
Max Q Clear Time (g_c+I1), s	18.4	28.1		22.3		2.0		
Green Ext Time (p_c), s	1.5	10.2		1.4		7.9		

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	1106	0	0	987	376	295	2	374	0	0	0
Future Volume (veh/h)	229	1106	0	0	987	376	295	2	374	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	252	1215	0	0	1085	413	466	0	260			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1034	2656	0	0	2124	685	736	0	328			
Arrive On Green	0.60	1.00	0.00	0.00	0.85	0.84	0.20	0.00	0.20			
Sat Flow, veh/h	3442	3632	0	0	5269	1611	3690	0	1647			
Grp Volume(v), veh/h	252	1215	0	0	1085	413	466	0	260			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1611	1845	0	1647			
Q Serve(g_s), s	4.1	0.0	0.0	0.0	6.9	9.9	13.9	0.0	18.0			
Cycle Q Clear(g_c), s	4.1	0.0	0.0	0.0	6.9	9.9	13.9	0.0	18.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1034	2656	0	0	2124	685	736	0	328			
V/C Ratio(X)	0.24	0.46	0.00	0.00	0.51	0.60	0.63	0.00	0.79			
Avail Cap(c_a), veh/h	1034	2656	0	0	2124	685	1199	0	535			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.00	0.00	0.55	0.55	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.6	0.0	0.0	0.0	5.7	6.2	44.0	0.0	45.7			
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.5	2.2	0.9	0.0	4.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.9	0.2	0.0	0.0	3.1	4.4	7.1	0.0	8.6			
LnGrp Delay(d),s/veh	17.7	0.5	0.0	0.0	6.2	8.4	44.9	0.0	50.0			
LnGrp LOS	B	A			A	A	D		D			
Approach Vol, veh/h		1467			1498			726				
Approach Delay, s/veh		3.5			6.8			46.7				
Approach LOS		A			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		93.1			39.1	54.0		26.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		73.5			19.5	49.5		37.5
Max Q Clear Time (g_c+I1), s		2.0			6.1	11.9		20.0
Green Ext Time (p_c), s		12.4			0.7	14.1		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	331	138	202	424	226	181	905	272	182	734	123
Future Volume (veh/h)	64	331	138	202	424	226	181	905	272	182	734	123
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	67	345	129	210	442	211	189	943	283	190	765	116
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	394	145	235	559	264	214	1256	764	363	1351	205
Arrive On Green	0.05	0.16	0.16	0.13	0.24	0.24	0.12	0.43	0.36	0.20	0.48	0.44
Sat Flow, veh/h	1774	2523	926	1774	2321	1097	1774	3539	1560	1774	3076	466
Grp Volume(v), veh/h	67	240	234	210	336	317	189	943	283	190	440	441
Grp Sat Flow(s),veh/h/ln	1774	1770	1680	1774	1770	1649	1774	1770	1560	1774	1770	1773
Q Serve(g_s), s	5.2	18.5	19.1	16.3	24.9	25.3	14.7	31.5	6.0	13.4	24.8	25.1
Cycle Q Clear(g_c), s	5.2	18.5	19.1	16.3	24.9	25.3	14.7	31.5	6.0	13.4	24.8	25.1
Prop In Lane	1.00		0.55	1.00		0.67	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	85	276	262	235	426	397	214	1256	764	363	777	778
V/C Ratio(X)	0.79	0.87	0.89	0.89	0.79	0.80	0.88	0.75	0.37	0.52	0.57	0.57
Avail Cap(c_a), veh/h	123	300	284	300	477	444	275	1256	764	363	777	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.9	57.7	57.9	59.7	49.8	49.9	60.6	34.9	8.2	49.6	26.7	27.4
Incr Delay (d2), s/veh	18.7	21.7	26.4	22.8	7.8	9.0	22.7	4.2	1.4	1.4	3.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	10.7	10.8	9.5	13.1	12.5	8.5	16.1	3.4	6.7	12.8	12.9
LnGrp Delay(d),s/veh	84.7	79.3	84.3	82.5	57.6	58.9	83.3	39.1	9.6	50.9	29.7	30.4
LnGrp LOS	F	E	F	F	E	E	F	D	A	D	C	C
Approach Vol, veh/h		541			863			1415			1071	
Approach Delay, s/veh		82.1			64.2			39.1			33.7	
Approach LOS		F			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.9	27.2	22.2	66.8	12.0	39.0	34.0	55.0
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	23.7	23.7	21.7	49.7	9.7	37.7	21.7	49.7
Max Q Clear Time (g_c+I1), s	18.3	21.1	16.7	27.1	7.2	27.3	15.4	33.5
Green Ext Time (p_c), s	0.3	0.8	0.2	8.5	0.0	3.1	0.3	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	49.2
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	717	810	5	4	35
Future Vol, veh/h	36	717	810	5	4	35
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	815	920	6	5	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	931	0	-	0	1418	468
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	731	-	-	-	128	542
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	728	-	-	-	120	540
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	579	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	728	-	-	-	478
HCM Lane V/C Ratio	0.056	-	-	-	0.093
HCM Control Delay (s)	10.2	-	-	-	13.3
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	681	24	27	948	88	24	16	17	99	32	29
Future Volume (veh/h)	27	681	24	27	948	88	24	16	17	99	32	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	28	717	25	28	998	93	25	17	18	104	34	31
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	1550	54	468	1451	135	257	164	118	356	114	68
Arrive On Green	0.03	0.44	0.44	0.03	0.44	0.44	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3484	121	1774	3260	304	454	667	480	774	461	277
Grp Volume(v), veh/h	28	364	378	28	542	549	60	0	0	169	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1835	1774	1770	1795	1601	0	0	1513	0	0
Q Serve(g_s), s	0.3	5.1	5.1	0.3	8.6	8.6	0.0	0.0	0.0	1.9	0.0	0.0
Cycle Q Clear(g_c), s	0.3	5.1	5.1	0.3	8.6	8.6	0.9	0.0	0.0	3.1	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.17	0.42		0.30	0.62		0.18
Lane Grp Cap(c), veh/h	356	787	817	468	787	798	539	0	0	538	0	0
V/C Ratio(X)	0.08	0.46	0.46	0.06	0.69	0.69	0.11	0.00	0.00	0.31	0.00	0.00
Avail Cap(c_a), veh/h	560	2120	2199	672	2136	2166	1155	0	0	1095	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	6.8	6.8	5.4	7.8	7.8	10.3	0.0	0.0	11.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	2.6	0.1	4.1	4.2	0.5	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	6.1	7.0	7.0	5.4	8.2	8.2	10.4	0.0	0.0	11.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B			B		
Approach Vol, veh/h		770			1119			60			169	
Approach Delay, s/veh		6.9			8.1			10.4			11.2	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	19.5		11.6	4.0	19.5		11.6
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.3	7.1		5.1	2.3	10.6		2.9
Green Ext Time (p_c), s	0.0	2.8		0.6	0.0	4.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	625	148	134	811	186	174	421	146	341	510	178
Future Volume (veh/h)	109	625	148	134	811	186	174	421	146	341	510	178
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	115	658	140	141	854	176	183	443	138	359	537	168
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	918	195	233	961	198	210	546	168	384	804	250
Arrive On Green	0.12	0.32	0.32	0.13	0.33	0.33	0.12	0.21	0.21	0.22	0.30	0.30
Sat Flow, veh/h	1774	2894	615	1774	2912	600	1774	2647	817	1774	2643	823
Grp Volume(v), veh/h	115	402	396	141	519	511	183	295	286	359	359	346
Grp Sat Flow(s),veh/h/ln	1774	1770	1739	1774	1770	1742	1774	1770	1694	1774	1770	1697
Q Serve(g_s), s	7.3	24.1	24.1	9.0	33.4	33.4	12.2	19.0	19.4	23.9	21.2	21.4
Cycle Q Clear(g_c), s	7.3	24.1	24.1	9.0	33.4	33.4	12.2	19.0	19.4	23.9	21.2	21.4
Prop In Lane	1.00		0.35	1.00		0.34	1.00		0.48	1.00		0.49
Lane Grp Cap(c), veh/h	207	562	552	233	584	575	210	365	349	384	538	516
V/C Ratio(X)	0.56	0.72	0.72	0.60	0.89	0.89	0.87	0.81	0.82	0.93	0.67	0.67
Avail Cap(c_a), veh/h	207	562	552	235	584	575	262	413	395	411	562	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	36.2	36.2	49.2	38.1	38.1	52.0	45.4	45.5	46.2	36.4	36.5
Incr Delay (d2), s/veh	1.9	4.1	4.2	3.1	18.1	18.3	19.4	10.2	11.6	26.8	2.8	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	12.4	12.2	4.6	19.2	19.0	7.1	10.4	10.2	14.5	10.8	10.4
LnGrp Delay(d),s/veh	52.0	40.3	40.4	52.2	56.2	56.4	71.3	55.6	57.1	73.0	39.3	39.5
LnGrp LOS	D	D	D	D	E	E	E	E	E	E	D	D
Approach Vol, veh/h		913			1171			764			1064	
Approach Delay, s/veh		41.8			55.8			59.9			50.7	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	41.6	18.4	40.0	18.5	43.1	30.2	28.2
Change Period (Y+Rc), s	4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	16	31.9	* 18	37.1	9.2	* 39	* 28	27.0
Max Q Clear Time (g_c+I1), s	11.0	26.1	14.2	23.4	9.3	35.4	25.9	21.4
Green Ext Time (p_c), s	0.1	2.3	0.1	3.5	0.0	1.9	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	52.0
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	985	45	113	919	388	33	172	58	451	280	184
Future Volume (veh/h)	115	985	45	113	919	388	33	172	58	451	280	184
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	119	1015	46	116	947	400	34	177	60	465	289	190
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	1334	60	269	1683	995	43	199	67	552	310	204
Arrive On Green	0.08	0.39	0.40	0.30	0.91	0.91	0.02	0.15	0.16	0.16	0.29	0.30
Sat Flow, veh/h	1774	3442	156	1774	3681	1599	1774	1321	448	3442	1081	710
Grp Volume(v), veh/h	119	522	539	116	947	400	34	0	237	465	0	479
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1840	1599	1774	0	1769	1721	0	1791
Q Serve(g_s), s	7.9	30.7	30.7	6.3	5.4	1.1	2.3	0.0	15.8	15.7	0.0	31.2
Cycle Q Clear(g_c), s	7.9	30.7	30.7	6.3	5.4	1.1	2.3	0.0	15.8	15.7	0.0	31.2
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	145	686	709	269	1683	995	43	0	267	552	0	514
V/C Ratio(X)	0.82	0.76	0.76	0.43	0.56	0.40	0.79	0.00	0.89	0.84	0.00	0.93
Avail Cap(c_a), veh/h	185	686	709	269	1683	995	81	0	302	645	0	560
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.2	31.9	31.9	37.7	3.0	0.5	58.2	0.0	49.8	48.9	0.0	41.5
Incr Delay (d2), s/veh	20.2	7.8	7.6	1.0	1.3	1.1	26.6	0.0	24.2	8.7	0.0	21.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	16.4	16.9	3.2	2.6	0.7	1.4	0.0	9.5	8.2	0.0	18.5
LnGrp Delay(d),s/veh	74.5	39.7	39.4	38.7	4.3	1.6	84.8	0.0	74.0	57.6	0.0	63.3
LnGrp LOS	E	D	D	D	A	A	F		E	E		E
Approach Vol, veh/h		1180			1463			271			944	
Approach Delay, s/veh		43.1			6.3			75.4			60.5	
Approach LOS		D			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	51.0	7.4	38.9	14.3	59.4	23.7	22.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	46.5	5.5	37.5	12.5	46.5	22.5	20.5
Max Q Clear Time (g_c+I1), s	13.3	32.7	4.3	33.2	9.9	7.4	17.7	17.8
Green Ext Time (p_c), s	0.1	5.5	0.0	1.2	0.1	9.8	0.8	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	35.7
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	944	557	501	1186	0	0	0	0	281	19	234
Future Volume (veh/h)	0	944	557	501	1186	0	0	0	0	281	19	234
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	994	586	527	1248	0				310	0	246
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2815	857	595	4040	0				625	0	279
Arrive On Green	0.00	1.00	1.00	0.35	1.00	0.00				0.17	0.00	0.17
Sat Flow, veh/h	0	5253	1549	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	994	586	527	1248	0				310	0	246
Grp Sat Flow(s),veh/h/ln	0	1695	1549	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	0.0	0.0	17.3	0.0	0.0				9.1	0.0	17.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	17.3	0.0	0.0				9.1	0.0	17.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2815	857	595	4040	0				625	0	279
V/C Ratio(X)	0.00	0.35	0.68	0.89	0.31	0.00				0.50	0.00	0.88
Avail Cap(c_a), veh/h	0	2815	857	846	4040	0				723	0	322
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.58	0.58	0.82	0.82	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.1	0.0	0.0				45.2	0.0	48.7
Incr Delay (d2), s/veh	0.0	0.2	2.6	6.9	0.2	0.0				0.6	0.0	21.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.6	8.8	0.1	0.0				4.7	0.0	16.6
LnGrp Delay(d),s/veh	0.0	0.2	2.6	45.0	0.2	0.0				45.8	0.0	70.2
LnGrp LOS		A	A	D	A					D		E
Approach Vol, veh/h		1580			1775						556	
Approach Delay, s/veh		1.1			13.5						56.6	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	25.3	69.9		24.8		95.2		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	20.5	53.5		23.5		87.5		
Max Q Clear Time (g_c+I1), s	19.3	2.0		19.5		2.0		
Green Ext Time (p_c), s	1.4	12.4		0.8		11.8		

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	1017	0	0	1226	428	461	0	428	0	0	0
Future Volume (veh/h)	193	1017	0	0	1226	428	461	0	428	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	199	1048	0	0	1264	441	612	0	294			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	898	2546	0	0	2103	676	790	0	353			
Arrive On Green	0.35	0.96	0.00	0.00	0.56	0.56	0.21	0.00	0.21			
Sat Flow, veh/h	3442	3632	0	0	5269	1605	3690	0	1647			
Grp Volume(v), veh/h	199	1048	0	0	1264	441	612	0	294			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1605	1845	0	1647			
Q Serve(g_s), s	4.9	2.5	0.0	0.0	20.1	22.9	18.8	0.0	20.5			
Cycle Q Clear(g_c), s	4.9	2.5	0.0	0.0	20.1	22.9	18.8	0.0	20.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	898	2546	0	0	2103	676	790	0	353			
V/C Ratio(X)	0.22	0.41	0.00	0.00	0.60	0.65	0.77	0.00	0.83			
Avail Cap(c_a), veh/h	898	2546	0	0	2103	676	1276	0	569			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.93	0.93	0.00	0.00	0.62	0.62	1.00	0.00	1.00			
Uniform Delay (d), s/veh	30.6	0.8	0.0	0.0	19.7	20.3	44.4	0.0	45.1			
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.8	3.1	1.7	0.0	5.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.3	1.2	0.0	0.0	9.4	10.6	9.7	0.0	9.9			
LnGrp Delay(d),s/veh	30.7	1.2	0.0	0.0	20.5	23.4	46.1	0.0	50.9			
LnGrp LOS	C	A			C	C	D		D			
Approach Vol, veh/h		1247			1705			906				
Approach Delay, s/veh		5.9			21.3			47.6				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		89.8			35.8	54.0		30.2
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		69.5			15.5	49.5		41.5
Max Q Clear Time (g_c+I1), s		4.5			6.9	24.9		22.5
Green Ext Time (p_c), s		9.2			0.4	13.2		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	411	172	170	167	137	74	649	187	180	659	59
Future Volume (veh/h)	105	411	172	170	167	137	74	649	187	180	659	59
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	118	462	174	191	188	139	83	729	210	202	740	59
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	523	195	216	496	344	104	843	560	496	1522	121
Arrive On Green	0.08	0.21	0.21	0.12	0.25	0.25	0.06	0.29	0.24	0.28	0.51	0.46
Sat Flow, veh/h	1774	2500	933	1774	1974	1371	1774	3539	1539	1774	3315	264
Grp Volume(v), veh/h	118	326	310	191	167	160	83	729	210	202	395	404
Grp Sat Flow(s),veh/h/ln	1774	1770	1664	1774	1770	1576	1774	1770	1539	1774	1770	1810
Q Serve(g_s), s	9.2	25.0	25.4	14.8	10.9	11.8	6.5	27.4	5.5	13.0	20.5	20.7
Cycle Q Clear(g_c), s	9.2	25.0	25.4	14.8	10.9	11.8	6.5	27.4	5.5	13.0	20.5	20.7
Prop In Lane	1.00		0.56	1.00		0.87	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	142	370	348	216	444	395	104	843	560	496	813	831
V/C Ratio(X)	0.83	0.88	0.89	0.88	0.38	0.40	0.80	0.86	0.38	0.41	0.49	0.49
Avail Cap(c_a), veh/h	222	413	389	288	479	427	166	1004	629	496	813	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.5	53.7	53.8	60.5	43.4	43.7	65.1	47.9	13.1	41.0	23.8	24.2
Incr Delay (d2), s/veh	14.1	18.0	20.6	21.2	0.5	0.7	13.1	11.5	1.9	0.5	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	14.1	13.6	8.5	5.4	5.2	3.6	14.7	3.2	6.4	10.4	10.8
LnGrp Delay(d),s/veh	77.6	71.7	74.4	81.7	43.9	44.4	78.2	59.4	15.0	41.5	25.9	26.2
LnGrp LOS	E	E	E	F	D	D	E	E	B	D	C	C
Approach Vol, veh/h		754			518			1022			1001	
Approach Delay, s/veh		73.7			58.0			51.8			29.2	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.4	34.6	13.5	69.6	16.5	40.4	44.4	38.6
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	22.7	32.7	13.1	50.3	17.5	37.9	23.7	39.7
Max Q Clear Time (g_c+I1), s	16.8	27.4	8.5	22.7	11.2	13.8	15.0	29.4
Green Ext Time (p_c), s	0.3	1.9	0.1	5.1	0.1	2.0	0.3	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.9
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	885	442	14	26	19
Future Vol, veh/h	18	885	442	14	26	19
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	983	491	16	29	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	512	0	-	0	1036	259
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1050	-	-	-	227	740
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	553	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1046	-	-	-	221	737
Mov Cap-2 Maneuver	-	-	-	-	354	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	551	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1046	-	-	-	454
HCM Lane V/C Ratio	0.019	-	-	-	0.11
HCM Control Delay (s)	8.5	-	-	-	13.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	769	9	10	491	29	8	12	13	85	13	19
Future Volume (veh/h)	10	769	9	10	491	29	8	12	13	85	13	19
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	894	10	12	571	34	9	14	15	99	15	22
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	492	1445	16	390	1365	81	192	210	165	445	73	60
Arrive On Green	0.01	0.40	0.40	0.01	0.40	0.40	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3583	40	1774	3385	201	170	836	656	937	292	237
Grp Volume(v), veh/h	12	442	462	12	298	307	38	0	0	136	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1854	1774	1770	1817	1661	0	0	1467	0	0
Q Serve(g_s), s	0.1	5.9	5.9	0.1	3.6	3.6	0.0	0.0	0.0	1.4	0.0	0.0
Cycle Q Clear(g_c), s	0.1	5.9	5.9	0.1	3.6	3.6	0.5	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.11	0.24		0.39	0.73		0.16
Lane Grp Cap(c), veh/h	492	714	747	390	714	733	567	0	0	577	0	0
V/C Ratio(X)	0.02	0.62	0.62	0.03	0.42	0.42	0.07	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	768	2506	2625	666	2524	2591	1397	0	0	1276	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.3	7.1	7.1	5.7	6.4	6.4	8.5	0.0	0.0	9.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.9	3.0	0.1	1.8	1.8	0.2	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	5.3	7.4	7.4	5.7	6.5	6.5	8.5	0.0	0.0	9.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A			A		
Approach Vol, veh/h		916			617			38			136	
Approach Delay, s/veh		7.3			6.5			8.5			9.2	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.4	15.9		10.5	3.4	15.9		10.5
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.1	7.9		4.1	2.1	5.6		2.5
Green Ext Time (p_c), s	0.0	3.6		0.4	0.0	2.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	790	97	98	478	270	107	514	155	217	253	51
Future Volume (veh/h)	109	790	97	98	478	270	107	514	155	217	253	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	120	868	91	108	525	276	118	565	154	238	278	36
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	1157	121	250	916	480	160	650	177	281	970	124
Arrive On Green	0.09	0.36	0.35	0.14	0.41	0.41	0.09	0.24	0.23	0.16	0.31	0.30
Sat Flow, veh/h	1774	3227	338	1774	2232	1170	1774	2738	744	1774	3148	403
Grp Volume(v), veh/h	120	476	483	108	416	385	118	364	355	238	155	159
Grp Sat Flow(s),veh/h/ln	1774	1770	1795	1774	1770	1631	1774	1770	1712	1774	1770	1782
Q Serve(g_s), s	7.9	28.3	28.3	6.7	21.7	21.9	7.8	23.7	23.9	15.6	8.0	8.2
Cycle Q Clear(g_c), s	7.9	28.3	28.3	6.7	21.7	21.9	7.8	23.7	23.9	15.6	8.0	8.2
Prop In Lane	1.00		0.19	1.00		0.72	1.00		0.43	1.00		0.23
Lane Grp Cap(c), veh/h	162	634	644	250	726	670	160	420	407	281	545	549
V/C Ratio(X)	0.74	0.75	0.75	0.43	0.57	0.58	0.74	0.87	0.87	0.85	0.28	0.29
Avail Cap(c_a), veh/h	192	634	644	250	726	670	242	442	428	355	554	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	33.8	33.8	47.2	27.3	27.5	53.2	43.9	44.1	49.1	31.5	31.6
Incr Delay (d2), s/veh	8.1	4.4	4.4	0.4	3.3	3.6	2.5	16.0	17.0	11.9	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	14.5	14.7	3.3	11.3	10.5	3.9	13.5	13.3	8.6	3.9	4.1
LnGrp Delay(d),s/veh	61.3	38.2	38.2	47.6	30.5	31.0	55.6	59.9	61.1	61.0	31.8	31.9
LnGrp LOS	E	D	D	D	C	C	E	E	E	E	C	C
Approach Vol, veh/h		1079			909			837			552	
Approach Delay, s/veh		40.8			32.8			59.8			44.4	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.2	46.0	13.8	40.0	14.0	52.2	22.3	31.5
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	14.8	* 37	* 15	36.1	* 12	39.5	22.8	* 29
Max Q Clear Time (g_c+I1), s	13.7	30.3	9.8	10.2	9.9	23.9	17.6	25.9
Green Ext Time (p_c), s	0.1	2.9	0.1	1.7	0.0	4.6	0.2	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	1111	21	36	784	244	26	135	78	278	105	78
Future Volume (veh/h)	82	1111	21	36	784	244	26	135	78	278	105	78
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	89	1208	23	39	852	265	28	147	85	302	114	85
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	329	1716	33	240	1595	886	58	179	104	405	254	189
Arrive On Green	0.19	0.48	0.48	0.27	0.87	0.87	0.03	0.16	0.16	0.12	0.25	0.24
Sat Flow, veh/h	1774	3550	68	1774	3681	1598	1774	1096	634	3442	1021	761
Grp Volume(v), veh/h	89	602	629	39	852	265	28	0	232	302	0	199
Grp Sat Flow(s),veh/h/ln	1774	1770	1848	1774	1840	1598	1774	0	1730	1721	0	1783
Q Serve(g_s), s	5.2	32.0	32.0	2.0	6.9	0.0	1.9	0.0	15.6	10.2	0.0	11.3
Cycle Q Clear(g_c), s	5.2	32.0	32.0	2.0	6.9	0.0	1.9	0.0	15.6	10.2	0.0	11.3
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.37	1.00		0.43
Lane Grp Cap(c), veh/h	329	855	893	240	1595	886	58	0	283	405	0	443
V/C Ratio(X)	0.27	0.70	0.70	0.16	0.53	0.30	0.48	0.00	0.82	0.75	0.00	0.45
Avail Cap(c_a), veh/h	329	855	893	240	1595	886	92	0	360	516	0	547
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.9	24.3	24.3	38.6	5.0	3.0	57.0	0.0	48.5	51.2	0.0	38.2
Incr Delay (d2), s/veh	0.4	4.8	4.6	0.3	1.2	0.8	6.1	0.0	11.2	4.4	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.7	17.4	1.0	3.6	1.2	1.0	0.0	8.3	5.1	0.0	5.7
LnGrp Delay(d),s/veh	42.4	29.1	28.9	38.9	6.2	3.8	63.1	0.0	59.7	55.6	0.0	38.9
LnGrp LOS	D	C	C	D	A	A	E		E	E		D
Approach Vol, veh/h		1320			1156			260			501	
Approach Delay, s/veh		29.9			6.8			60.1			49.0	
Approach LOS		C			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	61.0	6.9	32.8	25.2	55.0	17.1	22.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	56.5	4.7	35.3	11.5	50.5	16.5	23.5
Max Q Clear Time (g_c+I1), s	4.0	34.0	3.9	13.3	7.2	8.9	12.2	17.6
Green Ext Time (p_c), s	0.0	8.7	0.0	1.1	0.1	8.3	0.4	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	923	524	452	813	0	0	0	0	418	1	258
Future Volume (veh/h)	0	923	524	452	813	0	0	0	0	418	1	258
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1049	595	514	924	0				476	0	293
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88				0.88	0.88	0.88
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2721	831	614	3906	0				780	0	348
Arrive On Green	0.00	0.71	0.71	0.36	1.00	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	5253	1552	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1049	595	514	924	0				476	0	293
Grp Sat Flow(s),veh/h/ln	0	1695	1552	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	9.8	27.1	16.4	0.0	0.0				14.0	0.0	20.5
Cycle Q Clear(g_c), s	0.0	9.8	27.1	16.4	0.0	0.0				14.0	0.0	20.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2721	831	614	3906	0				780	0	348
V/C Ratio(X)	0.00	0.39	0.72	0.84	0.24	0.00				0.61	0.00	0.84
Avail Cap(c_a), veh/h	0	2721	831	889	3906	0				892	0	398
HCM Platoon Ratio	1.00	1.33	1.33	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.74	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.5	11.9	37.0	0.0	0.0				42.8	0.0	45.4
Incr Delay (d2), s/veh	0.0	0.3	3.9	4.2	0.1	0.0				1.0	0.0	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.6	12.2	8.1	0.0	0.0				7.2	0.0	10.6
LnGrp Delay(d),s/veh	0.0	9.8	15.9	41.2	0.1	0.0				43.8	0.0	58.9
LnGrp LOS		A	B	D	A					D		E
Approach Vol, veh/h		1644			1438						769	
Approach Delay, s/veh		12.0			14.8						49.5	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	67.2		28.4		91.6		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	9.5	49.5		27.5		83.5		
Max Q Clear Time (g_c+I1), s	18.4	29.1		22.5		2.0		
Green Ext Time (p_c), s	1.5	10.1		1.4		7.9		

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1107	0	0	987	376	298	2	374	0	0	0
Future Volume (veh/h)	235	1107	0	0	987	376	298	2	374	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	258	1216	0	0	1085	413	469	0	261			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1032	2654	0	0	2124	685	738	0	329			
Arrive On Green	0.60	1.00	0.00	0.00	0.85	0.84	0.20	0.00	0.20			
Sat Flow, veh/h	3442	3632	0	0	5269	1611	3690	0	1647			
Grp Volume(v), veh/h	258	1216	0	0	1085	413	469	0	261			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1611	1845	0	1647			
Q Serve(g_s), s	4.2	0.0	0.0	0.0	6.9	9.9	14.0	0.0	18.1			
Cycle Q Clear(g_c), s	4.2	0.0	0.0	0.0	6.9	9.9	14.0	0.0	18.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1032	2654	0	0	2124	685	738	0	329			
V/C Ratio(X)	0.25	0.46	0.00	0.00	0.51	0.60	0.64	0.00	0.79			
Avail Cap(c_a), veh/h	1032	2654	0	0	2124	685	1199	0	535			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.00	0.00	0.55	0.55	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.7	0.0	0.0	0.0	5.7	6.2	44.0	0.0	45.6			
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.5	2.2	0.9	0.0	4.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.0	0.2	0.0	0.0	3.1	4.4	7.2	0.0	8.6			
LnGrp Delay(d),s/veh	17.8	0.5	0.0	0.0	6.2	8.4	44.9	0.0	49.9			
LnGrp LOS	B	A			A	A	D		D			
Approach Vol, veh/h		1474			1498			730				
Approach Delay, s/veh		3.5			6.8			46.7				
Approach LOS		A			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		93.0			39.0	54.0		27.0
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		73.5			19.5	49.5		37.5
Max Q Clear Time (g_c+I1), s		2.0			6.2	11.9		20.1
Green Ext Time (p_c), s		12.5			0.7	14.1		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	334	138	205	426	228	181	905	276	185	734	123
Future Volume (veh/h)	64	334	138	205	426	228	181	905	276	185	734	123
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	67	348	129	214	444	214	189	943	288	193	765	116
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	397	144	239	564	269	214	1256	767	358	1342	203
Arrive On Green	0.05	0.16	0.16	0.13	0.24	0.24	0.12	0.43	0.36	0.20	0.48	0.44
Sat Flow, veh/h	1774	2529	921	1774	2313	1104	1774	3539	1560	1774	3076	466
Grp Volume(v), veh/h	67	242	235	214	339	319	189	943	288	193	440	441
Grp Sat Flow(s),veh/h/ln	1774	1770	1681	1774	1770	1647	1774	1770	1560	1774	1770	1773
Q Serve(g_s), s	5.2	18.7	19.2	16.6	25.1	25.5	14.7	31.5	6.2	13.6	24.9	25.3
Cycle Q Clear(g_c), s	5.2	18.7	19.2	16.6	25.1	25.5	14.7	31.5	6.2	13.6	24.9	25.3
Prop In Lane	1.00		0.55	1.00		0.67	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	85	278	264	239	431	401	214	1256	767	358	772	773
V/C Ratio(X)	0.79	0.87	0.89	0.89	0.79	0.80	0.88	0.75	0.38	0.54	0.57	0.57
Avail Cap(c_a), veh/h	123	300	285	300	477	444	275	1256	767	358	772	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.9	57.6	57.9	59.6	49.5	49.7	60.6	34.9	8.2	50.0	27.0	27.7
Incr Delay (d2), s/veh	18.7	22.0	26.7	23.5	7.7	8.9	22.7	4.2	1.4	1.6	3.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	10.8	10.9	9.7	13.2	12.6	8.5	16.1	3.5	6.9	12.8	12.9
LnGrp Delay(d),s/veh	84.7	79.6	84.6	83.1	57.3	58.6	83.3	39.1	9.6	51.6	30.0	30.7
LnGrp LOS	F	E	F	F	E	E	F	D	A	D	C	C
Approach Vol, veh/h		544			872			1420			1074	
Approach Delay, s/veh		82.4			64.1			39.0			34.2	
Approach LOS		F			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.2	27.3	22.2	66.4	12.0	39.4	33.6	55.0
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	23.7	23.7	21.7	49.7	9.7	37.7	21.7	49.7
Max Q Clear Time (g_c+I1), s	18.6	21.2	16.7	27.3	7.2	27.5	15.6	33.5
Green Ext Time (p_c), s	0.3	0.7	0.2	8.5	0.0	3.1	0.3	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	49.3
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	39	722	818	24	16	37
Future Vol, veh/h	39	722	818	24	16	37
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	820	930	27	18	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	962	0	-	0	1447	484
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	498	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	711	-	-	-	122	529
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	576	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	708	-	-	-	114	527
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	708	-	-	-	381
HCM Lane V/C Ratio	0.063	-	-	-	0.158
HCM Control Delay (s)	10.4	-	-	-	16.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	698	24	27	975	88	24	16	17	99	32	29
Future Volume (veh/h)	27	698	24	27	975	88	24	16	17	99	32	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	28	735	25	28	1026	93	25	17	18	104	34	31
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	1574	54	464	1476	134	254	163	117	352	112	68
Arrive On Green	0.03	0.45	0.45	0.03	0.45	0.45	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3487	119	1774	3270	296	455	667	481	774	460	277
Grp Volume(v), veh/h	28	373	387	28	555	564	60	0	0	169	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1836	1774	1770	1796	1603	0	0	1512	0	0
Q Serve(g_s), s	0.3	5.2	5.2	0.3	8.9	9.0	0.0	0.0	0.0	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	5.2	5.2	0.3	8.9	9.0	1.0	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.16	0.42		0.30	0.62		0.18
Lane Grp Cap(c), veh/h	350	799	829	464	799	811	534	0	0	532	0	0
V/C Ratio(X)	0.08	0.47	0.47	0.06	0.69	0.70	0.11	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	551	2089	2168	664	2104	2136	1139	0	0	1079	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.1	6.8	6.8	5.3	7.8	7.8	10.6	0.0	0.0	11.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.4	0.4	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	2.6	0.1	4.4	4.5	0.5	0.0	0.0	1.4	0.0	0.0
LnGrp Delay(d),s/veh	6.2	7.0	7.0	5.3	8.2	8.2	10.6	0.0	0.0	11.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B			B		
Approach Vol, veh/h		788			1147			60			169	
Approach Delay, s/veh		6.9			8.2			10.6			11.5	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	20.0		11.7	4.0	20.0		11.7
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.3	7.2		5.2	2.3	11.0		3.0
Green Ext Time (p_c), s	0.0	2.9		0.6	0.0	4.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	639	149	134	834	186	176	421	146	341	510	179
Future Volume (veh/h)	110	639	149	134	834	186	176	421	146	341	510	179
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	116	673	141	141	878	176	185	443	138	359	537	169
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	922	193	233	966	194	212	546	168	384	800	251
Arrive On Green	0.12	0.32	0.32	0.13	0.33	0.33	0.12	0.21	0.21	0.22	0.30	0.30
Sat Flow, veh/h	1774	2903	608	1774	2928	587	1774	2647	817	1774	2639	827
Grp Volume(v), veh/h	116	410	404	141	531	523	185	295	286	359	359	347
Grp Sat Flow(s),veh/h/ln	1774	1770	1741	1774	1770	1745	1774	1770	1694	1774	1770	1696
Q Serve(g_s), s	7.4	24.7	24.7	9.0	34.4	34.4	12.3	19.0	19.4	23.9	21.3	21.5
Cycle Q Clear(g_c), s	7.4	24.7	24.7	9.0	34.4	34.4	12.3	19.0	19.4	23.9	21.3	21.5
Prop In Lane	1.00		0.35	1.00		0.34	1.00		0.48	1.00		0.49
Lane Grp Cap(c), veh/h	207	562	553	233	584	576	212	365	349	384	536	514
V/C Ratio(X)	0.56	0.73	0.73	0.61	0.91	0.91	0.87	0.81	0.82	0.93	0.67	0.67
Avail Cap(c_a), veh/h	207	562	553	235	584	576	262	413	395	411	562	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	36.4	36.4	49.2	38.5	38.5	51.9	45.4	45.5	46.2	36.6	36.6
Incr Delay (d2), s/veh	2.0	4.5	4.6	3.1	20.5	20.7	19.8	10.2	11.6	26.8	2.9	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	12.8	12.6	4.6	20.1	19.9	7.2	10.4	10.2	14.5	10.8	10.5
LnGrp Delay(d),s/veh	52.1	40.8	41.0	52.3	58.9	59.2	71.8	55.6	57.1	73.0	39.5	39.8
LnGrp LOS	D	D	D	D	E	E	E	E	E	E	D	D
Approach Vol, veh/h		930			1195			766			1065	
Approach Delay, s/veh		42.3			58.3			60.1			50.9	
Approach LOS		D			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	41.6	18.5	39.9	18.5	43.1	30.2	28.2
Change Period (Y+Rc), s	4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	16	31.9	* 18	37.1	9.2	* 39	* 28	27.0
Max Q Clear Time (g_c+I1), s	11.0	26.7	14.3	23.5	9.4	36.4	25.9	21.4
Green Ext Time (p_c), s	0.1	2.2	0.1	3.5	0.0	1.3	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	52.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	995	48	113	935	388	37	172	58	451	280	187
Future Volume (veh/h)	117	995	48	113	935	388	37	172	58	451	280	187
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	121	1026	49	116	964	400	38	177	60	465	289	193
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	1330	64	261	1662	993	48	199	67	568	309	207
Arrive On Green	0.08	0.39	0.40	0.29	0.90	0.90	0.03	0.15	0.16	0.16	0.29	0.30
Sat Flow, veh/h	1774	3432	164	1774	3681	1599	1774	1321	448	3442	1073	717
Grp Volume(v), veh/h	121	529	546	116	964	400	38	0	237	465	0	482
Grp Sat Flow(s),veh/h/ln	1774	1770	1827	1774	1840	1599	1774	0	1769	1721	0	1790
Q Serve(g_s), s	8.1	31.3	31.3	6.4	6.4	1.3	2.6	0.0	15.8	15.7	0.0	31.5
Cycle Q Clear(g_c), s	8.1	31.3	31.3	6.4	6.4	1.3	2.6	0.0	15.8	15.7	0.0	31.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.25	1.00		0.40
Lane Grp Cap(c), veh/h	147	686	708	261	1662	993	48	0	267	568	0	516
V/C Ratio(X)	0.82	0.77	0.77	0.45	0.58	0.40	0.79	0.00	0.89	0.82	0.00	0.93
Avail Cap(c_a), veh/h	185	686	708	261	1662	993	81	0	302	645	0	559
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.2	32.1	32.1	38.4	3.5	0.6	58.0	0.0	49.8	48.4	0.0	41.4
Incr Delay (d2), s/veh	20.8	8.2	8.0	1.1	1.4	1.1	23.6	0.0	24.2	7.4	0.0	22.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	16.8	17.3	3.2	3.2	0.7	1.6	0.0	9.5	8.0	0.0	18.7
LnGrp Delay(d),s/veh	75.0	40.3	40.0	39.5	4.9	1.7	81.6	0.0	74.0	55.8	0.0	63.5
LnGrp LOS	E	D	D	D	A	A	F		E	E		E
Approach Vol, veh/h		1196			1480			275			947	
Approach Delay, s/veh		43.7			6.7			75.1			59.7	
Approach LOS		D			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	51.0	7.8	39.1	14.4	58.7	24.3	22.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	46.5	5.5	37.5	12.5	46.5	22.5	20.5
Max Q Clear Time (g_c+I1), s	10.1	33.3	4.6	33.5	10.1	8.4	17.7	17.8
Green Ext Time (p_c), s	0.1	5.5	0.0	1.1	0.1	10.0	0.8	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	35.8
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	949	562	501	1196	0	0	0	0	281	19	240
Future Volume (veh/h)	0	949	562	501	1196	0	0	0	0	281	19	240
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	999	592	527	1259	0				310	0	253
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2796	851	595	4021	0				638	0	285
Arrive On Green	0.00	1.00	1.00	0.35	1.00	0.00				0.17	0.00	0.17
Sat Flow, veh/h	0	5253	1548	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	999	592	527	1259	0				310	0	253
Grp Sat Flow(s),veh/h/ln	0	1695	1548	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	0.0	0.0	17.3	0.0	0.0				9.1	0.0	18.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	17.3	0.0	0.0				9.1	0.0	18.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2796	851	595	4021	0				638	0	285
V/C Ratio(X)	0.00	0.36	0.70	0.89	0.31	0.00				0.49	0.00	0.89
Avail Cap(c_a), veh/h	0	2796	851	846	4021	0				723	0	322
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.57	0.57	0.82	0.82	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.1	0.0	0.0				44.8	0.0	48.5
Incr Delay (d2), s/veh	0.0	0.2	2.7	6.9	0.2	0.0				0.6	0.0	22.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.6	8.8	0.1	0.0				4.7	0.0	10.0
LnGrp Delay(d),s/veh	0.0	0.2	2.7	45.0	0.2	0.0				45.4	0.0	71.3
LnGrp LOS		A	A	D	A					D		E
Approach Vol, veh/h		1591			1786						563	
Approach Delay, s/veh		1.1			13.4						57.0	
Approach LOS		A			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	25.3	69.5		25.3		94.7		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	20.5	53.5		23.5		87.5		
Max Q Clear Time (g_c+I1), s	19.3	2.0		20.0		2.0		
Green Ext Time (p_c), s	1.4	12.5		0.7		12.0		

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	197	1018	0	0	1227	428	469	0	428	0	0	0
Future Volume (veh/h)	197	1018	0	0	1227	428	469	0	428	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	203	1049	0	0	1265	441	621	0	294			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	897	2545	0	0	2103	676	791	0	353			
Arrive On Green	0.35	0.96	0.00	0.00	0.56	0.56	0.21	0.00	0.21			
Sat Flow, veh/h	3442	3632	0	0	5269	1605	3690	0	1647			
Grp Volume(v), veh/h	203	1049	0	0	1265	441	621	0	294			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1605	1845	0	1647			
Q Serve(g_s), s	5.0	2.6	0.0	0.0	20.2	22.9	19.1	0.0	20.5			
Cycle Q Clear(g_c), s	5.0	2.6	0.0	0.0	20.2	22.9	19.1	0.0	20.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	897	2545	0	0	2103	676	791	0	353			
V/C Ratio(X)	0.23	0.41	0.00	0.00	0.60	0.65	0.79	0.00	0.83			
Avail Cap(c_a), veh/h	897	2545	0	0	2103	676	1276	0	569			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.93	0.93	0.00	0.00	0.62	0.62	1.00	0.00	1.00			
Uniform Delay (d), s/veh	30.6	0.8	0.0	0.0	19.7	20.3	44.5	0.0	45.1			
Incr Delay (d2), s/veh	0.1	0.5	0.0	0.0	0.8	3.1	1.8	0.0	5.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.4	1.2	0.0	0.0	9.4	10.6	9.9	0.0	9.9			
LnGrp Delay(d),s/veh	30.7	1.3	0.0	0.0	20.5	23.4	46.3	0.0	50.8			
LnGrp LOS	C	A			C	C	D		D			
Approach Vol, veh/h		1252			1706			915				
Approach Delay, s/veh		6.0			21.3			47.7				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		89.8			35.8	54.0		30.2
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		69.5			15.5	49.5		41.5
Max Q Clear Time (g_c+I1), s		4.6			7.0	24.9		22.5
Green Ext Time (p_c), s		9.2			0.4	13.2		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	441	188	166	194	154	84	713	186	202	762	81
Future Volume (veh/h)	137	441	188	166	194	154	84	713	186	202	762	81
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	3	3	0	3	6	0	0	3	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	147	474	182	178	209	150	90	767	200	217	819	78
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	531	202	211	471	308	120	915	582	462	1489	140
Arrive On Green	0.10	0.21	0.21	0.11	0.23	0.23	0.06	0.31	0.26	0.27	0.50	0.46
Sat Flow, veh/h	1774	2485	946	1774	1994	1353	1774	3539	1541	1774	3260	310
Grp Volume(v), veh/h	147	336	320	178	184	175	90	767	200	217	445	452
Grp Sat Flow(s),veh/h/ln	1774	1770	1662	1774	1770	1577	1774	1770	1541	1774	1770	1800
Q Serve(g_s), s	11.4	25.8	26.2	13.8	12.5	13.4	7.0	28.4	5.3	14.3	24.1	24.4
Cycle Q Clear(g_c), s	11.4	25.8	26.2	13.8	12.5	13.4	7.0	28.4	5.3	14.3	24.1	24.4
Prop In Lane	1.00		0.57	1.00		0.86	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	172	378	355	211	410	367	120	915	582	462	807	822
V/C Ratio(X)	0.85	0.89	0.90	0.84	0.45	0.48	0.75	0.84	0.34	0.47	0.55	0.55
Avail Cap(c_a), veh/h	260	413	388	262	416	371	161	1029	629	470	810	824
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	53.4	53.6	60.8	46.3	46.6	64.6	46.0	12.2	43.7	25.2	25.6
Incr Delay (d2), s/veh	15.8	19.4	22.0	18.0	0.8	1.0	12.6	9.1	1.6	0.7	2.7	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	9.2	0.2	0.2	18.2	1.9	0.0	0.0	0.1	0.1
%ile BackOfQ(50%),veh/ln	6.3	14.7	14.2	8.8	6.5	6.2	4.9	15.8	2.9	7.2	12.7	13.1
LnGrp Delay(d),s/veh	78.1	72.9	75.6	88.0	47.2	47.8	95.4	57.0	13.9	44.4	27.9	28.3
LnGrp LOS	E	E	E	F	D	D	F	E	B	D	C	C
Approach Vol, veh/h		803			537			1057			1114	
Approach Delay, s/veh		74.9			60.9			52.1			31.3	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	35.2	14.1	69.4	18.9	37.7	42.4	41.0
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	20.7	32.7	12.7	52.7	20.5	32.9	24.7	40.7
Max Q Clear Time (g_c+I1), s	15.8	28.2	9.0	26.4	13.4	15.4	16.3	30.4
Green Ext Time (p_c), s	0.2	1.7	0.1	9.3	0.2	2.1	0.4	5.3

Intersection Summary	
HCM 2010 Ctrl Delay	52.1
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	936	500	8	7	17
Future Vol, veh/h	18	936	500	8	7	17
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	985	526	8	7	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	539	0	-	0	1066	272
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1025	-	-	-	217	726
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1021	-	-	-	211	723
Mov Cap-2 Maneuver	-	-	-	-	345	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1021	-	-	-	548
HCM Lane V/C Ratio	0.019	-	-	-	0.046
HCM Control Delay (s)	8.6	-	-	-	11.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	791	10	11	535	48	8	17	14	118	14	26
Future Volume (veh/h)	15	791	10	11	535	48	8	17	14	118	14	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	833	11	12	563	51	8	18	15	124	15	27
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	476	1376	18	395	1246	113	179	251	164	471	66	63
Arrive On Green	0.02	0.39	0.39	0.01	0.38	0.38	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	3574	47	1774	3269	295	126	943	617	969	247	236
Grp Volume(v), veh/h	16	412	432	12	304	310	41	0	0	166	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1852	1774	1770	1795	1686	0	0	1451	0	0
Q Serve(g_s), s	0.2	5.5	5.5	0.1	3.8	3.8	0.0	0.0	0.0	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	5.5	5.5	0.1	3.8	3.8	0.5	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.16	0.20		0.37	0.75		0.16
Lane Grp Cap(c), veh/h	476	681	713	395	674	684	595	0	0	600	0	0
V/C Ratio(X)	0.03	0.61	0.61	0.03	0.45	0.45	0.07	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	747	2528	2645	674	2546	2583	1427	0	0	1281	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	7.3	7.3	6.0	6.8	6.8	8.1	0.0	0.0	8.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.7	2.8	0.1	1.8	1.8	0.3	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	5.7	7.6	7.6	6.0	7.0	7.0	8.1	0.0	0.0	8.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A			A		
Approach Vol, veh/h		860			626			41			166	
Approach Delay, s/veh		7.5			7.0			8.1			8.9	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.4	15.2		10.9	3.5	15.1		10.9
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.1	7.5		4.7	2.2	5.8		2.5
Green Ext Time (p_c), s	0.0	3.3		0.6	0.0	2.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	836	153	165	529	286	155	684	231	238	412	55
Future Volume (veh/h)	114	836	153	165	529	286	155	684	231	238	412	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	116	853	141	168	540	273	158	698	221	243	420	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	964	159	236	827	417	202	746	236	284	1090	98
Arrive On Green	0.09	0.32	0.31	0.13	0.37	0.36	0.11	0.28	0.28	0.16	0.33	0.33
Sat Flow, veh/h	1774	3031	501	1774	2264	1142	1774	2632	833	1774	3278	295
Grp Volume(v), veh/h	116	498	496	168	422	391	158	469	450	243	226	232
Grp Sat Flow(s),veh/h/ln	1774	1770	1763	1774	1770	1636	1774	1770	1695	1774	1770	1804
Q Serve(g_s), s	7.6	32.0	32.1	10.9	23.8	24.0	10.4	31.0	31.1	16.0	11.7	11.8
Cycle Q Clear(g_c), s	7.6	32.0	32.1	10.9	23.8	24.0	10.4	31.0	31.1	16.0	11.7	11.8
Prop In Lane	1.00		0.28	1.00		0.70	1.00		0.49	1.00		0.16
Lane Grp Cap(c), veh/h	158	563	561	236	646	597	202	501	480	284	588	600
V/C Ratio(X)	0.74	0.88	0.88	0.71	0.65	0.66	0.78	0.94	0.94	0.85	0.38	0.39
Avail Cap(c_a), veh/h	180	563	561	259	646	597	303	501	480	297	588	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	38.8	38.9	49.8	31.8	32.0	51.7	41.9	42.1	49.0	30.7	30.7
Incr Delay (d2), s/veh	9.1	14.2	14.2	6.3	5.1	5.5	3.7	25.2	26.0	19.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	17.9	17.8	5.7	12.5	11.7	5.3	18.6	18.0	9.3	5.8	5.9
LnGrp Delay(d),s/veh	62.4	53.0	53.1	56.1	36.8	37.5	55.5	67.1	68.1	68.2	31.1	31.1
LnGrp LOS	E	D	D	E	D	D	E	E	E	E	C	C
Approach Vol, veh/h		1110			981			1077			701	
Approach Delay, s/veh		54.0			40.4			65.8			44.0	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	41.2	16.6	42.9	13.7	46.8	22.5	37.0
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	6.3	* 35	* 19	32.1	* 11	40.2	18.9	* 33
Max Q Clear Time (g_c+I1), s	12.9	34.1	12.4	13.8	9.6	26.0	18.0	33.1
Green Ext Time (p_c), s	0.1	0.5	0.1	2.3	0.0	4.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.0
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	836	153	165	529	286	155	684	231	238	412	55
Future Volume (veh/h)	114	836	153	165	529	286	155	684	231	238	412	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1937	1863	1863	1976
Adj Flow Rate, veh/h	116	853	141	168	540	273	158	698	221	243	420	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	1136	188	230	946	477	202	814	574	285	917	83
Arrive On Green	0.09	0.37	0.37	0.13	0.42	0.41	0.11	0.23	0.23	0.16	0.28	0.28
Sat Flow, veh/h	1774	3032	501	1774	2265	1142	1774	3539	1610	1774	3278	295
Grp Volume(v), veh/h	116	498	496	168	422	391	158	698	221	243	226	232
Grp Sat Flow(s),veh/h/ln	1774	1770	1763	1774	1770	1637	1774	1770	1610	1774	1770	1803
Q Serve(g_s), s	7.6	29.4	29.4	10.9	21.9	22.0	10.4	22.7	0.0	16.0	12.6	12.8
Cycle Q Clear(g_c), s	7.6	29.4	29.4	10.9	21.9	22.0	10.4	22.7	0.0	16.0	12.6	12.8
Prop In Lane	1.00		0.28	1.00		0.70	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	158	663	661	230	739	683	202	814	574	285	495	504
V/C Ratio(X)	0.73	0.75	0.75	0.73	0.57	0.57	0.78	0.86	0.39	0.85	0.46	0.46
Avail Cap(c_a), veh/h	235	663	661	269	739	683	299	844	587	334	495	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	32.6	32.7	50.2	26.7	26.9	51.7	44.3	29.0	49.0	35.7	35.8
Incr Delay (d2), s/veh	2.2	4.3	4.3	6.3	3.2	3.5	4.1	8.6	0.4	14.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	15.2	15.1	5.8	11.3	10.6	5.3	12.0	5.5	9.0	6.3	6.5
LnGrp Delay(d),s/veh	55.5	37.0	37.1	56.5	29.9	30.4	55.9	52.9	29.4	63.8	36.3	36.4
LnGrp LOS	E	D	D	E	C	C	E	D	C	E	D	D
Approach Vol, veh/h		1110			981			1077			701	
Approach Delay, s/veh		38.9			34.6			48.5			45.9	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	48.0	16.6	36.6	13.7	53.1	22.6	30.6
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	7.6	* 37	* 19	29.5	* 15	39.4	21.4	* 27
Max Q Clear Time (g_c+I1), s	12.9	31.4	12.4	14.8	9.6	24.0	18.0	24.7
Green Ext Time (p_c), s	0.1	2.9	0.1	2.2	0.1	4.6	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.8
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	1161	18	38	856	459	40	369	121	455	160	129
Future Volume (veh/h)	141	1161	18	38	856	459	40	369	121	455	160	129
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	148	1222	19	40	901	483	42	388	127	479	168	136
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1378	21	98	1196	778	76	401	131	545	409	331
Arrive On Green	0.12	0.39	0.38	0.05	0.32	0.32	0.04	0.30	0.30	0.16	0.42	0.41
Sat Flow, veh/h	1774	3565	55	1774	3681	1593	1774	1337	438	3442	983	796
Grp Volume(v), veh/h	148	606	635	40	901	483	42	0	515	479	0	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1851	1774	1840	1593	1774	0	1775	1721	0	1780
Q Serve(g_s), s	9.6	38.4	38.4	2.6	26.3	7.1	2.8	0.0	34.3	16.3	0.0	14.5
Cycle Q Clear(g_c), s	9.6	38.4	38.4	2.6	26.3	7.1	2.8	0.0	34.3	16.3	0.0	14.5
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.25	1.00		0.45
Lane Grp Cap(c), veh/h	207	684	716	98	1196	778	76	0	532	545	0	740
V/C Ratio(X)	0.72	0.89	0.89	0.41	0.75	0.62	0.56	0.00	0.97	0.88	0.00	0.41
Avail Cap(c_a), veh/h	207	684	716	98	1196	778	105	0	532	545	0	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.1	34.3	34.4	54.8	36.2	22.7	56.3	0.0	41.5	49.4	0.0	24.8
Incr Delay (d2), s/veh	11.1	15.7	15.2	2.5	4.1	3.4	6.3	0.0	30.7	15.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	21.7	22.6	1.3	13.9	11.5	1.5	0.0	21.3	8.9	0.0	7.2
LnGrp Delay(d),s/veh	62.2	50.0	49.5	57.3	40.2	26.1	62.6	0.0	72.2	64.6	0.0	25.2
LnGrp LOS	E	D	D	E	D	C	E		E	E		C
Approach Vol, veh/h		1389			1424			557			783	
Approach Delay, s/veh		51.1			35.9			71.5			49.3	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	49.4	8.1	52.9	17.0	42.0	22.0	39.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	44.9	5.6	46.4	12.5	37.5	17.5	34.5
Max Q Clear Time (g_c+I1), s	4.6	40.4	4.8	16.5	11.6	28.3	18.3	36.3
Green Ext Time (p_c), s	0.0	2.9	0.0	1.9	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	48.3
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1160	547	479	859	0	0	0	0	727	1	414
Future Volume (veh/h)	0	1160	547	479	859	0	0	0	0	727	1	414
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1221	576	504	904	0				766	0	436
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2252	686	613	3416	0				1122	0	501
Arrive On Green	0.00	0.89	0.89	0.24	0.86	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5253	1550	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1221	576	504	904	0				766	0	436
Grp Sat Flow(s),veh/h/ln	0	1695	1550	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	6.3	19.9	16.7	3.7	0.0				21.9	0.0	30.1
Cycle Q Clear(g_c), s	0.0	6.3	19.9	16.7	3.7	0.0				21.9	0.0	30.1
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2252	686	613	3416	0				1122	0	501
V/C Ratio(X)	0.00	0.54	0.84	0.82	0.26	0.00				0.68	0.00	0.87
Avail Cap(c_a), veh/h	0	2252	686	803	3416	0				1261	0	563
HCM Platoon Ratio	1.00	2.00	2.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.36	0.36	0.83	0.83	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.2	5.0	44.0	3.3	0.0				36.7	0.0	39.5
Incr Delay (d2), s/veh	0.0	0.3	4.6	4.4	0.2	0.0				1.3	0.0	12.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.8	8.2	8.3	1.7	0.0				11.4	0.0	15.5
LnGrp Delay(d),s/veh	0.0	4.5	9.5	48.4	3.4	0.0				38.0	0.0	52.3
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		1797			1408						1202	
Approach Delay, s/veh		6.1			19.5						43.2	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	56.1		39.5		80.5		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	26.5	40.5		39.5		71.5		
Max Q Clear Time (g_c+I1), s	13.7	21.9		32.1		5.7		
Green Ext Time (p_c), s	1.2	10.7		2.9		7.7		

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	391	1393	0	0	1046	467	313	2	396	0	0	0
Future Volume (veh/h)	391	1393	0	0	1046	467	313	2	396	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	412	1466	0	0	1101	492	473	0	264			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1088	2652	0	0	2041	658	740	0	330			
Arrive On Green	0.63	1.00	0.00	0.00	0.54	0.54	0.20	0.00	0.20			
Sat Flow, veh/h	3442	3632	0	0	5269	1610	3690	0	1647			
Grp Volume(v), veh/h	412	1466	0	0	1101	492	473	0	264			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1610	1845	0	1647			
Q Serve(g_s), s	6.9	0.0	0.0	0.0	17.1	28.4	14.1	0.0	18.3			
Cycle Q Clear(g_c), s	6.9	0.0	0.0	0.0	17.1	28.4	14.1	0.0	18.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1088	2652	0	0	2041	658	740	0	330			
V/C Ratio(X)	0.38	0.55	0.00	0.00	0.54	0.75	0.64	0.00	0.80			
Avail Cap(c_a), veh/h	1088	2652	0	0	2041	658	1076	0	480			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.77	0.77	0.00	0.00	0.54	0.54	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.4	0.0	0.0	0.0	20.1	23.0	44.0	0.0	45.7			
Incr Delay (d2), s/veh	0.2	0.6	0.0	0.0	0.6	4.3	0.9	0.0	6.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.2	0.2	0.0	0.0	7.9	13.2	7.3	0.0	8.9			
LnGrp Delay(d),s/veh	16.5	0.6	0.0	0.0	20.7	27.2	44.9	0.0	51.6			
LnGrp LOS	B	A			C	C	D		D			
Approach Vol, veh/h		1878			1593			737				
Approach Delay, s/veh		4.1			22.7			47.3				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		92.9			40.9	52.0		27.1
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		77.5			25.5	47.5		33.5
Max Q Clear Time (g_c+I1), s		2.0			8.9	30.4		20.3
Green Ext Time (p_c), s		17.7			1.3	10.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	377	156	234	477	253	198	981	309	209	832	141
Future Volume (veh/h)	75	377	156	234	477	253	198	981	309	209	832	141
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	75	377	141	234	477	228	198	981	309	209	832	127
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	423	156	259	604	287	223	1181	752	357	1258	192
Arrive On Green	0.05	0.17	0.17	0.15	0.26	0.26	0.13	0.40	0.33	0.20	0.45	0.41
Sat Flow, veh/h	1774	2521	929	1774	2318	1100	1774	3539	1560	1774	3073	469
Grp Volume(v), veh/h	75	263	255	234	363	342	198	981	309	209	479	480
Grp Sat Flow(s),veh/h/ln	1774	1770	1680	1774	1770	1648	1774	1770	1560	1774	1770	1772
Q Serve(g_s), s	5.9	20.3	20.9	18.2	26.8	27.1	15.4	34.9	7.1	14.9	29.7	30.0
Cycle Q Clear(g_c), s	5.9	20.3	20.9	18.2	26.8	27.1	15.4	34.9	7.1	14.9	29.7	30.0
Prop In Lane	1.00		0.55	1.00		0.67	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	94	297	282	259	461	429	223	1181	752	357	724	725
V/C Ratio(X)	0.79	0.89	0.91	0.90	0.79	0.80	0.89	0.83	0.41	0.59	0.66	0.66
Avail Cap(c_a), veh/h	123	312	296	313	502	467	275	1181	752	357	724	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.5	57.0	57.2	58.8	48.2	48.3	60.3	38.4	8.7	50.6	30.9	31.6
Incr Delay (d2), s/veh	23.0	24.1	28.6	25.0	7.6	8.6	24.4	6.9	1.7	2.5	4.7	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	11.9	11.9	10.7	14.1	13.4	9.0	18.1	3.9	7.6	15.3	15.6
LnGrp Delay(d),s/veh	88.5	81.1	85.8	83.8	55.8	56.9	84.7	45.3	10.3	53.1	35.6	36.3
LnGrp LOS	F	F	F	F	E	E	F	D	B	D	D	D
Approach Vol, veh/h		593			939			1488			1168	
Approach Delay, s/veh		84.0			63.2			43.3			39.0	
Approach LOS		F			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.7	28.8	22.9	62.6	12.7	41.8	33.5	52.0
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	24.7	24.7	21.7	47.7	9.7	39.7	22.7	46.7
Max Q Clear Time (g_c+I1), s	20.2	22.9	17.4	32.0	7.9	29.1	16.9	36.9
Green Ext Time (p_c), s	0.3	0.6	0.2	7.7	0.0	3.5	0.3	6.4

Intersection Summary	
HCM 2010 Ctrl Delay	52.3
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	822	926	5	4	37
Future Vol, veh/h	38	822	926	5	4	37
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	822	926	5	4	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	936	0	-	0	1421	471
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	727	-	-	-	127	539
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	724	-	-	-	119	537
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	724	-	-	-	478
HCM Lane V/C Ratio	0.052	-	-	-	0.086
HCM Control Delay (s)	10.2	-	-	-	13.2
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	756	25	29	1026	119	25	17	18	161	34	66
Future Volume (veh/h)	52	756	25	29	1026	119	25	17	18	161	34	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	756	25	29	1026	119	25	17	18	161	34	66
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	1615	53	447	1419	164	261	171	129	357	77	97
Arrive On Green	0.04	0.46	0.46	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3491	115	1774	3181	369	508	661	501	809	298	375
Grp Volume(v), veh/h	52	383	398	29	570	575	60	0	0	261	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1837	1774	1770	1780	1670	0	0	1482	0	0
Q Serve(g_s), s	0.6	5.8	5.9	0.3	10.4	10.4	0.0	0.0	0.0	5.1	0.0	0.0
Cycle Q Clear(g_c), s	0.6	5.8	5.9	0.3	10.4	10.4	1.0	0.0	0.0	6.1	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.21	0.42		0.30	0.62		0.25
Lane Grp Cap(c), veh/h	350	819	850	447	789	794	561	0	0	531	0	0
V/C Ratio(X)	0.15	0.47	0.47	0.06	0.72	0.72	0.11	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	497	1892	1964	624	1905	1917	1045	0	0	966	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	7.3	7.3	5.9	8.9	8.9	11.2	0.0	0.0	13.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	0.5	0.5	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.8	2.9	0.2	5.0	5.1	0.5	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	6.9	7.4	7.4	5.9	9.4	9.4	11.2	0.0	0.0	13.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B			B		
Approach Vol, veh/h		833			1174			60			261	
Approach Delay, s/veh		7.4			9.3			11.2			13.3	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.1	22.1		13.2	4.7	21.5		13.2
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.3	7.9		8.1	2.6	12.4		3.0
Green Ext Time (p_c), s	0.0	3.0		0.9	0.0	5.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	676	269	242	902	197	228	510	185	361	747	189
Future Volume (veh/h)	116	676	269	242	902	197	228	510	185	361	747	189
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	116	676	254	242	902	178	228	510	170	361	747	171
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	692	260	271	969	191	254	584	193	386	853	195
Arrive On Green	0.10	0.28	0.28	0.15	0.33	0.33	0.14	0.22	0.22	0.22	0.30	0.30
Sat Flow, veh/h	1774	2502	940	1774	2937	579	1774	2596	860	1774	2849	652
Grp Volume(v), veh/h	116	478	452	242	543	537	228	347	333	361	464	454
Grp Sat Flow(s),veh/h/ln	1774	1770	1672	1774	1770	1747	1774	1770	1686	1774	1770	1731
Q Serve(g_s), s	7.6	32.1	32.1	16.1	35.6	35.7	15.2	22.7	22.9	24.0	29.9	29.9
Cycle Q Clear(g_c), s	7.6	32.1	32.1	16.1	35.6	35.7	15.2	22.7	22.9	24.0	29.9	29.9
Prop In Lane	1.00		0.56	1.00		0.33	1.00		0.51	1.00		0.38
Lane Grp Cap(c), veh/h	171	490	463	271	584	576	254	398	379	386	530	518
V/C Ratio(X)	0.68	0.98	0.98	0.89	0.93	0.93	0.90	0.87	0.88	0.94	0.88	0.88
Avail Cap(c_a), veh/h	171	490	463	271	584	576	262	413	393	411	562	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	43.0	43.0	49.9	38.9	38.9	50.6	44.8	44.9	46.1	39.9	39.9
Incr Delay (d2), s/veh	7.6	32.4	33.5	28.5	23.5	23.9	29.1	17.6	19.3	27.1	13.9	14.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	20.1	19.1	10.0	21.2	21.0	9.5	13.0	12.7	14.6	16.6	16.3
LnGrp Delay(d),s/veh	60.0	75.4	76.5	78.4	62.4	62.7	79.7	62.4	64.2	73.2	53.8	54.1
LnGrp LOS	E	E	E	E	E	E	E	E	E	E	D	D
Approach Vol, veh/h		1046			1322			908			1279	
Approach Delay, s/veh		74.2			65.5			67.4			59.4	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	36.7	21.4	39.4	16.1	43.1	30.3	30.5
Change Period (Y+Rc), s	4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	16	31.9	* 18	37.1	9.2	* 39	* 28	27.0
Max Q Clear Time (g_c+I1), s	9.1	34.1	17.2	31.9	9.6	37.7	26.0	24.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.5	0.0	0.6	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	66.1
HCM 2010 LOS	E

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	676	269	242	902	197	228	510	185	361	747	189
Future Volume (veh/h)	116	676	269	242	902	197	228	510	185	361	747	189
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1863	1863	1863	1976
Adj Flow Rate, veh/h	116	676	254	242	902	178	228	510	185	361	747	171
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	767	288	263	1105	218	255	772	568	385	820	188
Arrive On Green	0.08	0.36	0.30	0.15	0.64	0.37	0.14	0.21	0.21	0.22	0.28	0.28
Sat Flow, veh/h	1774	2567	964	1774	3013	594	1774	3725	1544	1774	2922	669
Grp Volume(v), veh/h	116	491	439	242	558	522	228	510	185	361	476	442
Grp Sat Flow(s),veh/h/ln	1774	1863	1668	1774	1863	1744	1774	1863	1544	1774	1863	1728
Q Serve(g_s), s	7.7	29.6	29.9	16.1	27.0	29.4	15.2	15.1	10.4	24.0	29.7	29.7
Cycle Q Clear(g_c), s	7.7	29.6	29.9	16.1	27.0	29.4	15.2	15.1	10.4	24.0	29.7	29.7
Prop In Lane	1.00		0.58	1.00		0.34	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	139	557	499	263	683	640	255	772	568	385	523	485
V/C Ratio(X)	0.84	0.88	0.88	0.92	0.82	0.82	0.89	0.66	0.33	0.94	0.91	0.91
Avail Cap(c_a), veh/h	139	557	499	263	683	640	308	885	615	396	536	497
HCM Platoon Ratio	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	36.5	38.5	50.4	18.5	23.8	50.5	43.7	27.6	46.2	41.7	41.7
Incr Delay (d2), s/veh	29.8	16.4	17.9	34.3	10.4	11.1	21.5	1.5	0.3	28.8	19.6	20.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	17.7	16.2	10.4	15.4	15.9	8.9	8.0	4.5	14.8	18.1	16.9
LnGrp Delay(d),s/veh	84.3	52.9	56.5	84.6	28.9	34.9	71.9	45.2	27.9	75.0	61.3	62.5
LnGrp LOS	F	D	E	F	C	C	E	D	C	E	E	E
Approach Vol, veh/h		1046			1322			923			1279	
Approach Delay, s/veh		57.9			41.5			48.3			65.6	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	39.4	21.5	37.2	13.9	47.5	30.3	28.4
Change Period (Y+Rc), s	4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	11.8	30.5	* 21	33.5	5.3	* 43	* 27	27.5
Max Q Clear Time (g_c+I1), s	9.7	31.9	17.2	31.7	9.7	31.4	26.0	17.1
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	5.2	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	53.4
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	1044	48	120	975	594	38	287	61	622	431	328
Future Volume (veh/h)	167	1044	48	120	975	594	38	287	61	622	431	328
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	167	1044	48	120	975	594	38	287	61	622	431	328
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	1143	53	153	1154	861	48	314	67	756	409	311
Arrive On Green	0.11	0.33	0.34	0.17	0.63	0.63	0.03	0.21	0.22	0.22	0.40	0.41
Sat Flow, veh/h	1774	3439	158	1774	3681	1592	1774	1483	315	3442	1012	770
Grp Volume(v), veh/h	167	537	555	120	975	594	38	0	348	622	0	759
Grp Sat Flow(s),veh/h/ln	1774	1770	1828	1774	1840	1592	1774	0	1798	1721	0	1782
Q Serve(g_s), s	11.2	34.9	34.9	7.8	25.2	13.7	2.6	0.0	22.7	20.7	0.0	48.5
Cycle Q Clear(g_c), s	11.2	34.9	34.9	7.8	25.2	13.7	2.6	0.0	22.7	20.7	0.0	48.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.18	1.00		0.43
Lane Grp Cap(c), veh/h	186	588	608	153	1154	861	48	0	381	756	0	720
V/C Ratio(X)	0.90	0.91	0.91	0.79	0.84	0.69	0.79	0.00	0.91	0.82	0.00	1.05
Avail Cap(c_a), veh/h	186	588	608	153	1154	861	61	0	430	756	0	720
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.1	38.4	38.3	48.6	20.1	3.7	58.0	0.0	46.1	44.6	0.0	35.5
Incr Delay (d2), s/veh	38.4	20.9	20.4	20.3	6.6	3.9	40.0	0.0	22.2	7.3	0.0	48.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	20.4	21.0	4.7	13.5	5.8	1.8	0.0	13.7	10.6	0.0	33.5
LnGrp Delay(d),s/veh	91.5	59.3	58.8	68.9	26.7	7.6	98.0	0.0	68.4	51.9	0.0	84.1
LnGrp LOS	F	E	E	E	C	A	F		E	D		F
Approach Vol, veh/h		1259			1689			386			1381	
Approach Delay, s/veh		63.3			23.0			71.3			69.6	
Approach LOS		E			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	44.4	7.8	53.0	17.1	42.1	30.8	29.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	39.9	4.1	48.5	12.6	36.8	23.9	28.7
Max Q Clear Time (g_c+I1), s	13.2	36.9	4.6	50.5	13.2	27.2	22.7	24.7
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	5.8	0.4	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	51.4
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1138	590	531	1257	0	0	0	0	416	23	460
Future Volume (veh/h)	0	1138	590	531	1257	0	0	0	0	416	23	460
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1138	590	531	1257	0				432	0	460
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2146	651	594	3343	0				1112	0	496
Arrive On Green	0.00	0.84	0.84	0.35	1.00	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5253	1544	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1138	590	531	1257	0				432	0	460
Grp Sat Flow(s),veh/h/ln	0	1695	1544	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	7.6	30.4	17.5	0.0	0.0				11.1	0.0	32.5
Cycle Q Clear(g_c), s	0.0	7.6	30.4	17.5	0.0	0.0				11.1	0.0	32.5
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2146	651	594	3343	0				1112	0	496
V/C Ratio(X)	0.00	0.53	0.91	0.89	0.38	0.00				0.39	0.00	0.93
Avail Cap(c_a), veh/h	0	2146	651	760	3343	0				1215	0	542
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.31	0.31	0.77	0.77	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.0	7.8	38.2	0.0	0.0				33.2	0.0	40.6
Incr Delay (d2), s/veh	0.0	0.3	7.1	8.8	0.3	0.0				0.2	0.0	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	13.1	9.0	0.1	0.0				5.7	0.0	17.8
LnGrp Delay(d),s/veh	0.0	6.3	14.9	47.0	0.3	0.0				33.4	0.0	62.0
LnGrp LOS		A	B	D	A					C		E
Approach Vol, veh/h		1728			1788						892	
Approach Delay, s/veh		9.2			14.1						48.1	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	25.2	54.1		40.7		79.3		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	20.5	40.5		39.5		71.5		
Max Q Clear Time (g_c+I1), s	19.5	32.4		34.5		2.0		
Green Ext Time (p_c), s	1.2	5.5		1.6		11.9		

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	382	1141	0	0	1300	568	489	0	454	0	0	0
Future Volume (veh/h)	382	1141	0	0	1300	568	489	0	454	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	382	1141	0	0	1300	568	630	0	303			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	878	2525	0	0	2103	676	812	0	362			
Arrive On Green	0.26	0.71	0.00	0.00	0.56	0.56	0.22	0.00	0.22			
Sat Flow, veh/h	3442	3632	0	0	5269	1605	3690	0	1647			
Grp Volume(v), veh/h	382	1141	0	0	1300	568	630	0	303			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1605	1845	0	1647			
Q Serve(g_s), s	11.2	16.4	0.0	0.0	21.0	35.3	19.3	0.0	21.1			
Cycle Q Clear(g_c), s	11.2	16.4	0.0	0.0	21.0	35.3	19.3	0.0	21.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	878	2525	0	0	2103	676	812	0	362			
V/C Ratio(X)	0.44	0.45	0.00	0.00	0.62	0.84	0.78	0.00	0.84			
Avail Cap(c_a), veh/h	878	2525	0	0	2103	676	1276	0	569			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.84	0.84	0.00	0.00	0.52	0.52	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.5	7.3	0.0	0.0	19.9	23.1	44.0	0.0	44.7			
Incr Delay (d2), s/veh	0.3	0.5	0.0	0.0	0.7	6.7	1.6	0.0	6.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.3	8.1	0.0	0.0	9.6	16.6	10.0	0.0	10.2			
LnGrp Delay(d),s/veh	37.7	7.8	0.0	0.0	20.6	29.8	45.7	0.0	51.0			
LnGrp LOS	D	A			C	C	D		D			
Approach Vol, veh/h		1523			1868			933				
Approach Delay, s/veh		15.3			23.4			47.4				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		89.1			35.1	54.0		30.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		69.5			15.5	49.5		41.5
Max Q Clear Time (g_c+I1), s		18.4			13.2	37.3		23.1
Green Ext Time (p_c), s		10.3			0.3	8.9		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	442	188	170	197	157	84	713	187	203	762	81
Future Volume (veh/h)	137	442	188	170	197	157	84	713	187	203	762	81
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	3	3	0	3	6	0	0	3	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	147	475	182	183	212	153	90	767	201	218	819	78
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	532	202	216	475	312	120	894	576	468	1481	139
Arrive On Green	0.10	0.21	0.21	0.12	0.23	0.23	0.06	0.30	0.25	0.27	0.50	0.45
Sat Flow, veh/h	1774	2486	945	1774	1988	1358	1774	3539	1540	1774	3260	310
Grp Volume(v), veh/h	147	337	320	183	187	178	90	767	201	218	445	452
Grp Sat Flow(s),veh/h/ln	1774	1770	1662	1774	1770	1577	1774	1770	1540	1774	1770	1800
Q Serve(g_s), s	11.4	25.9	26.3	14.2	12.7	13.6	7.0	28.8	5.3	14.3	24.3	24.5
Cycle Q Clear(g_c), s	11.4	25.9	26.3	14.2	12.7	13.6	7.0	28.8	5.3	14.3	24.3	24.5
Prop In Lane	1.00		0.57	1.00		0.86	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	172	378	355	216	415	371	120	894	576	468	802	817
V/C Ratio(X)	0.85	0.89	0.90	0.85	0.45	0.48	0.75	0.86	0.35	0.47	0.55	0.55
Avail Cap(c_a), veh/h	260	413	388	262	416	370	161	1029	633	477	805	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	53.4	53.6	60.7	46.1	46.4	64.6	46.9	12.4	43.3	25.5	25.9
Incr Delay (d2), s/veh	15.8	19.6	22.2	19.0	0.8	1.0	12.6	10.5	1.7	0.7	2.7	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	9.1	0.2	0.2	18.2	2.3	0.0	0.0	0.1	0.1
%ile BackOfQ(50%),veh/ln	6.3	14.7	14.3	9.1	6.6	6.3	4.9	16.1	2.9	7.2	12.8	13.1
LnGrp Delay(d),s/veh	78.1	73.1	75.8	88.8	47.0	47.6	95.4	59.6	14.1	44.0	28.3	28.6
LnGrp LOS	E	E	E	F	D	D	F	E	B	D	C	C
Approach Vol, veh/h		804			548			1058			1115	
Approach Delay, s/veh		75.1			61.1			54.0			31.5	
Approach LOS		E			E			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	35.2	14.1	69.0	18.9	38.1	43.0	40.1
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	20.7	32.7	12.7	52.7	20.5	32.9	24.7	40.7
Max Q Clear Time (g_c+I1), s	16.2	28.3	9.0	26.5	13.4	15.6	16.3	30.8
Green Ext Time (p_c), s	0.2	1.7	0.1	5.9	0.2	2.1	0.4	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.8
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	944	503	14	26	20
Future Vol, veh/h	19	944	503	14	26	20
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	994	529	15	27	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	549	0	-	0	1079	277
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1017	-	-	-	213	720
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1013	-	-	-	207	717
Mov Cap-2 Maneuver	-	-	-	-	341	-
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	548	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1013	-	-	-	442
HCM Lane V/C Ratio	0.02	-	-	-	0.11
HCM Control Delay (s)	8.6	-	-	-	14.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	818	10	11	544	48	8	17	14	118	14	26
Future Volume (veh/h)	15	818	10	11	544	48	8	17	14	118	14	26
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	16	861	11	12	573	51	8	18	15	124	15	27
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	475	1402	18	389	1271	113	177	249	163	466	65	62
Arrive On Green	0.02	0.39	0.39	0.01	0.39	0.39	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3576	46	1774	3275	291	126	943	617	969	246	236
Grp Volume(v), veh/h	16	426	446	12	309	315	41	0	0	166	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1852	1774	1770	1796	1686	0	0	1451	0	0
Q Serve(g_s), s	0.2	5.8	5.8	0.1	3.9	3.9	0.0	0.0	0.0	2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	5.8	5.8	0.1	3.9	3.9	0.5	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.02	1.00		0.16	0.20		0.37	0.75		0.16
Lane Grp Cap(c), veh/h	475	694	726	389	687	697	589	0	0	594	0	0
V/C Ratio(X)	0.03	0.61	0.61	0.03	0.45	0.45	0.07	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	742	2492	2608	663	2509	2547	1406	0	0	1263	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.6	7.3	7.3	5.9	6.8	6.8	8.3	0.0	0.0	9.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.8	2.9	0.1	1.8	1.9	0.3	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	5.6	7.6	7.6	6.0	7.0	7.0	8.3	0.0	0.0	9.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A			A		
Approach Vol, veh/h		888			636			41			166	
Approach Delay, s/veh		7.6			6.9			8.3			9.1	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.4	15.6		10.9	3.5	15.5		10.9
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.1	7.8		4.7	2.2	5.9		2.5
Green Ext Time (p_c), s	0.0	3.4		0.6	0.0	2.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	859	155	165	536	286	156	684	231	238	412	55
Future Volume (veh/h)	115	859	155	165	536	286	156	684	231	238	412	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	117	877	143	168	547	273	159	698	221	243	420	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	159	973	159	233	829	413	203	746	236	284	1088	98
Arrive On Green	0.09	0.32	0.32	0.13	0.36	0.36	0.11	0.28	0.28	0.16	0.33	0.33
Sat Flow, veh/h	1774	3038	495	1774	2275	1133	1774	2632	833	1774	3278	295
Grp Volume(v), veh/h	117	511	509	168	425	395	159	469	450	243	226	232
Grp Sat Flow(s),veh/h/ln	1774	1770	1764	1774	1770	1638	1774	1770	1695	1774	1770	1804
Q Serve(g_s), s	7.7	33.1	33.1	10.9	24.1	24.3	10.5	31.0	31.1	16.0	11.7	11.9
Cycle Q Clear(g_c), s	7.7	33.1	33.1	10.9	24.1	24.3	10.5	31.0	31.1	16.0	11.7	11.9
Prop In Lane	1.00		0.28	1.00		0.69	1.00		0.49	1.00		0.16
Lane Grp Cap(c), veh/h	159	567	565	233	645	597	203	501	480	284	587	599
V/C Ratio(X)	0.74	0.90	0.90	0.72	0.66	0.66	0.78	0.94	0.94	0.85	0.38	0.39
Avail Cap(c_a), veh/h	180	567	565	259	645	597	303	501	480	297	587	599
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	39.0	39.0	50.0	31.9	32.1	51.7	41.9	42.1	49.0	30.7	30.8
Incr Delay (d2), s/veh	9.3	16.1	16.1	6.8	5.2	5.7	3.9	25.2	26.0	19.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	18.7	18.7	5.8	12.7	11.9	5.3	18.6	18.0	9.3	5.8	5.9
LnGrp Delay(d),s/veh	62.6	55.0	55.2	56.8	37.1	37.8	55.6	67.1	68.1	68.2	31.1	31.2
LnGrp LOS	E	E	E	E	D	D	E	E	E	E	C	C
Approach Vol, veh/h		1137			988			1078			701	
Approach Delay, s/veh		55.9			40.7			65.8			44.0	
Approach LOS		E			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	41.4	16.7	42.8	13.7	46.7	22.5	37.0
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	16.3	* 35	* 19	32.1	* 11	40.2	18.9	* 33
Max Q Clear Time (g_c+I1), s	12.9	35.1	12.5	13.9	9.7	26.3	18.0	33.1
Green Ext Time (p_c), s	0.1	0.0	0.1	2.3	0.0	4.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & College Ave/College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	859	155	165	536	286	156	684	231	238	412	55
Future Volume (veh/h)	115	859	155	165	536	286	156	684	231	238	412	55
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1937	1863	1863	1976
Adj Flow Rate, veh/h	117	877	143	168	547	273	159	698	221	243	420	38
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	159	1151	188	222	949	472	203	814	567	285	915	82
Arrive On Green	0.09	0.38	0.37	0.13	0.42	0.41	0.11	0.23	0.23	0.16	0.28	0.27
Sat Flow, veh/h	1774	3039	495	1774	2275	1133	1774	3539	1610	1774	3278	295
Grp Volume(v), veh/h	117	511	509	168	425	395	159	698	221	243	226	232
Grp Sat Flow(s),veh/h/ln	1774	1770	1764	1774	1770	1639	1774	1770	1610	1774	1770	1803
Q Serve(g_s), s	7.7	30.2	30.3	11.0	22.1	22.3	10.5	22.7	0.0	16.0	12.7	12.8
Cycle Q Clear(g_c), s	7.7	30.2	30.3	11.0	22.1	22.3	10.5	22.7	0.0	16.0	12.7	12.8
Prop In Lane	1.00		0.28	1.00		0.69	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	159	671	669	222	738	683	203	814	567	285	494	503
V/C Ratio(X)	0.73	0.76	0.76	0.76	0.58	0.58	0.78	0.86	0.39	0.85	0.46	0.46
Avail Cap(c_a), veh/h	235	671	669	269	738	683	299	844	580	334	494	503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	32.5	32.6	50.7	26.8	27.0	51.7	44.3	29.3	49.0	35.7	35.8
Incr Delay (d2), s/veh	2.2	4.6	4.6	7.3	3.3	3.5	4.3	8.6	0.4	14.8	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	15.6	15.6	5.8	11.4	10.7	5.4	12.0	5.5	9.0	6.3	6.5
LnGrp Delay(d),s/veh	55.4	37.1	37.2	58.0	30.1	30.6	56.0	52.9	29.8	63.8	36.4	36.5
LnGrp LOS	E	D	D	E	C	C	E	D	C	E	D	D
Approach Vol, veh/h		1137			988			1078			701	
Approach Delay, s/veh		39.1			35.0			48.6			45.9	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	48.5	16.7	36.5	13.8	53.0	22.6	30.6
Change Period (Y+Rc), s	4.5	* 4.5	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5
Max Green Setting (Gmax), s	17.6	* 37	* 19	29.5	* 15	39.4	21.4	* 27
Max Q Clear Time (g_c+I1), s	13.0	32.3	12.5	14.8	9.7	24.3	18.0	24.7
Green Ext Time (p_c), s	0.1	2.6	0.1	2.2	0.1	4.6	0.1	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	41.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	1177	22	38	861	459	41	369	121	455	160	130
Future Volume (veh/h)	144	1177	22	38	861	459	41	369	121	455	160	130
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	152	1239	23	40	906	483	43	388	127	479	168	137
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	1374	25	98	1196	778	77	401	131	545	407	332
Arrive On Green	0.12	0.39	0.38	0.06	0.32	0.32	0.04	0.30	0.30	0.16	0.42	0.41
Sat Flow, veh/h	1774	3552	66	1774	3681	1593	1774	1337	438	3442	980	799
Grp Volume(v), veh/h	152	617	645	40	906	483	43	0	515	479	0	305
Grp Sat Flow(s),veh/h/ln	1774	1770	1849	1774	1840	1593	1774	0	1775	1721	0	1779
Q Serve(g_s), s	9.9	39.4	39.4	2.6	26.4	7.1	2.9	0.0	34.3	16.3	0.0	14.6
Cycle Q Clear(g_c), s	9.9	39.4	39.4	2.6	26.4	7.1	2.9	0.0	34.3	16.3	0.0	14.6
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.25	1.00		0.45
Lane Grp Cap(c), veh/h	207	684	715	98	1196	778	77	0	532	545	0	738
V/C Ratio(X)	0.73	0.90	0.90	0.41	0.76	0.62	0.56	0.00	0.97	0.88	0.00	0.41
Avail Cap(c_a), veh/h	207	684	715	98	1196	778	105	0	532	545	0	738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.2	34.7	34.7	54.8	36.3	22.7	56.3	0.0	41.5	49.4	0.0	24.9
Incr Delay (d2), s/veh	12.7	17.3	16.8	2.5	4.1	3.4	6.2	0.0	30.7	15.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	22.5	23.4	1.3	14.2	11.5	1.5	0.0	21.3	8.9	0.0	7.2
LnGrp Delay(d),s/veh	63.9	52.0	51.5	57.3	40.4	26.1	62.5	0.0	72.2	64.6	0.0	25.2
LnGrp LOS	E	D	D	E	D	C	E		E	E		C
Approach Vol, veh/h		1414			1429			558			784	
Approach Delay, s/veh		53.0			36.0			71.5			49.3	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	49.4	8.2	52.8	17.0	42.0	22.0	39.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	44.9	5.6	46.4	12.5	37.5	17.5	34.5
Max Q Clear Time (g_c+I1), s	4.6	41.4	4.9	16.6	11.9	28.4	18.3	36.3
Green Ext Time (p_c), s	0.0	2.4	0.0	1.9	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	49.0
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1167	555	479	862	0	0	0	0	727	1	416
Future Volume (veh/h)	0	1167	555	479	862	0	0	0	0	727	1	416
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1228	584	504	907	0				766	0	438
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2247	685	613	3411	0				1126	0	502
Arrive On Green	0.00	0.88	0.88	0.24	0.86	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	5253	1550	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1228	584	504	907	0				766	0	438
Grp Sat Flow(s),veh/h/ln	0	1695	1550	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	6.5	21.3	16.7	3.8	0.0				21.8	0.0	30.2
Cycle Q Clear(g_c), s	0.0	6.5	21.3	16.7	3.8	0.0				21.8	0.0	30.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2247	685	613	3411	0				1126	0	502
V/C Ratio(X)	0.00	0.55	0.85	0.82	0.27	0.00				0.68	0.00	0.87
Avail Cap(c_a), veh/h	0	2247	685	803	3411	0				1261	0	563
HCM Platoon Ratio	1.00	2.00	2.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.33	0.33	0.82	0.82	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	4.3	5.1	44.0	3.3	0.0				36.6	0.0	39.5
Incr Delay (d2), s/veh	0.0	0.3	4.7	4.4	0.2	0.0				1.3	0.0	13.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.8	9.0	8.3	1.9	0.0				11.3	0.0	15.6
LnGrp Delay(d),s/veh	0.0	4.6	9.9	48.4	3.5	0.0				37.9	0.0	52.5
LnGrp LOS		A	A	D	A					D		D
Approach Vol, veh/h		1812			1411						1204	
Approach Delay, s/veh		6.3			19.5						43.2	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.4	56.0		39.6		80.4		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	26.5	40.5		39.5		71.5		
Max Q Clear Time (g_c+I1), s	10.7	23.3		32.2		5.8		
Green Ext Time (p_c), s	1.2	10.2		2.9		7.7		

Intersection Summary	
HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave #1

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	1394	0	0	1046	467	316	2	396	0	0	0
Future Volume (veh/h)	397	1394	0	0	1046	467	316	2	396	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	418	1467	0	0	1101	492	477	0	265			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1085	2650	0	0	2041	658	743	0	331			
Arrive On Green	0.63	1.00	0.00	0.00	0.54	0.54	0.20	0.00	0.20			
Sat Flow, veh/h	3442	3632	0	0	5269	1610	3690	0	1647			
Grp Volume(v), veh/h	418	1467	0	0	1101	492	477	0	265			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1610	1845	0	1647			
Q Serve(g_s), s	7.1	0.0	0.0	0.0	17.1	28.4	14.2	0.0	18.4			
Cycle Q Clear(g_c), s	7.1	0.0	0.0	0.0	17.1	28.4	14.2	0.0	18.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1085	2650	0	0	2041	658	743	0	331			
V/C Ratio(X)	0.39	0.55	0.00	0.00	0.54	0.75	0.64	0.00	0.80			
Avail Cap(c_a), veh/h	1085	2650	0	0	2041	658	1076	0	480			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00	0.00	0.54	0.54	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.5	0.0	0.0	0.0	20.1	23.0	44.0	0.0	45.6			
Incr Delay (d2), s/veh	0.2	0.6	0.0	0.0	0.6	4.3	0.9	0.0	6.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.3	0.2	0.0	0.0	7.9	13.2	7.3	0.0	8.9			
LnGrp Delay(d),s/veh	16.6	0.6	0.0	0.0	20.7	27.2	44.9	0.0	51.7			
LnGrp LOS	B	A			C	C	D		D			
Approach Vol, veh/h		1885			1593			742				
Approach Delay, s/veh		4.2			22.7			47.3				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		92.8			40.8	52.0		27.2
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		77.5			25.5	47.5		33.5
Max Q Clear Time (g_c+I1), s		2.0			9.1	30.4		20.4
Green Ext Time (p_c), s		17.7			1.3	10.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
1: Stony Point Road/Marlow Road & West College Avenue

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	380	156	237	479	255	198	981	313	212	832	141
Future Volume (veh/h)	75	380	156	237	479	255	198	981	313	212	832	141
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	75	380	141	237	479	230	198	981	313	212	832	127
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	420	153	262	604	288	223	1181	755	356	1257	192
Arrive On Green	0.05	0.17	0.17	0.15	0.26	0.26	0.13	0.40	0.33	0.20	0.45	0.41
Sat Flow, veh/h	1774	2527	924	1774	2314	1104	1774	3539	1560	1774	3073	469
Grp Volume(v), veh/h	75	264	257	237	366	343	198	981	313	212	479	480
Grp Sat Flow(s),veh/h/ln	1774	1770	1681	1774	1770	1648	1774	1770	1560	1774	1770	1772
Q Serve(g_s), s	5.9	20.5	21.0	18.4	26.9	27.2	15.4	34.9	7.2	15.2	29.7	30.0
Cycle Q Clear(g_c), s	5.9	20.5	21.0	18.4	26.9	27.2	15.4	34.9	7.2	15.2	29.7	30.0
Prop In Lane	1.00		0.55	1.00		0.67	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	94	294	279	262	462	430	223	1181	755	356	724	725
V/C Ratio(X)	0.79	0.90	0.92	0.90	0.79	0.80	0.89	0.83	0.41	0.59	0.66	0.66
Avail Cap(c_a), veh/h	123	300	284	326	502	467	275	1181	755	356	724	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.00	1.00	1.10	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.5	57.2	57.4	58.7	48.2	48.3	60.3	38.4	8.6	50.8	30.9	31.6
Incr Delay (d2), s/veh	23.0	27.7	32.6	23.7	7.9	8.8	24.4	6.9	1.7	2.7	4.7	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	12.3	12.3	10.7	14.2	13.5	9.0	18.1	3.9	7.7	15.5	15.6
LnGrp Delay(d),s/veh	88.5	84.9	90.0	82.4	56.1	57.2	84.7	45.3	10.3	53.4	35.7	36.3
LnGrp LOS	F	F	F	F	E	E	F	D	B	D	D	D
Approach Vol, veh/h		596			946			1492			1171	
Approach Delay, s/veh		87.6			63.1			43.2			39.2	
Approach LOS		F			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	28.6	22.9	62.6	12.7	41.8	33.4	52.0
Change Period (Y+Rc), s	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
Max Green Setting (Gmax), s	25.7	23.7	21.7	47.7	9.7	39.7	22.7	46.7
Max Q Clear Time (g_c+I1), s	20.4	23.0	17.4	32.0	7.9	29.2	17.2	36.9
Green Ext Time (p_c), s	0.3	0.2	0.2	5.4	0.0	3.4	0.3	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	52.8
HCM 2010 LOS	D

HCM 2010 TWSC
2: W College Ave & Kowell Lane

08/10/2021

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	827	934	24	16	39
Future Vol, veh/h	41	827	934	24	16	39
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	827	934	24	16	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	963	0	-	0	1447	484
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	496	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	711	-	-	-	122	529
Stage 1	-	-	-	-	336	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	708	-	-	-	114	527
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	708	-	-	-	385
HCM Lane V/C Ratio	0.058	-	-	-	0.143
HCM Control Delay (s)	10.4	-	-	-	15.9
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

HCM 2010 Signalized Intersection Summary
3: Clover Drive & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	773	25	29	1053	119	25	17	18	161	34	66
Future Volume (veh/h)	52	773	25	29	1053	119	25	17	18	161	34	66
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	773	25	29	1053	119	25	17	18	161	34	66
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	1636	53	443	1442	163	259	170	129	354	76	96
Arrive On Green	0.04	0.47	0.47	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3494	113	1774	3191	360	511	660	501	811	297	375
Grp Volume(v), veh/h	52	391	407	29	583	589	60	0	0	261	0	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1838	1774	1770	1782	1671	0	0	1482	0	0
Q Serve(g_s), s	0.6	6.1	6.1	0.3	10.8	10.8	0.0	0.0	0.0	5.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	6.1	6.1	0.3	10.8	10.8	1.1	0.0	0.0	6.3	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.20	0.42		0.30	0.62		0.25
Lane Grp Cap(c), veh/h	344	828	860	443	799	805	557	0	0	527	0	0
V/C Ratio(X)	0.15	0.47	0.47	0.07	0.73	0.73	0.11	0.00	0.00	0.50	0.00	0.00
Avail Cap(c_a), veh/h	487	1859	1930	615	1872	1885	1028	0	0	949	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	7.3	7.3	5.9	9.0	9.0	11.4	0.0	0.0	13.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.5	0.5	0.0	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.0	3.1	0.2	5.3	5.3	0.5	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	7.0	7.4	7.4	5.9	9.5	9.5	11.5	0.0	0.0	13.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B			B		
Approach Vol, veh/h		850			1201			60			261	
Approach Delay, s/veh		7.4			9.4			11.5			13.6	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.1	22.7		13.3	4.8	22.0		13.3
Change Period (Y+Rc), s	3.0	3.9		3.0	3.0	* 3.9		3.0
Max Green Setting (Gmax), s	5.0	42.1		22.0	5.0	* 42		23.0
Max Q Clear Time (g_c+I1), s	2.3	8.1		8.3	2.6	12.8		3.1
Green Ext Time (p_c), s	0.0	3.0		0.9	0.0	5.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.2
HCM 2010 LOS	A

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	690	270	242	925	197	230	510	185	361	747	190
Future Volume (veh/h)	117	690	270	242	925	197	230	510	185	361	747	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1976	1863	1863	1976
Adj Flow Rate, veh/h	117	690	255	242	925	178	230	510	170	361	747	172
Adj No. of Lanes	1	2	0	1	2	0	1	2	0	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	696	257	271	974	187	256	584	193	386	849	195
Arrive On Green	0.10	0.28	0.28	0.15	0.33	0.33	0.14	0.22	0.22	0.22	0.30	0.30
Sat Flow, veh/h	1774	2515	929	1774	2951	568	1774	2596	860	1774	2845	655
Grp Volume(v), veh/h	117	486	459	242	554	549	230	347	333	361	465	454
Grp Sat Flow(s),veh/h/ln	1774	1770	1675	1774	1770	1749	1774	1770	1686	1774	1770	1731
Q Serve(g_s), s	7.7	32.8	32.8	16.1	36.7	36.7	15.3	22.7	22.9	24.0	30.0	30.0
Cycle Q Clear(g_c), s	7.7	32.8	32.8	16.1	36.7	36.7	15.3	22.7	22.9	24.0	30.0	30.0
Prop In Lane	1.00		0.55	1.00		0.32	1.00		0.51	1.00		0.38
Lane Grp Cap(c), veh/h	171	490	463	271	584	577	256	398	379	386	528	516
V/C Ratio(X)	0.68	0.99	0.99	0.89	0.95	0.95	0.90	0.87	0.88	0.94	0.88	0.88
Avail Cap(c_a), veh/h	171	490	463	271	584	577	262	413	393	411	562	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	43.3	43.3	49.9	39.2	39.2	50.5	44.8	44.9	46.1	40.1	40.1
Incr Delay (d2), s/veh	7.9	36.2	37.2	28.5	26.7	27.0	29.5	17.6	19.3	27.1	14.4	14.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	21.0	20.0	10.0	22.2	22.0	9.6	13.0	12.7	14.6	16.7	16.4
LnGrp Delay(d),s/veh	60.3	79.4	80.5	78.4	65.9	66.3	80.0	62.4	64.2	73.2	54.4	54.7
LnGrp LOS	E	E	F	E	E	E	F	E	E	E	D	D
Approach Vol, veh/h		1062			1345			910			1280	
Approach Delay, s/veh		77.8			68.3			67.5			59.8	
Approach LOS		E			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.5	36.7	21.5	39.3	16.1	43.1	30.3	30.5
Change Period (Y+Rc), s	4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	16.3	31.9	* 18	37.1	9.2	* 39	* 28	27.0
Max Q Clear Time (g_c+I1), s	18.1	34.8	17.3	32.0	9.7	38.7	26.0	24.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.5	0.0	0.0	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	68.0
HCM 2010 LOS	E

Notes

HCM 2010 Signalized Intersection Summary
4: Dutton Ave & W College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	690	270	242	925	197	230	510	185	361	747	190
Future Volume (veh/h)	117	690	270	242	925	197	230	510	185	361	747	190
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1976	1863	1863	1863	1863	1863	1976
Adj Flow Rate, veh/h	117	690	255	242	925	178	230	510	185	361	747	172
Adj No. of Lanes	1	2	0	1	2	0	1	2	1	1	2	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	768	284	263	1110	213	257	777	570	385	819	189
Arrive On Green	0.08	0.36	0.30	0.15	0.64	0.37	0.14	0.21	0.21	0.22	0.28	0.28
Sat Flow, veh/h	1774	2580	953	1774	3027	582	1774	3725	1544	1774	2918	672
Grp Volume(v), veh/h	117	498	447	242	569	534	230	510	185	361	477	442
Grp Sat Flow(s),veh/h/ln	1774	1863	1671	1774	1863	1747	1774	1863	1544	1774	1863	1727
Q Serve(g_s), s	7.8	30.4	30.6	16.1	28.2	30.5	15.3	15.1	10.4	24.0	29.7	29.7
Cycle Q Clear(g_c), s	7.8	30.4	30.6	16.1	28.2	30.5	15.3	15.1	10.4	24.0	29.7	29.7
Prop In Lane	1.00		0.57	1.00		0.33	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	136	554	497	263	683	640	257	777	570	385	523	485
V/C Ratio(X)	0.86	0.90	0.90	0.92	0.83	0.83	0.89	0.66	0.32	0.94	0.91	0.91
Avail Cap(c_a), veh/h	136	554	497	263	683	640	308	885	615	396	536	496
HCM Platoon Ratio	1.00	1.20	1.00	1.00	1.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.7	36.9	38.9	50.4	18.7	24.0	50.4	43.5	27.5	46.2	41.7	41.7
Incr Delay (d2), s/veh	37.4	20.0	21.7	34.3	11.4	12.1	21.8	1.5	0.3	28.8	19.7	20.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	18.7	17.1	10.4	16.4	16.6	9.0	7.9	4.5	14.8	18.1	16.9
LnGrp Delay(d),s/veh	92.1	56.8	60.6	84.6	30.1	36.1	72.2	45.0	27.8	75.0	61.4	62.6
LnGrp LOS	F	E	E	F	C	D	E	D	C	E	E	E
Approach Vol, veh/h		1062			1345			925			1280	
Approach Delay, s/veh		62.3			42.3			48.3			65.6	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	39.2	21.6	37.2	13.7	47.5	30.3	28.5
Change Period (Y+Rc), s	* 4.2	4.5	* 4.2	4.5	4.5	* 4.5	* 4.2	4.5
Max Green Setting (Gmax), s	* 18	30.5	* 21	33.5	5.3	* 43	* 27	27.5
Max Q Clear Time (g_c+I1), s	18.1	32.6	17.3	31.7	9.8	32.5	26.0	17.1
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	5.0	0.1	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	54.6
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
5: Cleveland Ave & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	169	1054	51	120	991	594	42	287	61	622	431	331
Future Volume (veh/h)	169	1054	51	120	991	594	42	287	61	622	431	331
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1976	1863	1937	1937	1863	1863	1900	1863	1937	1976
Adj Flow Rate, veh/h	169	1054	51	120	991	594	42	287	61	622	431	331
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	2	1	0
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	1140	55	147	1143	861	54	314	67	766	407	313
Arrive On Green	0.11	0.33	0.34	0.17	0.62	0.62	0.03	0.21	0.22	0.22	0.40	0.41
Sat Flow, veh/h	1774	3429	166	1774	3681	1592	1774	1483	315	3442	1008	774
Grp Volume(v), veh/h	169	544	561	120	991	594	42	0	348	622	0	762
Grp Sat Flow(s),veh/h/ln	1774	1770	1826	1774	1840	1592	1774	0	1798	1721	0	1781
Q Serve(g_s), s	11.3	35.5	35.5	7.8	26.5	13.8	2.8	0.0	22.7	20.6	0.0	48.5
Cycle Q Clear(g_c), s	11.3	35.5	35.5	7.8	26.5	13.8	2.8	0.0	22.7	20.6	0.0	48.5
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.18	1.00		0.43
Lane Grp Cap(c), veh/h	186	588	607	147	1143	861	54	0	381	766	0	720
V/C Ratio(X)	0.91	0.92	0.92	0.81	0.87	0.69	0.78	0.00	0.91	0.81	0.00	1.06
Avail Cap(c_a), veh/h	186	588	607	147	1143	861	61	0	430	766	0	720
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.1	38.6	38.6	49.1	20.7	3.8	57.8	0.0	46.1	44.3	0.0	35.5
Incr Delay (d2), s/veh	40.8	22.5	22.0	24.9	7.7	3.9	43.3	0.0	22.2	6.6	0.0	50.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	21.0	21.6	4.8	14.4	5.8	2.0	0.0	13.7	10.5	0.0	33.8
LnGrp Delay(d),s/veh	94.0	61.1	60.6	74.0	28.4	7.6	101.1	0.0	68.4	50.9	0.0	85.6
LnGrp LOS	F	E	E	E	C	A	F		E	D		F
Approach Vol, veh/h		1274			1705			390			1384	
Approach Delay, s/veh		65.2			24.4			71.9			70.0	
Approach LOS		E			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	44.4	8.1	53.0	17.1	41.8	31.2	29.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	39.9	4.1	48.5	12.6	36.8	23.9	28.7
Max Q Clear Time (g_c+I1), s	13.8	37.5	4.8	50.5	13.3	28.5	22.6	24.7
Green Ext Time (p_c), s	0.0	1.5	0.0	0.0	0.0	5.3	0.4	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: U.S.101 South Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1143	595	531	1267	0	0	0	0	416	23	466
Future Volume (veh/h)	0	1143	595	531	1267	0	0	0	0	416	23	466
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1863	1863	1937	0				1937	1937	1937
Adj Flow Rate, veh/h	0	1143	595	531	1267	0				432	0	466
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	2131	647	594	3327	0				1123	0	501
Arrive On Green	0.00	0.84	0.84	0.35	1.00	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5253	1544	3442	5463	0				3690	0	1647
Grp Volume(v), veh/h	0	1143	595	531	1267	0				432	0	466
Grp Sat Flow(s),veh/h/ln	0	1695	1544	1721	1763	0				1845	0	1647
Q Serve(g_s), s	0.0	7.9	32.7	17.5	0.0	0.0				11.1	0.0	33.0
Cycle Q Clear(g_c), s	0.0	7.9	32.7	17.5	0.0	0.0				11.1	0.0	33.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2131	647	594	3327	0				1123	0	501
V/C Ratio(X)	0.00	0.54	0.92	0.89	0.38	0.00				0.38	0.00	0.93
Avail Cap(c_a), veh/h	0	2131	647	760	3327	0				1215	0	542
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.30	0.30	0.77	0.77	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.3	8.3	38.2	0.0	0.0				32.9	0.0	40.5
Incr Delay (d2), s/veh	0.0	0.3	7.8	8.8	0.3	0.0				0.2	0.0	22.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.4	14.3	9.0	0.1	0.0				5.7	0.0	18.1
LnGrp Delay(d),s/veh	0.0	6.6	16.1	47.0	0.3	0.0				33.1	0.0	62.5
LnGrp LOS		A	B	D	A					C		E
Approach Vol, veh/h		1738			1798						898	
Approach Delay, s/veh		9.8			14.1						48.4	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	25.2	53.8		41.0		79.0		
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5		
Max Green Setting (Gmax), s	26.5	40.5		39.5		71.5		
Max Q Clear Time (g_c+I1), s	19.5	34.7		35.0		2.0		
Green Ext Time (p_c), s	1.2	4.2		1.6		12.0		

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
7: U.S.101 North Ramps & College Ave

08/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	386	1142	0	0	1301	568	497	0	454	0	0	0
Future Volume (veh/h)	386	1142	0	0	1301	568	497	0	454	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	0	0	1937	1976	1937	1937	1937			
Adj Flow Rate, veh/h	386	1142	0	0	1301	568	638	0	303			
Adj No. of Lanes	2	2	0	0	4	0	2	0	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	877	2524	0	0	2103	676	812	0	363			
Arrive On Green	0.25	0.71	0.00	0.00	0.56	0.56	0.22	0.00	0.22			
Sat Flow, veh/h	3442	3632	0	0	5269	1605	3690	0	1647			
Grp Volume(v), veh/h	386	1142	0	0	1301	568	638	0	303			
Grp Sat Flow(s),veh/h/ln	1721	1770	0	0	1666	1605	1845	0	1647			
Q Serve(g_s), s	11.3	16.4	0.0	0.0	21.0	35.3	19.6	0.0	21.1			
Cycle Q Clear(g_c), s	11.3	16.4	0.0	0.0	21.0	35.3	19.6	0.0	21.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	877	2524	0	0	2103	676	812	0	363			
V/C Ratio(X)	0.44	0.45	0.00	0.00	0.62	0.84	0.79	0.00	0.84			
Avail Cap(c_a), veh/h	877	2524	0	0	2103	676	1276	0	569			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00			
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.52	0.52	1.00	0.00	1.00			
Uniform Delay (d), s/veh	37.5	7.3	0.0	0.0	19.9	23.1	44.1	0.0	44.7			
Incr Delay (d2), s/veh	0.3	0.5	0.0	0.0	0.7	6.7	1.7	0.0	6.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.4	8.1	0.0	0.0	9.8	16.6	10.1	0.0	10.2			
LnGrp Delay(d),s/veh	37.8	7.8	0.0	0.0	20.7	29.8	45.8	0.0	50.9			
LnGrp LOS	D	A			C	C	D		D			
Approach Vol, veh/h		1528			1869			941				
Approach Delay, s/veh		15.4			23.4			47.5				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		89.1			35.1	54.0		30.9
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5
Max Green Setting (Gmax), s		69.5			15.5	49.5		41.5
Max Q Clear Time (g_c+I1), s		18.4			13.3	37.3		23.1
Green Ext Time (p_c), s		10.3			0.3	8.9		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Notes