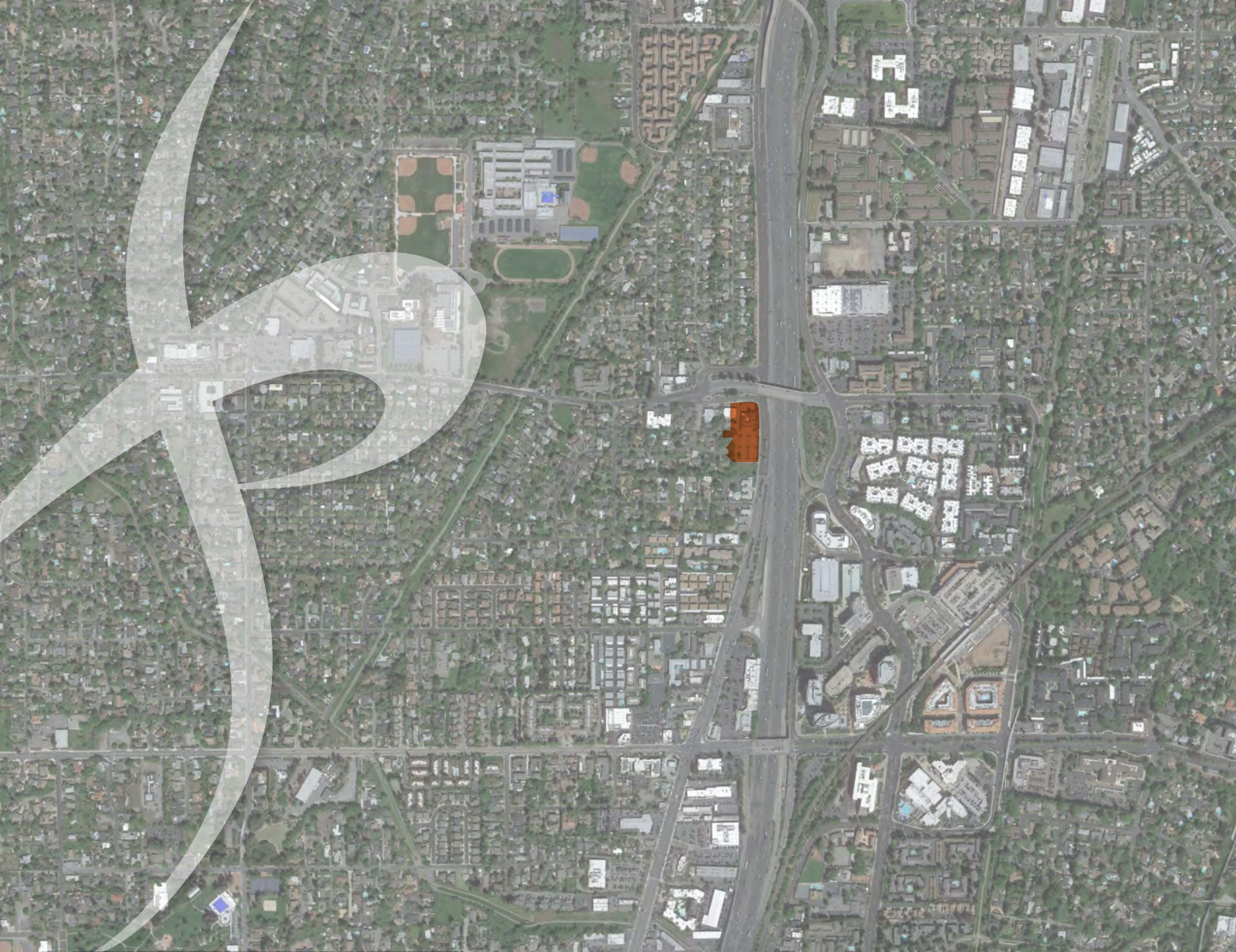


Appendix J:
Transportation Impact Assessment



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December 2018

Draft Final
Transportation Impact Assessment

Cambria Hotel Project

Prepared for:
City of Pleasant Hill
Lamphier-Gregory

Cambria Hotel Project Draft Final Transportation Impact Assessment

Prepared for:
City of Pleasant Hill
Lamphier-Gregory

December 2018

WC18-3495

FEHR  PEERS

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Executive Summary

This study presents the analysis and findings of the Transportation Impact Assessment (TIA) prepared for the Cambria Hotel "Project" in Pleasant Hill, California.

Project Description and Analysis Parameters

The approximately 2.5-acre site is located in the City of Pleasant Hill, west of Main Street and south of Oak Park Boulevard. The project would remove an existing 9,740 square-foot occupied restaurant building and an existing 3,070 square-foot vacant retail building, and construct a 4-story, 155-room hotel. Approximately 133 surface parking spaces are proposed. Access to the site is currently provided from two right-in/right-out driveways on Main Street and one full access driveway on Oak Park Boulevard. As part of the project, the northern most site driveway would be modified to provide left-turn access into the site and restricted to inbound vehicle travel only. A shuttle would be provided between the hotel and Pleasant Hill BART station for hotel guests.

Off-Site Findings

No significant intersection impacts to intersections were identified with construction of the project in either the existing or cumulative scenarios. However, there could be potentially significant impacts during the construction phase of the project, which would be reduced to a less-than-significant level with implementation mitigation measures.

On-Site Findings

Based on a detailed site plan review, recommendations were made to enhance access and circulation for all modes, as detailed in Chapter 6, as well as to manage the proposed parking supply.

1. Introduction

This report presents the analysis results and findings of the Transportation Impact Assessment (TIA) prepared for the Cambria Hotel (project). This chapter discusses the analysis methods, criteria used to identify significant impacts, and report organization.

TIA Purpose

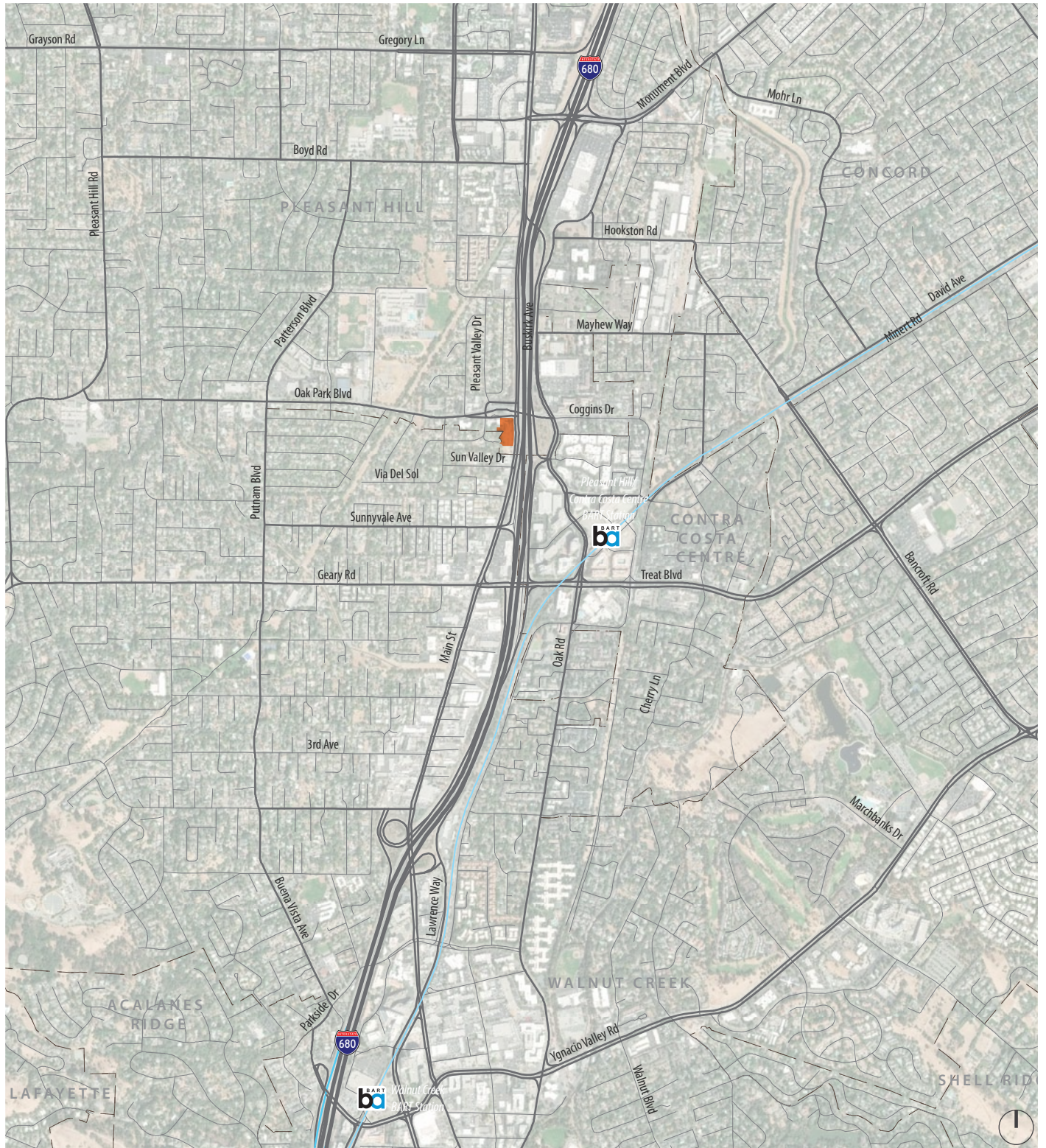
The approximately 2.5-acre site is located in the City of Pleasant Hill, west of Main Street and south of Oak Park Boulevard, as shown on **Figure 1**. The project would remove an existing 9,740 square-foot occupied restaurant building and an existing 3,070 square-foot vacant retail building, and construct a 4-story, 155-room hotel. A conceptual project site plan is shown on **Figure 2**. Approximately 133 surface parking spaces are proposed. Access to the site is currently provided from two right-in/right-out driveways on Main Street and one full access driveway on Oak Park Boulevard. As part of the project, the northern most site driveway would be modified to provide left-turn access into the site and restricted to inbound vehicle travel only. A shuttle would be provided between the hotel and Pleasant Hill BART station for hotel guests.

This study addresses the project's impacts on the roadway system under existing and cumulative scenarios and discusses potential impacts to the adjacent bicycle, pedestrian, and transit network. A parking assessment was also conducted.

Report Organization

This report is divided into seven chapters as described below:

- **Chapter 1 – Introduction** discusses the purpose and organization of this report.
- **Chapter 2 – Existing Conditions** describes the transportation system in the project vicinity, including the surrounding roadway network, peak period intersection turning movement volumes, existing bicycle, pedestrian, and transit facilities, and intersection operations.
- **Chapter 3 – Project Characteristics** presents the project description, and trip generation, distribution, and assignment.
- **Chapter 4 – Existing with Project Traffic Conditions** addresses the existing condition with the project and discusses vehicular impacts.



 Project Site



Figure 1

Regional Project Site Vicinity



Conceptual Project Site Plan



- **Chapter 5 – Cumulative Traffic Conditions** addresses future conditions, both without and with the project, and discusses vehicular impacts.
- **Chapter 6 – Site Access, Circulation and Parking** discusses site access, circulation and parking based on the current site plan for all modes of travel. Recommendations are provided.
- **Chapter 7 – Vehicle Miles of Travel** presents the results of the VMT assessment conducted for informational purposes only.

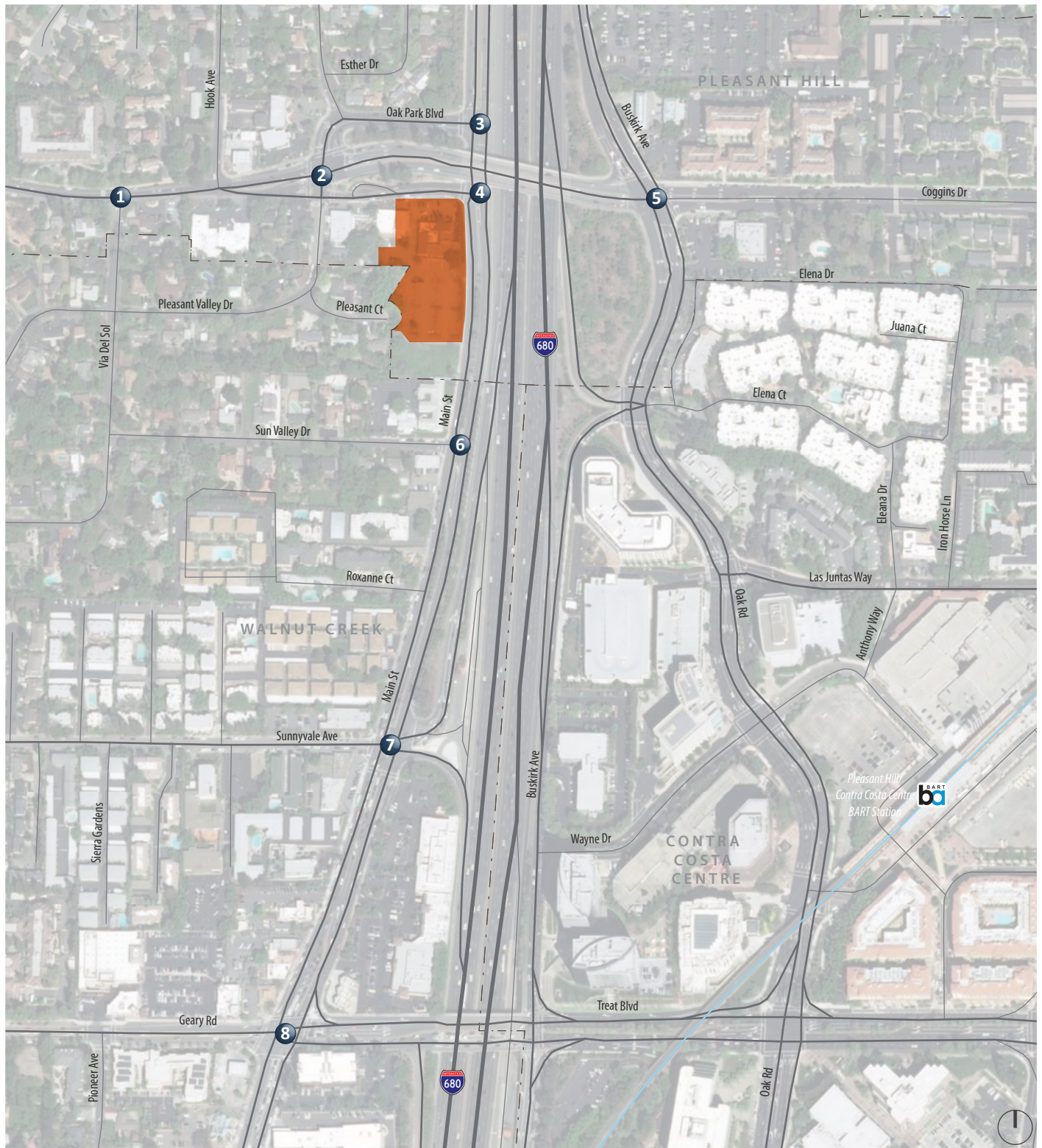
Study Locations, Analysis Scenarios and Analysis Methods

Project impacts to the study area roadway facilities were identified by measuring the effect of project traffic during the weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak periods, when commute traffic is typically the highest. The study intersections were selected in consultation with City of Pleasant Hill staff based on a review of the project location and the amount of traffic that could be added to the intersections in the site vicinity. The study intersections are listed below and shown on **Figure 3**, with the responsible agency noted in parentheses.

1. Oak Park Boulevard at Via Del Sol (City of Pleasant Hill)
2. Oak Park Boulevard at Pleasant Valley Drive (City of Pleasant Hill)
3. Pleasant Valley Drive at Main Street (City of Pleasant Hill)
4. Oak Park Boulevard at Main Street (City of Pleasant Hill)
5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road (City of Pleasant Hill)
6. Sun Valley Drive at Main Street (City of Pleasant Hill)
7. Sunnyside Avenue at North Main Street (City of Walnut Creek)
8. Geary Road at North Main Street (City of Walnut Creek)

The operations of roadway facilities are described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow from a vehicle driver’s perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (free-flow conditions) to LOS F (over capacity conditions). LOS E corresponds to operations “at capacity.” When volumes exceed capacity, stop-and-go conditions result and operations are designated LOS F.

Different methods are used to assess signalized and unsignalized (stop-controlled) intersections.



Project Site
 Study Intersection



Figure 3

Project Site Vicinity and Study Intersection Locations

Analysis Scenarios

Intersections operations were evaluated for the following scenarios:

1. Existing – Based on traffic counts collected at the study intersections in 2018.
2. Existing Plus Project – Existing traffic counts plus traffic generated by the project.
3. Cumulative – Forecasts for the cumulative scenario are based on traffic growth trends as described in the Pleasant Hill General Plan EIR and supplemented by a check of traffic forecasts for the study area in the Contra Costa Countywide Travel Demand Model. In addition to considering the regional growth trends, the forecasts also consider approved/pending projects in the immediate study area.
4. Cumulative Plus Project – Cumulative forecasts plus traffic expected to be generated by the project.

Analysis Methodology

The traffic operations analysis uses the Synchro 10.0 software, based on the procedures outlined in the 2010 *Highway Capacity Manual* (Transportation Research Board). Intersection operation inputs include vehicle, bicycle, and pedestrian volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors.

Intersection operations are described using the term “Level of Service” (LOS). LOS is a quantitative measure of the average delay experienced by a driver at the intersection. It ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delay.

Signalized Intersections

Operations of signalized intersections were evaluated using the method from Transportation Research Board’s 2010 Highway Capacity Manual (HCM 2010), which uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. **Table 1** summarizes the relationship between average delay per vehicle and LOS for signalized intersections. This method evaluates each intersection in isolation and the effects of vehicle queue spillback are not considered in the analysis results.

Table 1: Signalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: *Highway Capacity Manual*, 2010.

Unsignalized Intersections

Operations at unsignalized intersections were evaluated using the method from the HCM 2010. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections.

Table 2: Unsignalized Intersection LOS Criteria

Level of Service	Description	Delay in Seconds
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: *Highway Capacity Manual*, 2010.

Vehicle Miles of Travel

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) is updating California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, with final guidelines published in November 2017 incorporating public comments from the August 2014 and January 2016 guidelines. New guidelines are undergoing a formal rule-making process; full compliance with the guidelines is expected by July 2020. In response to the final guidelines, a preliminary assessment of vehicle miles of travel (VMT) generated by the proposed project was prepared for informational purposes only.

Regulatory Setting

The determination of significance for project impacts is based on applicable policies, regulations, goals, and guidelines defined by the City of Pleasant Hill, Walnut Creek, Contra Costa County, and the Contra Costa Transportation Authority (CCTA). Changes to the CEQA guidelines as dictated by Senate Bill 743 are also considered.

The impacts of the project were evaluated by comparing the results of the level of service calculations under Existing with Project and Cumulative with Project conditions to the results under Existing and Cumulative without Project conditions, respectively. The following criteria were used to identify significant off-site impacts of the proposed project under the various criteria.

Roadway Network

For this study, based on guidance contained in the City of Pleasant Hill General Plan and recently prepared environmental documents for other projects in the City, a significant transportation-related impact would occur if a project results in:

- Deterioration of peak hour operations at a signalized intersection from acceptable to unacceptable operations
- At an intersection projected to operate unacceptably prior to the addition of project traffic, the project increases delay by more than 5-seconds
- Deterioration of peak hour operations at a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:
 1. Project traffic results in satisfaction of the peak hour volume traffic signal warrant;
 2. Project traffic increases minor movement delay by more than 30 seconds; or
 3. Where the peak hour volume signal warrant is met without project traffic and delay cannot be measured, project increases traffic by 10 or more vehicles per lane on the controlled approach.
- The addition of project traffic at a study intersection would result in the 95th percentile vehicle queue exceeding the available storage or would increase 95th percentile queue by more than two vehicles where the queue already exceeds the available storage space (for example, vehicle queues extending beyond the available turn pocket length, impeding travel in the adjacent lanes)

The goal of City Pleasant Hill is to maintain LOS D during the peak hours, however signalized intersections located along CCTA Congestion Management Plan (CMP) network may operate at LOS E (i.e. intersections 3, 4, 6, 7 and 8). Additionally, the level of service standard at the North Main Street at Geary Road intersection is LOS F.

Bicycle and Pedestrian Network

The *City of Pleasant Hill 2003 General Plan* and *City of Pleasant Hill Draft Pedestrian and Bicycle Master Plan, 2011*, describes related policies necessary to ensure that pedestrian and bicycle facilities are safe and effective for City residents. Using these plans as a guide, significant impacts to these facilities would occur when a project or an element of the project:

- Creates a hazardous condition that currently does not exist for pedestrians and bicyclists, or otherwise interferes with pedestrian accessibility to the site and adjoining areas; or

- Conflicts with an existing or planned pedestrian or bicycle facility; or
- Conflicts with policies related to bicycle and pedestrian activity adopted by the City of Pleasant Hill.

Transit System

Generally, a project causes a significant impact to transit facilities and services if an element of it conflicts with existing or planned transit services. The evaluation of transit facilities shall consider if:

- A project creates demand for public transit services above the capacity which is provided, or planned;
- A project or project-related mitigation disrupts existing transit services or facilities;¹
- A project or project-related mitigation conflicts with an existing or planned transit facility; or
- A project or project-related mitigation conflicts with transit policies adopted by the City of Pleasant Hill, CCTA, or County Connection for their respective facilities in the study area.

Vehicle Miles of Travel

According to the *Update to CEQA Thresholds of Significance and Transportation Impact Study Guidelines* dated November 27, 2017, VMT impacts could have a significant effect on the environment if the project would:

1. Conflict with a plan, ordinance, or policy addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay); or
2. Cause additional VMT per capita, per service population, or other appropriate efficiency measure²; or
3. Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.

¹ This includes disruptions caused by proposed-project driveways on transit streets and impacts to transit stops/shelters; and impacts to transit operations from traffic improvements proposed or resulting from a project.

² Based on the latest guidance from OPR, residential development that would generate vehicle travel that is 15 or more percent below the existing residential VMT per capita, measured against the region or city, may indicate a less-than-significant transportation impact. In MPO areas, development measured against city VMT per capita (rather than regional VMT per capita) should not cumulatively exceed the population or number of units specified in the SCS for that city because greater-than-planned amounts of development in areas above the region-based threshold would undermine the VMT containment needed to achieve regional targets under SB 375.

Neither the City of Pleasant Hill, Contra Costa County nor the Contra Costa Transportation Authority have adopted VMT thresholds, and the new guidelines section 15064.3 states that they do not take effect until July 1, 2020 unless the lead agency adopts them earlier. As agencies have until 2020 to fully implement VMT, this analysis is being prepared for informational purposes only.

2. Existing Conditions

This chapter describes the existing transportation conditions in the study area including the roadway network, and transit, pedestrian, and bicycle facilities in the vicinity of the project site.

Roadway System

The project site is located in the City of Pleasant Hill, a City in Contra Costa County, north of the City of Walnut Creek and west of the City of Concord. The immediate area surrounding the project site is primarily residential with supporting commercial uses in close proximity.

Regional access to the site is provided by North Main Street and Interstate 680, with local access provided from Oak Park Boulevard. The following discusses the roadways that would provide access to the site and are most likely to experience direct traffic impacts, if any, from the proposed project.

Interstate I-680 is a north-south freeway located east of the project site. In the study area, it provides 5 mixed-flow and one high-occupancy vehicle lane in the southbound direction and 5 mixed-flow lanes in the northbound direction in addition to auxiliary lanes between interchanges. In the project area, approximately 260,000 vehicles per day travel on I-680. Access to/from northbound I-680 in the study area is provided from Oak Road on the east side of the freeway. Access to/from southbound I-680 is provided from North Main Street at Sunnyvale Avenue. Ramps at Contra Costa Boulevard also provide freeway access to the area.

North Main Street is a north-south four-lane arterial that runs parallel to Interstate 680. Oak Park Boulevard has an overpass with ramps to access North Main Street. South of Oak Park Boulevard, the right lane in both directions is a Class III bicycle facility with bike sharrows. North of Oak Park Boulevard, buffered bicycle lanes are provided until the roadway transitions to Contra Costa Boulevard, where a bicycle lane is provided in the northbound direction, and Class III lane marking provided in the southbound direction. Sidewalks are also present on both sides of the road. No on-street parking is allowed along this arterial in the study area. The posted speed limit is 35 miles per hour.

Oak Park Boulevard is an east-west collector roadway that extends west from Buskirk Avenue to Pleasant Hill Road. It features a four-lane bridge across I-680, and then reduces to a two-lane undivided road at Pleasant Valley Drive. The roadway has wide shoulders that are primarily used for on-street parking, but is also used by bicyclists. Sidewalks vary along the road, with small stretches without sidewalks on either side of the road. The posted speed limit is 30 miles per hour.

Oak Road/Buskirk Avenue is a north-south arterial that runs parallel to Interstate 680. Oak Road is four-lanes between Oak Park Boulevard and Walden Road before it becomes Civic Drive. Buskirk Avenue is two-lanes between Oak Park Boulevard and Hookston Court before it widens to four-lanes between Hookston Court and Monument Boulevard; the four-lane segment of Buskirk Avenue is a Class III bicycle facility with bike sharrow markings. North of Monument Boulevard, Buskirk Avenue becomes Ramona Drive. Sidewalks are present at least one side of the road and sometimes both. No on-street parking is allowed along this arterial in the study area. The posted speed limit is between 25 and 30 miles per hour.

Geary Road/Treat Boulevard is an east-west arterial that extends from Camino Verde to Clayton Road. Geary Road is two-lanes between North Main Street and Camino Verde before it continues as Pleasant Hill Road. Treat Boulevard is six-lanes between North Main Street and San Simeon Drive and four-lanes north of San Simeon before it continues as Denkinger Road at Clayton Road. Geary Road is a Class II bicycle facility with bike lanes. Sidewalks are present on both sides of the road except between North Main Street and Buskirk Avenue. On-street parking is allowed on Geary Road, but not Treat Boulevard. The posted speed limit is 35 miles per hour.

Via Del Sol is a two-lane residential street that extends from the EBMUD Trail to Oak Park Boulevard. There are sidewalks along the frontage of some residential properties, however for the most part there are no sidewalks along either side of the road. On-street parking is typically provided in unpaved shoulder areas.

Sun Valley Drive is a two-lane residential street that extends from Via Del Sol to North Main Street. There are no sidewalks along either side of the road except along the frontage of Oak Park Hills Chapel. On-street parking is typically provided in unpaved shoulder areas.

Sunnyvale Avenue is a two-lane residential street that extends from Putnam Boulevard to North Main Street. Sunnyvale Avenue provides direct access to Southbound Interstate I-680. There are sidewalks along both sides of the road east of the EBMUD Trail and only along the frontage of some residential properties west of the EBMUD Trail. On-street parking is provided.

Pedestrian Facilities

Pedestrian facilities include sidewalks, pathways, crosswalks, and pedestrian signals. Sidewalk coverage is not ubiquitous in the study area and there are gaps along sections of Oak Park Boulevard, Via Del Sol, Sun Valley Drive, and other residential streets in the immediate study area. There are high-visibility crosswalks with pedestrian actuated warning light systems in the study area that include the trail crossing on Oak Park Boulevard.

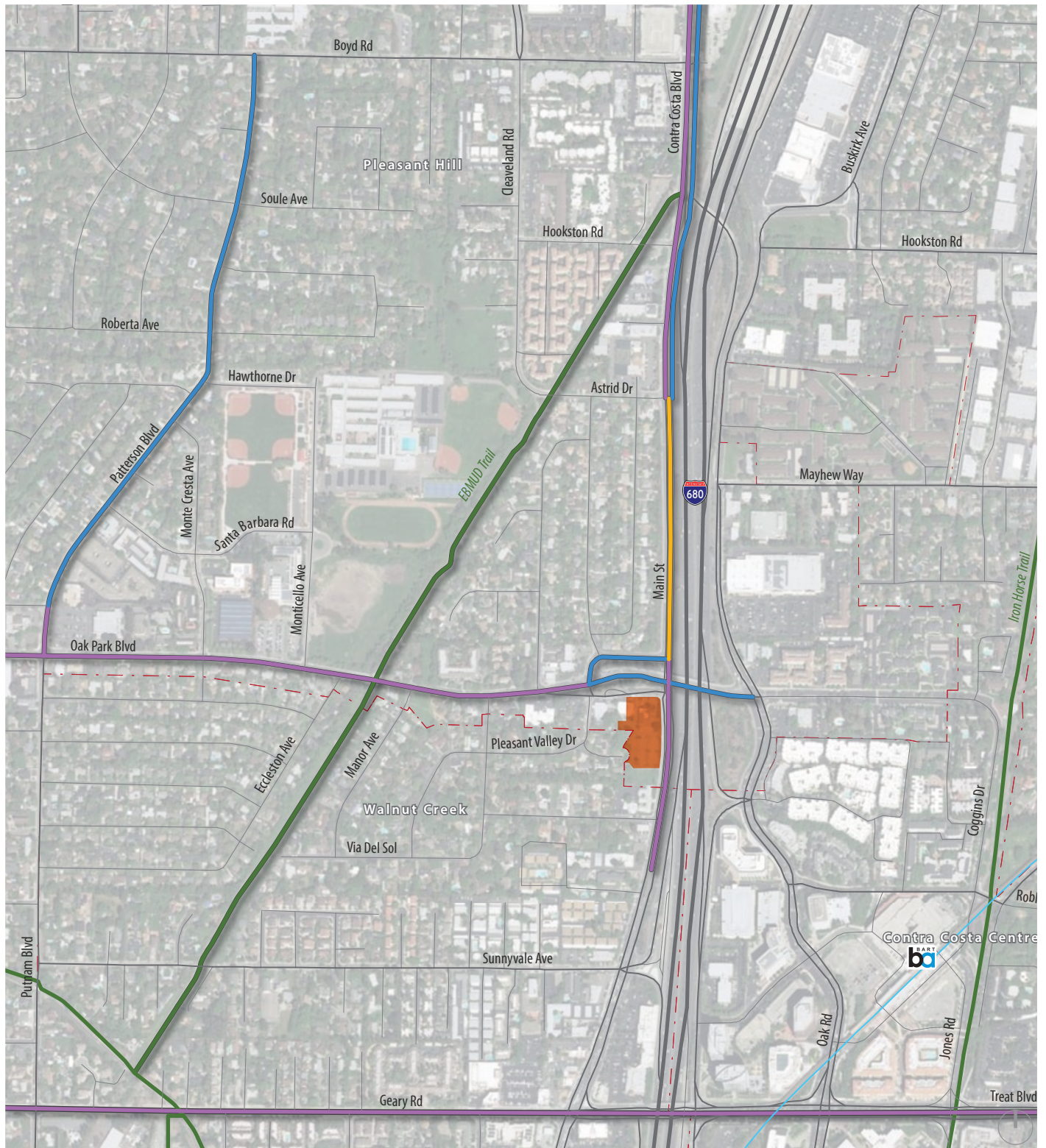
Bicycle Facilities

Bicycle facilities include the following general types:

- Class I: Shared Use Path – These facilities provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicle cross-flow minimized.
- Class II: Bicycle Lane – Bicycle lanes provide a restricted right-of-way and are designated for the use of bicycles for one-way travel with a striped lane on a street or highway. Bicycle lanes are generally a minimum of five feet wide. Vehicle/pedestrian cross-flow are permitted.
- Class III: Bicycle Route with Sharrows – These bikeways provide right-of-way designated by signs or pavement markings for shared use with motor vehicles. These include sharrows or “shared-lane markings” to highlight the presence of bicyclists.
- Class IV: Buffered Bicycle Lanes – Bicycle lanes that include a physically separated lane for increased comfort and protection of cyclists. Can be physically separated by a barrier, such as planters or on-street parking, grade-separated from the roadway, or a painted buffer area.

Figure 4 shows the location of various bicycle facilities in the study area, which includes Class IV and Class III facilities on North Main Street, Class II bicycle facilities on Geary Road, and Class II and Class III bicycle facilities on portions of Oak Park Boulevard.

The East Bay Municipal Utilities District (EBMUB) Trail is a shared use path that crosses Oak Park Boulevard approximately 650-feet west from Via Del Sol. This trail connects to the Contra Costa Canal Trail in the south and Contra Costa Boulevard in the north. From the Contra Costa Canal Trail, connections can be made to the regional trail system including the Iron Horse Trail.



- Project Site
- Existing**
- Class 1 Bike Path
- Class 2 Bike Lane
- Class 3 Bike Route
- Class 4 Protected

Figure 4

Existing Bicycle Facilities

Transit Service

Transit service in the area is primarily provided by The County Connection and Bay Area Rapid Transit (BART), with existing transit routes in the area shown on **Figure 4**, along with the transit stops in the immediate vicinity of the project site.

The County Connection provides fixed route, express route, school service and paratransit transit service within and connecting to Central Contra Costa County. The study area is served by Route 9, which travels on Oak Park Boulevard in the study area, and connects the Pleasant Hill BART Station to Diablo Valley College (DVC), and numerous schools, residential areas, and commercial areas along the way. Service is provided on headways ranging between 30 and 60 minutes. On a typical weekday, this route serves approximately 500 passengers a day; the majority of riders have a destination at the BART station or DVC. Approximately 50 passengers per day on Route 9 originate from within the study area and access service from stops on Oak Park Boulevard. At the BART station, connections to numerous other County Connection routes and other transit service providers are available. Based on existing levels of ridership, excess capacity is available to accommodate increased levels of ridership.

Bay Area Rapid Transit (BART) provides regional transportation connections to much of the Bay Area and the Antioch line provides direct access to San Francisco, with several stops in Oakland where connections may be made to other lines. The closest BART station is the Pleasant Hill/Contra Costa Center Station located less than a mile southeast the study area. BART train frequency ranges between 6-20 minutes from approximately 5:00 AM to 12:00 AM. Based on 2018 data from BART, approximately 8,000 passengers per day enter/exit the BART system at the Pleasant Hill/Contra Costa Center Station.

Existing Traffic Counts

Weekday morning (7:00 to 9:00 AM) and weekday evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersections, in addition to separate counts of pedestrians, bicycles and heavy vehicles. For each of the count periods, a global peak hour was identified. The weekday AM and PM peak hours were identified to be 8:00 to 9:00 AM and 4:45 to 5:45 PM, respectively. The peak hour volumes are presented on **Figure 6** along with the existing lane configuration and traffic control. Existing bicycle and pedestrian volumes are shown on **Figure 7**. Traffic count worksheets are provided in **Appendix A**.



Figure 5

Existing Transit Facilities



XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign

Project Site Study Intersection

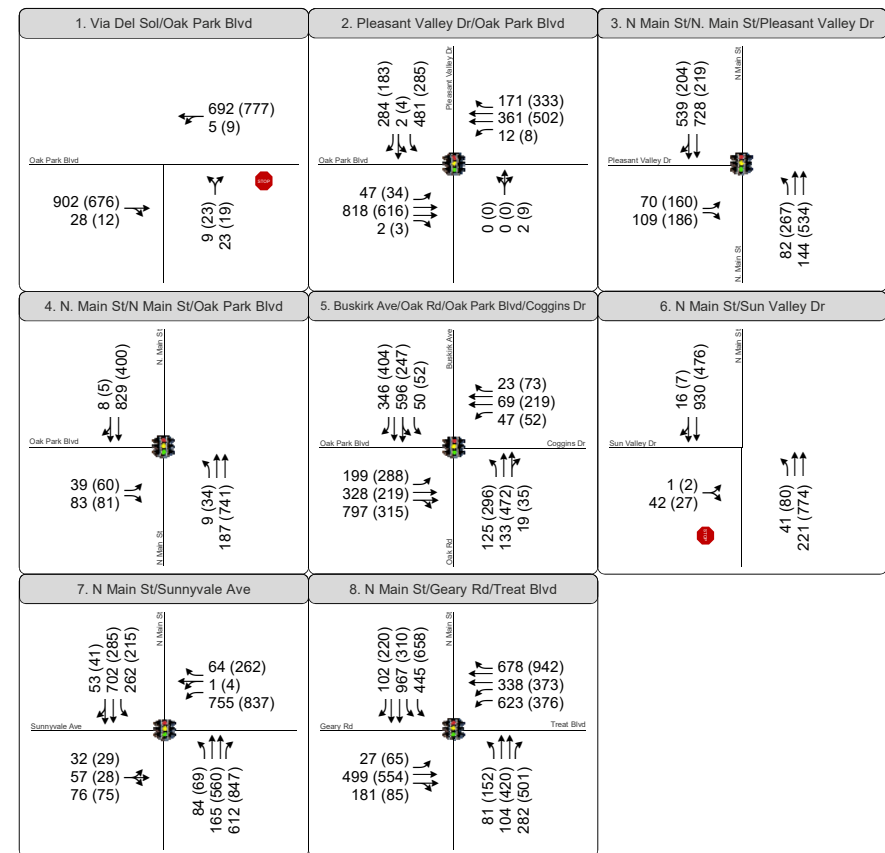


Figure 6

Existing Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

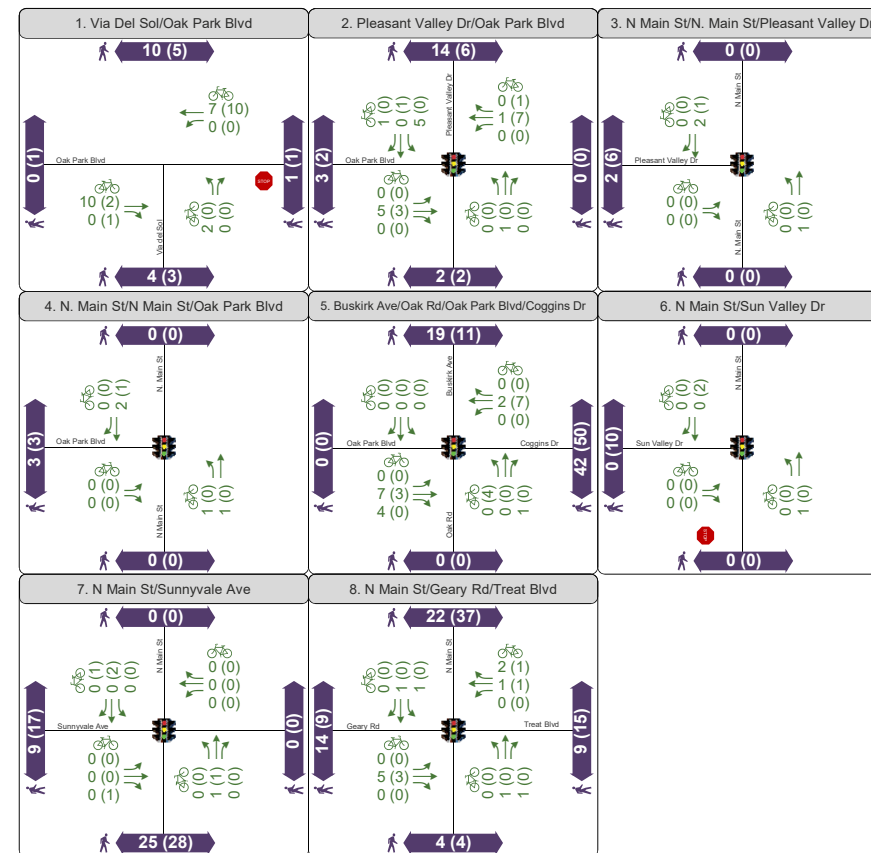
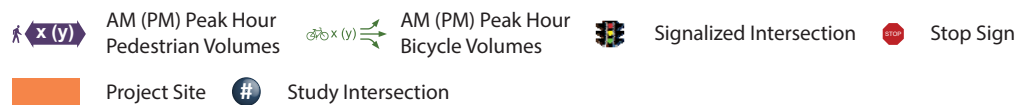


Figure 7

Existing Conditions Peak Hour Bicycle and Pedestrian Volumes

Existing Operations

Intersection Levels of Service

Existing operations were evaluated using the methodology described in Chapter 1. The results are summarized in **Table 3** based on the HCM 2010 method unless otherwise specified. Observed peak hour factors³ were used at all intersections, and truck, pedestrian and bicycle activity was factored into the analysis. Study intersections generally operate at overall acceptable service levels in accordance with benchmarks set by the City of Pleasant Hill and CCTA during both the weekday morning and evening peak hours, which was confirmed during field observations. Detailed intersection LOS calculation worksheets are provided in **Appendix B**. Although the intersection of Geary Road/Treat Boulevard at North Main Street is operates at LOS E during the evening peak hour, the level of service standard for this intersection is LOS F.

Although the study intersections are shown to operate within acceptable levels of service, significant levels of traffic diversion from I-680 and other regional travel routes can occur through the study area when there is recurring and non-recurring congestion on other routes. Congestion on I-680, State Route 242, and State Route 24 can influence the operations of intersections in the study area – for example, when traffic deviates from I-680 to Main Street, it can result in vehicle queue spillback that often extends from Geary Road through the signal at Oak Park Boulevard. The data collection effort and subsequent analysis is reflective of a day when there was not a major incident that resulted in atypical traffic diversion through the study area. Analyzing the effects of project traffic on roadway operations considering increased traffic diversion due to non-recurring incidents on the regional transportation system would serve to dilute the effects of project traffic and would reduce the project's proportionate share to potential impacts.

³ The relationship between the peak 15-minute flow rate and the full hourly volume is given by the peak-hour factor (PHF) based on the following equation: $PHF = \text{Hourly volume} / (4 * \text{volume during the peak 15 minutes of flow})$. The analysis of level of service is based on peak rates of flow occurring within the peak hour because substantial short-term fluctuations typically occur during an hour.

Table 3: Existing Conditions - Peak Hour Intersection Levels of Service

Intersection	Control ¹	Peak Hour	Existing Conditions	
			Delay ^{2,3} (seconds)	LOS
1. Oak Park Boulevard at Via Del Sol	SSSC	AM PM	1 (34) 1 (32)	A (D) A (D)
2. Oak Park Boulevard at Pleasant Valley Drive	Signal	AM PM	9 7	A A
3. Pleasant Valley Drive at North Main Street	Signal	AM PM	13 11	B B
4. Oak Park Boulevard at North Main Street	Signal	AM PM	7 9	A A
5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	Signal	AM PM	21 16	C B
6. Sun Valley Drive at North Main Street	SSSC	AM PM	1 (13) 1 (11)	A (B) A (B)
7. Sunnyvale Avenue at North Main Street	Signal	AM PM	54 41	D D
8. Geary Road/Treat Boulevard at North Main Street	Signal	AM PM	46 73	D E

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations.

1. SSSC = Side-street Stop Controlled
2. For side-street stop-controlled intersections, delay is presented for intersection average (worst movement).
3. Intersections 3 and 4 are evaluated using the HCM 2000 methodology.

Source: Fehr & Peers, 2018.

Vehicle Queues

Although all intersections currently operate within the standards set by the City of Pleasant Hill and CCTA, there can be periodic vehicle queue spillback and delays greater than shown in Table 3 for some movements. For signalized intersections, **Table 4** presents the 95th percentile vehicle queue results for turn movements with exclusive lanes. Queue worksheets are provided in **Appendix B**.

Table 4: Existing Conditions – 95th Percentile Queue Summary

Intersection	Movement	Storage Length (ft) ¹	AM Peak Period	PM Peak Period
2. Oak Park Boulevard at Pleasant Valley Drive	EBL	75	75	50
	EBR	50	0	0
	WBL	100	25	25
	WBR	125	25	25
	SBL	450	200	125
	SBR	100	75	50
3. Pleasant Valley Drive at North Main Street	EBL	450	75	150
	EBR	100	75	25
	NBL	125	75	100
4. Oak Park Boulevard at North Main Street	EBL	125	50	75
	EBR	125	75	75
	NBL	100	25	50
5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	EBL	500	250	400
	WBL	175	75	100
	NBL	150	200	450
	SBL	125	125	125
	SBR	175	125	100
7. Sunnyvale Avenue at North Main Street	WBL	850	450	675
	WBR	850	25	75
	NBL	125	200	100
	NBR	675	275	750
	SBL	350	400	325
8. Geary Road at North Main Street	EBL	200	75	125
	WBL	250	425	225
	WBR	625	0	0
	NBL	250	175	200
	NBR	100	100	400
	SBL	200	250	500
	SBR	125	25	150

Notes: **Bold** indicates queue potentially extends beyond available storage.

An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.

Source: Fehr & Peers, 2018.

Vehicle queues can exceed the available storage at the following intersections:

5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road (northbound left-turn AM and PM peak hours)
7. Sunnyside Avenue at North Main Street (northbound and southbound left-turn AM peak hour; and northbound right-turn PM peak hour)
8. Geary Road at North Main Street (westbound left-turn AM peak hour; southbound left-turn AM and PM peak hours, and northbound right-turn PM peak hour)

Peak Hour Signal Warrants

Peak hour traffic signal warrants were reviewed at the unsignalized study intersections. Peak hour warrants⁴ are not met at any of the unsignalized study intersection based on existing traffic volumes. Peak hour signal warrant worksheets are shown in **Appendix C**.

⁴ Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the Manual on Uniform Traffic Control Devices (MUTCD) and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible State or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

3. Project Characteristics

This chapter provides an overview of the proposed project components and addresses the proposed project trip generation, trip distribution, and trip assignment characteristics, allowing for an evaluation of project impacts on the surrounding roadway network. The amount of traffic associated with the project was estimated using a three-step process:

1. **Trip Generation** – The *amount* of vehicle traffic entering/exiting the site was estimated.
2. **Trip Distribution** – The *direction* trips would use to approach and depart the area was projected.
3. **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Project Description

The approximately 2.5 acre project area is located west of Main Street and south of Oak Park Boulevard. The project would remove an existing 9,740 square-foot occupied restaurant building and an existing 3,070 square-foot vacant retail building, and construct a 4-story, 155-room hotel. Approximately 133 surface parking spaces are proposed. As part of the project, the northern most site driveway would be modified to provide left-turn access into the site and restricted to inbound vehicle travel only. As part of the project, the northern most site driveway would be modified to provide left-turn access into the site.

Project Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Project trip generation estimates for the one-hour peak period during the weekday morning and evening commute when traffic volumes on the adjacent streets are typically the highest. Project trip generation was estimated using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition).

As the surveys of hotel sites included in the *Trip Generation Manual* were conducted prior to rise in use of Transportation Network Companies (TNC) such as Lyft and UBER, the resulting trip generation estimates were increased to account for use of these services to and from the site, which is considered likely given the projects proximity to BART – a little more than a half-mile – which may be too far for some people to walk, especially if they have luggage or there is inclement weather. Although a shuttle is proposed to connect the hotel and Pleasant Hill BART station for hotel guests, no transit discount was considered in the initial

evaluation of potential project impacts as the operational characteristics of the proposed shuttle in terms of operating hours and frequency are not well defined.

To determine the amount of TNC activity that could be expected, a trip generation study prepared by Fehr & Peers that includes surveys of TNC activity at hotels in a variety of land use/transportation settings was reviewed. Based on the available data, it is expected that up to 15 percent of peak hour trip generation activity for a hotel in a suburban setting close to transit could be a TNC trip. To account for the extra trip end with TNC activity, the initial trip generation estimates were increased by 15 percent to account for a TNC vehicle making two trips per group of arriving/departing guests, versus a vehicle that would park at the site.

As part of the trip generation assessment, traffic counts were conducted at the site access driveways in late May 2018 at the same time intersection turning movement counts were conducted to establish the level of traffic generated by the existing restaurant. Based on the driveway counts, the existing site use generates approximately 3 morning peak hour trips, and 82 evening peak hour trips. As daily traffic counts were not collected at the driveways, daily trip generation for the restaurant was estimated using ITE rates for a quality-restaurant based on a 9,740 square-foot restaurant.

As shown in **Table 5**, the project is expected to generate a net 1,350 new weekday daily trips, including approximately 107 net new morning peak hour, and 48 evening peak hour trips when considering TNC use and trips already generated by existing site uses.

Table 5: Weekday Project Trip Generation

Use	Size	Weekday Daily	Weekday AM Peak Hour			Weekday PM Peak Hour		
			In	Out	Total	In	Out	Total
Hotel ¹	155 Rooms	1,900	56	40	96	55	58	113
TNC Factor ²	15%	290	6	8	14	9	18	17
Existing Restaurant to be Removed ³	---	-840	-1	-2	-3	-52	-30	-82
Project Trip Generation:		1,350	61	46	107	12	36	48

- ITE land use category 310 – Hotel:
Weekday Daily: T = 12.23 (X)
Weekday AM Peak Hour: T = 0.62 (X); Enter = 58%; Exit = 42%
Weekday PM Peak Hour: T = 0.73 (X); Enter = 49%; Exit = 51%
 - Based on trip generation surveys of hotel locations in the San Francisco Area, approximately 15 percent of trips to/from hotels were observed to be TNC trips
 - Based on driveway counts collected in May 2018.
- Source: *Trip Generation Manual* (10th Edition), ITE; Fehr & Peers.

Trip Distribution & Assignment

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. Estimates of project trip distribution were developed based on existing travel patterns in the area, a select zone analysis using the Contra Costa Transportation Authority (CCTA) travel demand model, and the location of complementary land uses. The resulting trip distribution percentages are shown on **Figure 8**. Project trips were assigned to the roadway network based on the general directions of approach and departure shown on Figure 8. The project trip assignment is shown on **Figure 9**.

Given the location of project access points, there is the potential for some guest and employees to travel through the adjacent neighborhood. For example, someone exiting the site from the right-out only driveway on Main Street could turn right onto Sun Valley Drive, right onto Via Del Sol, right onto the Oak Park Boulevard to either travel north on North Main Street, or travel east of I-680. While the number of trips expected to make these maneuvers is expected to be low, some vehicles could be routed through the adjacent neighborhood. This routing is reflected in the project trip assignment.

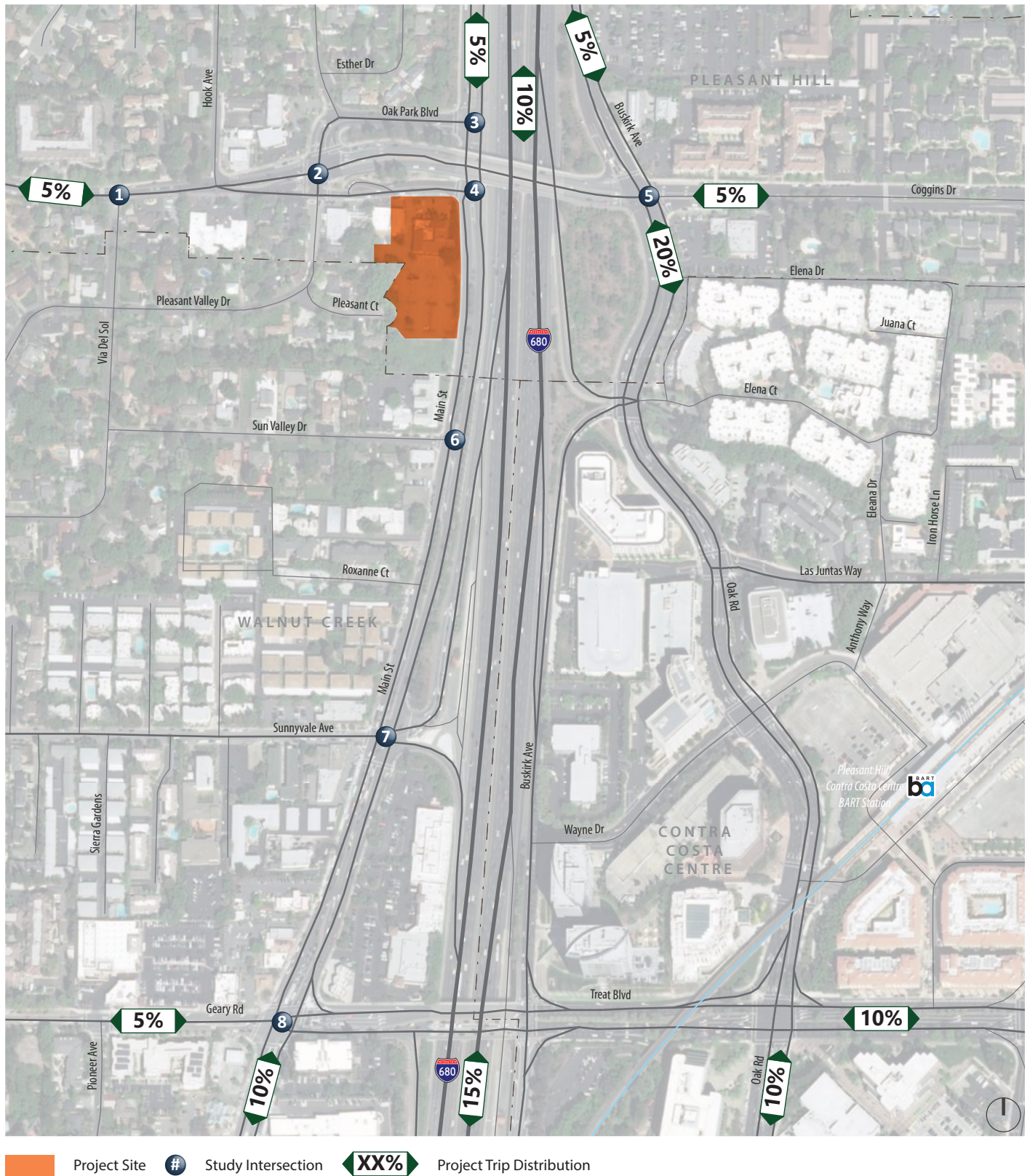


Figure 8

Project Trip Distribution Percentages



XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign

Project Site Study Intersection

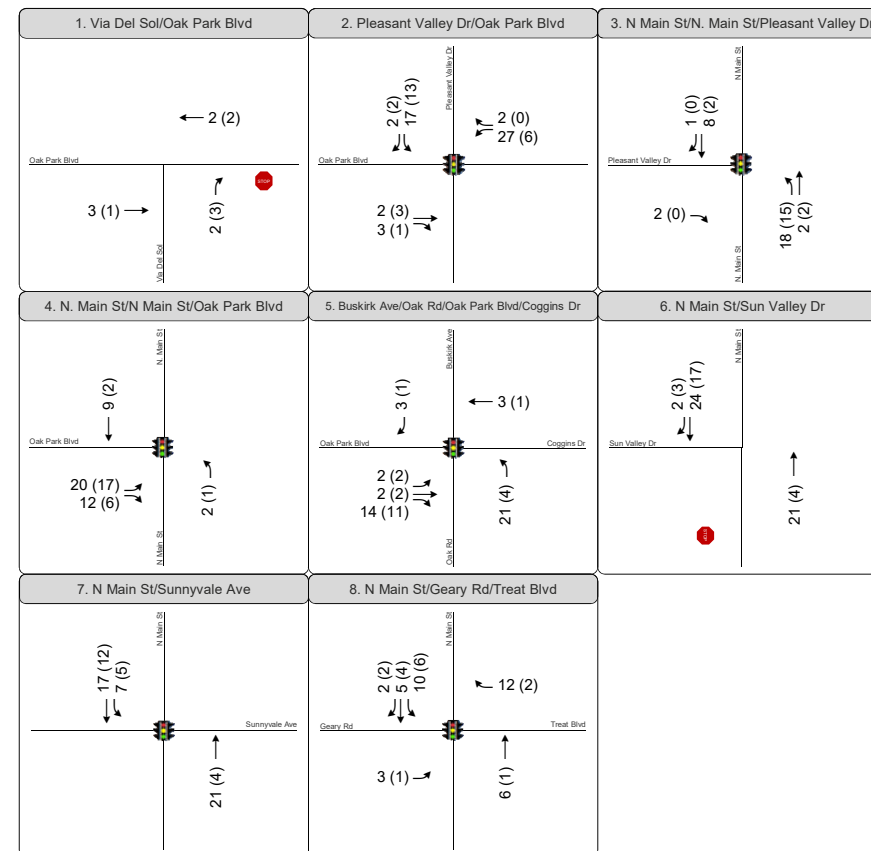


Figure 9

Net New Peak Hour Project Trip Assignment

4. Existing with Project Conditions

This chapter evaluates potential off-site traffic impacts under Existing with Project conditions.

Existing with Project Traffic Volumes and Roadway Improvements

Project-only traffic volumes (Figure 9) were added to the existing peak hour traffic volumes (Figure 6) to estimate Existing with Project peak hour intersection turning movement volumes, as shown on **Figure 10**. Intersection lane configurations, traffic control, traffic signal timings, peak hour factors, heavy vehicle percentages, and pedestrian and bicycle activity at the study intersections were left unchanged from existing conditions.

Analysis of Existing with Project Conditions Intersection Levels of Service

Existing with Project conditions were evaluated using the same methods described in Chapter 1. The analysis results are presented in **Table 6**, based on the traffic volumes and lane configurations presented on Figure 10. Table 6 also includes the operations results for the Existing without Project conditions for comparison purposes.

The addition of project traffic would worsen LOS D operations at the Sunnyvale Avenue at North Main Street intersection to LOS E operations during the morning peak hour by increasing average delay by 2-seconds. Although LOS E is considered acceptable for this intersection, optimizing traffic signal timings along the North Main Street corridor, which the Cities of Walnut Creek and Pleasant Hill do as a part of regular maintenance, could result in LOS D operations at this intersection.

At the Geary Road at North Main Street intersection, the addition of project traffic does not appreciably increase average delay (1-second increase) during the PM peak hour when the intersection operates at LOS E. All other study intersections would continue to operate within the established level of service standards with the addition of project traffic in the existing condition. Detailed intersection LOS calculation worksheets are provided in **Appendix B**.



XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign

Project Site Study Intersection

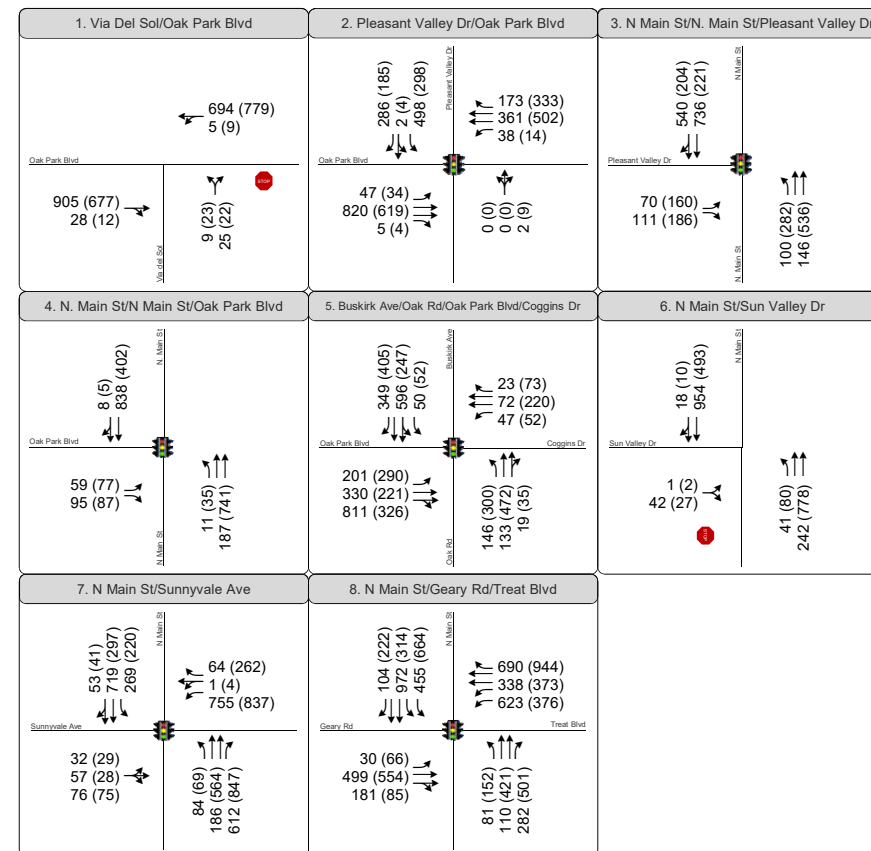


Figure 10

Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 6: Existing with Project Conditions - Peak Hour Intersection Levels of Service

Intersection	Control ¹	Peak Hour	Existing Conditions		Existing with Project Conditions		
			Delay ^{2,3}	LOS	Delay ^{2,3}	LOS	Signal Warrant Met?
1 Oak Park Boulevard at Via Del Sol	SSSC	AM PM	1 (34) 1 (32)	A (D) A (D)	1 (34) 1 (32)	A (D) A (D)	No No
2 Oak Park Boulevard at Pleasant Valley Drive	Signal	AM PM	9 7	A A	10 8	A A	- -
3 Pleasant Valley Drive at North Main Street	Signal	AM PM	13 11	B B	14 11	B B	- -
4 Oak Park Boulevard at North Main Street	Signal	AM PM	7 9	A A	8 9	A A	- -
5 Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	Signal	AM PM	21 16	C B	22 16	C B	- -
6 Sun Valley Drive at North Main Street	SSSC	AM PM	1 (13) 1 (11)	A (B) A (B)	1 (13) 1 (11)	A (B) A (B)	No No
7 Sunnyvale Avenue at North Main Street	Signal	AM PM	54 41	D D	56 41	E D	- -
8 Geary Road at North Main Street	Signal	AM PM	46 73	D E	46 74	D E	- -

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).

1. SSSC = Side-street Stop Controlled
2. For side-street stop-controlled intersections, delay is presented for intersection average (worst movement).
3. Intersections 3 and 4 are evaluated using the HCM 2000 methodology.

Source: Fehr & Peers, 2018.

Vehicle Queues

Vehicle queues were assessed for the signalized intersections in the with project condition, and the addition of project traffic is not expected to result in vehicle queues to increase by more than 50-feet (or 2 car-lengths) for movements where the 95th percentile queue exceeds capacity, as presented in **Table 7**. Queue worksheets are provided in **Appendix B**.

Signal Warrants

Signal warrants were evaluated for the unsignalized intersections. As shown in Table 6, signalization of the unsignalized study intersections is not warranted with the addition of project traffic in the existing condition. Signal warrant worksheets are provided in **Appendix C**.

Table 7: Existing with Project Conditions – 95th Percentile Queue Summary

Intersection	Movement	Storage Length (ft)	AM Peak Period		PM Peak Period	
			Without Project	With Project	Without Project	With Project
2. Oak Park Boulevard at Pleasant Valley Drive	EBL	75	75	75	50	50
	EBR	50	0	0	0	0
	WBL	100	25	75	25	50
	WBR	125	25	25	25	25
	SBL	450	200	225	125	125
	SBR	100	75	75	50	50
3. Pleasant Valley Drive at North Main Street	EBL	450	75	75	150	150
	EBR	100	75	75	25	25
	NBL	125	75	75	100	125
4. Oak Park Boulevard at North Main Street	EBL	125	50	75	75	75
	EBR	125	75	100	75	100
	NBL	100/75 ¹	25	25	50	50
5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	EBL	500	250	250	400	425
	WBL	175	75	75	100	100
	NBL	150	200	225	450	450
	SBL	125	125	125	125	125
	SBR	175	125	125	100	100
7. Sunnyvale Avenue at North Main Street	WBL	850	450	450	675	675
	WBR	850	25	25	75	75
	NBL	125	200	200	100	100
	NBR	675	275	300	750	750
	SBL	350	400	425	325	325
8. Geary Road at North Main Street	EBL	200	75	75	125	125
	WBL	250	425	425	225	225
	WBR	625	0	0	0	0
	NBL	250	175	175	200	200
	NBR	100	100	100	400	400
	SBL	200	250	250	500	525
	SBR	125	25	50	150	175

Notes: **Bold** indicates queue potentially extends beyond available storage. An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.

1. With the project, the turn-pocket would be reduced to approximately 75 feet.

Source: Fehr & Peers, 2018.

Existing Conditions Impacts and Mitigation

Although potential off-site intersection impacts related to levels of service and vehicle queues are considered less-than-significant based on the significance criteria, there could be temporary significant impacts during the construction phase of the project.

Impact Statement 1: Construction related activities could create potential conflicts with other roadway users, such as construction related activities resulting in lane closures along the project frontage, construction vehicles queuing within the public right-of-way waiting entry to the site, construction worker parking in non-designated parking areas, or construction debris on public streets. Construction impacts would be temporary in nature; however, this impact is considered **potentially significant**.

Mitigation Measure 1: Although construction impacts would be temporary, development of a construction management plan would reduce the potential for construction vehicle conflicts with other roadway users. The plan should include:

- Project staging plan to maximize on-site storage of materials and equipment
- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak hours; lane closure proceedings; signs, cones, and other warning devices for drivers; and designation of construction access routes
- Permitted construction hours
- Location of construction staging
- Identification of parking areas for construction employees, site visitors, and inspectors, including on-site locations
- Provisions for street sweeping to remove construction related debris on public streets

Implementation of the construction management plan would reduce the temporary construction impact to a **less-than-significant** level.

5. Cumulative Conditions

This chapter presents the results of the level of service calculations under cumulative conditions without and with the project.

Cumulative Intersection Volumes and Roadway Improvements

Cumulative forecasts were developed using traffic growth trends as described in the Pleasant Hill General Plan supplemented by a check of traffic forecasts for the study area in the Contra Costa Transportation Authority (CCTA) Countywide Travel Demand Model, as well as considering approved and potential projects in the immediate study area.

Based on growth trends projected by the CCTA model, traffic volumes on Main Street and Treat Boulevard are projected to increase by approximately 2 percent per year (between 2018 and 2040), with some of the increase from traffic diverting from regional travel routes to local roadways. Through traffic volumes are expected to increase on Oak Park Boulevard by approximately 1 percent per year. Turning movements to/from residential neighborhoods are not expected to significantly change, but existing observed traffic volumes were rounded up to the nearest 10 vehicles to account for potential minor changes to travel patterns to/from existing established neighborhoods. Model plots from the travel demand model near the study area are provided in **Appendix D**.

In addition to considering the regional growth trends, the forecasts also consider the following approved/pending projects in the immediate study area:

1. Oak Park/Monticello Specific Plan
2. Day Care center at the intersection of Boyd Road at Kahrs Avenue
3. Fountainhead Day Care Center on Oak Park Boulevard
4. Development of Housing Element Opportunity sites on Beatrice Road and Cleaveland Road⁵
5. 85 Cleaveland

The trip generation assumptions for these projects is provided in **Appendix E**.

⁵ No development is currently contemplated on these sites, but up to 200 multi-family homes could be constructed in the area. As no development is proposed, all access was assumed to occur from Cleaveland Road for the purposes of this analysis.

The resulting intersection turning movement forecasts are presented on **Figure 11** for the cumulative without project scenario. Project-only traffic volumes (**Figure 9**) were added to the cumulative without project peak hour traffic volumes (Figure 11) to estimate Cumulative with Project peak hour intersection turning movement volumes, presented on **Figure 12**. The resulting cumulative forecast are an estimate of conditions in 2040.

The forecasting described above does not take into consideration some foreseeable travel changes, including increased use of transportation network companies, such as Uber and Lyft, nor the potential for autonomous vehicles. Although the technology for autonomous vehicles is expected to be available over the planning horizon, the Federal and State legal and policy frameworks are uncertain. Initial modeling of an autonomous future indicates that with automated and connected vehicles, the capacity of the existing transportation system would increase as vehicles can travel closer together; however, these efficiencies are only realized when a high percentage of vehicles on the roadway are automated and connected. There is also the potential for vehicle travel to increase with zero-occupant vehicles on the roadway, off-setting any potential capacity benefits. Although the future baseline is uncertain, the project's incremental effect on that future baseline is expected to be similar to the analysis results presented below.

Analysis of Cumulative Conditions

Intersection Level of Service

Existing peak hour factors, heavy vehicle percentages, and pedestrian and bicycle activity at the study intersections remain unchanged from the existing condition for the assessment of Cumulative conditions. No improvements were assumed to be in place at any of the study intersections.

Traffic signal timings were optimized at intersections where the initial analysis indicated LOS E or F operations, reflecting that as part of the City of Pleasant Hill and Walnut Creek's continuing maintenance of traffic signals, signal timing for intersections near capacity are regularly updated to better accommodate actual travel demand. **Table 8** presents the Cumulative without and with Project intersection level of service results.



XX (YY) AM (PM) Peak Hour Traffic Volumes  Signalized Intersection  Stop Sign

 Project Site  Study Intersection

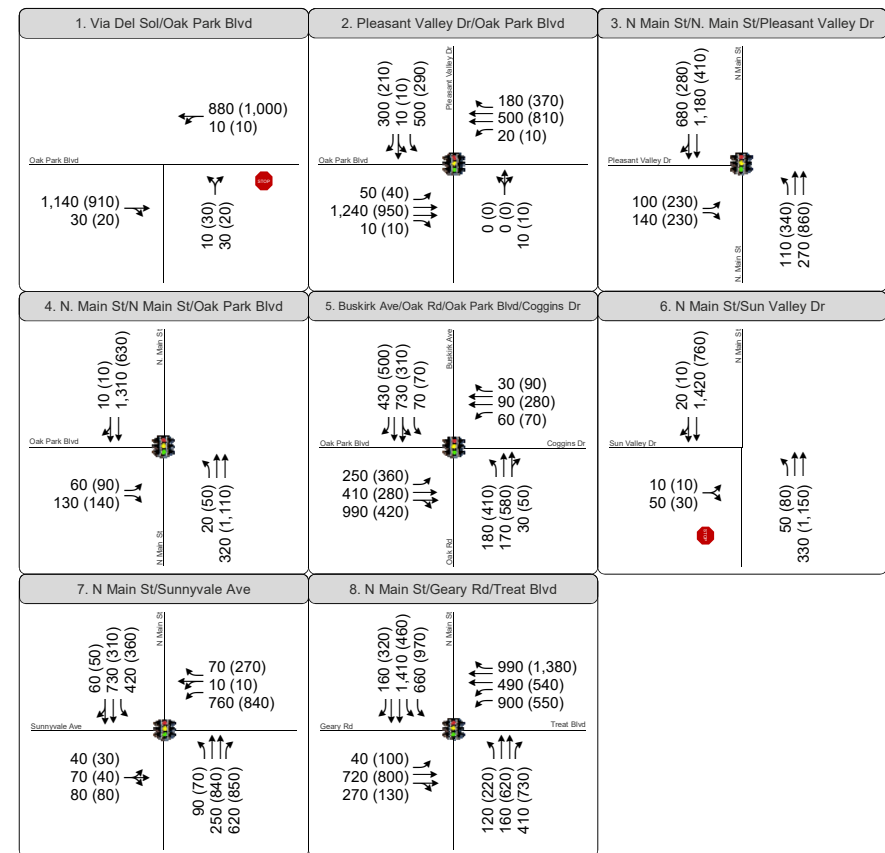


Figure 11

Cumulative Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls



XX (YY) AM (PM) Peak Hour Traffic Volumes Signalized Intersection Stop Sign

Project Site Study Intersection

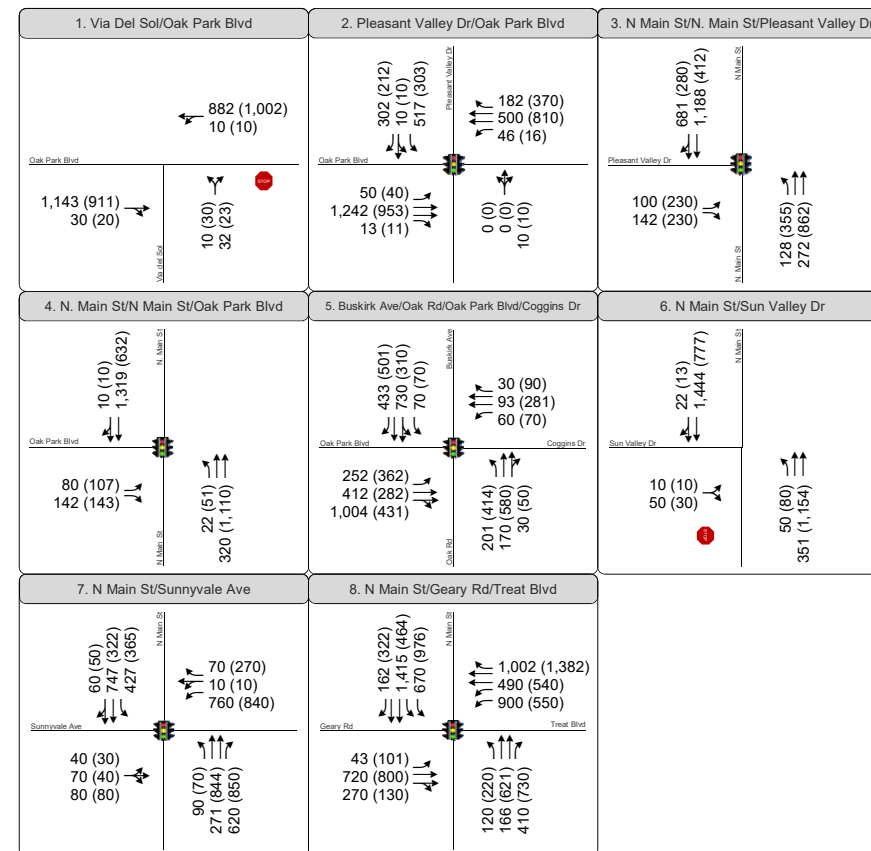


Figure 12

Cumulative with Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 8: Cumulative Conditions - Peak Hour Intersection Levels of Service

Intersection	Control ¹	Peak Hour	Cumulative Conditions		Cumulative with Project Conditions		
			Delay ^{2,3}	LOS	Delay ^{2,3}	LOS	Signal Warrant Met?
1 Oak Park Boulevard at Via Del Sol	SSSC	AM PM	1 (58) 2 (77)	A (F) A (F)	1 (58) 2 (76)	A (F) A (F)	No No
2 Oak Park Boulevard at Pleasant Valley Drive	Signal	AM PM	11 8	B A	11 8	B A	- -
3 Pleasant Valley Drive at North Main Street	Signal	AM PM	28 15	C B	33 15	C B	- -
4 Oak Park Boulevard at North Main Street	Signal	AM PM	10 12	A B	11 12	B B	- -
5 Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	Signal	AM PM	44 36	D D	47 37	D D	- -
6 Sun Valley Drive at North Main Street	SSSC	AM PM	2 (33) 1 (22)	A (D) A (C)	2 (36) 1 (23)	A (E) A (C)	No No
7 Sunnyvale Avenue at North Main Street	Signal	AM PM	52 72	D E	53 73	D E	- -
8 Geary Road at North Main Street	Signal	AM PM	108 163	F F	109 164	F F	- -

Notes: **Bold** indicates operations below the local LOS standard for acceptable operations (below LOS D).

1. SSSC = Side-street Stop Controlled
2. For side-street stop-controlled intersections, delay is presented for intersection average (worst movement).
3. Intersections 3 and 4 are evaluated using the HCM 2000 methodology.

Source: Fehr & Peers, 2018.

The addition of project traffic would not degrade the operation of any study intersection from an overall acceptable service level to an unacceptable service level, although it would worsen side-street delay at the unsignalized Sun Valley Drive at North Main Street intersection from LOS D to LOS E during the morning peak hour, as well as add traffic to the Oak Park Boulevard at Via Del Sol intersection where the side-street movement is projected to operate at an unacceptable LOS F prior to the addition of project traffic. Additionally, the addition of project traffic could worsen the operation of two signalized intersections projected to operate at LOS E or F prior to the addition of project traffic. Consideration of whether the project would have a significant impact at this intersections is further discussed below.

The Oak Park Boulevard at Via Del Sol intersection is projected to operate at an overall LOS A with the side-street movement operating at LOS F during both the morning and evening peak hours prior to the addition of project traffic in the cumulative condition. The addition of project traffic would not increase average

delay for the side-street movement in either peak hour, and peak hour traffic signal warrants are not satisfied. Based on the significance criteria, this is not a significant impact.

The Sun Valley Drive at North Main Street intersection is projected to operate at an overall LOS A with the side-street movement operating at LOS D during the morning peak hour prior to the addition of project traffic in the cumulative condition. The addition of project traffic would result in LOS E operations for the side-street movement in the morning peak hour by increasing delay for that movement by 3-seconds. Peak hour signal warrants would not be satisfied. Based on the significance criteria, this is not a significant impact.

The Sunnyvale Avenue at North Main Street intersection is projected to operate at LOS E during the evening peak hour prior to the addition of project traffic in the cumulative condition. The addition of project traffic would increase average delay by 1-second. As LOS E is the standard for this intersection, and the delay increase is less than 5-seconds, this is not considered a significant impact.

The Geary Road at North Main Street intersection is projected to operate at LOS F during the evening peak hour prior to the addition of project traffic in the cumulative condition. The addition of project traffic would increase average delay by 1-second. As LOS F is the standard for this intersection, and the delay increase is less than 5-seconds, this is not considered a significant impact.

As detailed above, the project would not have a significant impact at intersections operating below established level of service ranges in the cumulative condition and all other study intersections would continue to operate within the established level of service ranges with the addition of project traffic in the cumulative condition. Therefore the project would not have a significant impact related to intersection operation under the cumulative condition. Detailed intersection LOS calculation worksheets are provided in **Appendix B**.

Vehicle Queues

Vehicle queues were assessed for the signalized intersections in the Cumulative condition, and the addition of project traffic is not expected to result in vehicle queues to increase by more than 50-feet (or 2 car-lengths) for movements where the 95th percentile queue is projected to exceed the available storage in the without project condition, as presented in **Table 9**. However, the addition of project traffic could result in the vehicle queue for the northbound left-turn movement to extend beyond the available storage at the Pleasant Valley Drive at North Main Street intersection in the morning peak hour. Queue worksheets are provided in **Appendix B**.

Table 9: Cumulative Conditions – 95th Percentile Queue Summary

Intersection	Movement	Storage Length (ft)	AM Peak Period		PM Peak Period	
			Without Project	With Project	Without Project	With Project
2. Oak Park Boulevard at Pleasant Valley Drive	EBL	75	75	75	75	75
	EBR	50	0	0	0	0
	WBL	100	50	75	25	50
	WBR	125	25	25	25	25
	SBL	450	225	250	150	150
	SBR	100	75	75	75	75
3. Pleasant Valley Drive at North Main Street	EBL	450	150	150	250	250
	EBR	100	125	125	50	50
	NBL	125	125	175	250	275
4. Oak Park Boulevard at North Main Street	EBL	125	100	125	100	125
	EBR	125	175	225	150	150
	NBL	100/75	50	50	75	75
5. Oak Park Boulevard/Coggins Drive at Buskirk Avenue/Oak Road	EBL	500	450	450	750	750
	WBL	175	200	200	175	175
	NBL	150	350	400	825	850
	SBL	125	225	225	200	200
	SBR	175	275	275	375	375
7. Sunnyvale Avenue at North Main Street	WBL	850	575	575	650	650
	WBR	850	25	25	75	75
	NBL	125	175	175	75	75
	NBR	675	450	450	600	600
	SBL	350	600	600	600	600
8. Geary Road at North Main Street	EBL	200	100	100	150	150
	WBL	250	700	700	375	375
	WBR	625	0	0	0	0
	NBL	250	300	300	275	275
	NBR	100	175	175	875	875
	SBL	200	525	525	850	850
	SBR	125	50	50	200	200

Notes: **Bold** indicates queue potentially extends beyond available storage.

An additional 60 to 90 feet of storage is typically provided in the taper area outside of the through lane, which is not reflected in the storage length above.

Source: Fehr & Peers, 2018.

Signal Warrants

Signal warrants were evaluated for the unsignalized intersections. As shown in Table 8, none of the unsignalized study intersections is projected to meet signal warrants in the cumulative condition prior to or with the addition of project traffic. Signal warrant worksheets are provided in **Appendix C**.

Cumulative Impacts and Mitigation

No off-site intersection impacts were identified in the cumulative condition and no project specific mitigation is required.

6. Site Access, Circulation & Parking

This section is based on the site plan presented previously on Figure 2. Considerations for all modes of travel as well as parking are provided. Site plan recommendations are summarized on **Figure 13**.

Site Access and Circulation

Vehicular Access

Access to the site is currently provided from two right-in/right-out driveways on Main Street and one full access driveway on Oak Park Boulevard. As part of the project, the northern most site driveway would be modified to provide left-turn access into the site and would be restricted to inbound traffic only; a landscaped median would also be constructed on Main Street at the approach to Oak Park Boulevard to prevent left-turn movements from the site. A review of site access operations indicates that the site access intersections would operate acceptably as side-street stop-controlled intersections as summarized in **Table 10**. Although site access intersections would operate acceptable, vehicle queues on Oak Park Boulevard at North Main Street could extend beyond the project driveway, impeding site access.

Table 10: Site Access Intersections Peak Hour Intersection Levels of Service

Intersection	Control ¹	Peak Hour	Cumulative With Project	
			Delay ^{2,3}	LOS ^{2,3}
9. Oak Park Boulevard at Project Entry	SSSC	AM PM	2 (11) 2 (10)	A (B) A (A)
10. Northern Project Driveway at North Main Street	SSSC	AM PM	0 (14) 0 (11)	A (B) A (B)
11. Northern Project Driveway at North Main Street	SSSC	AM PM	0 (16) 0 (11)	A (C) A (B)

Notes:

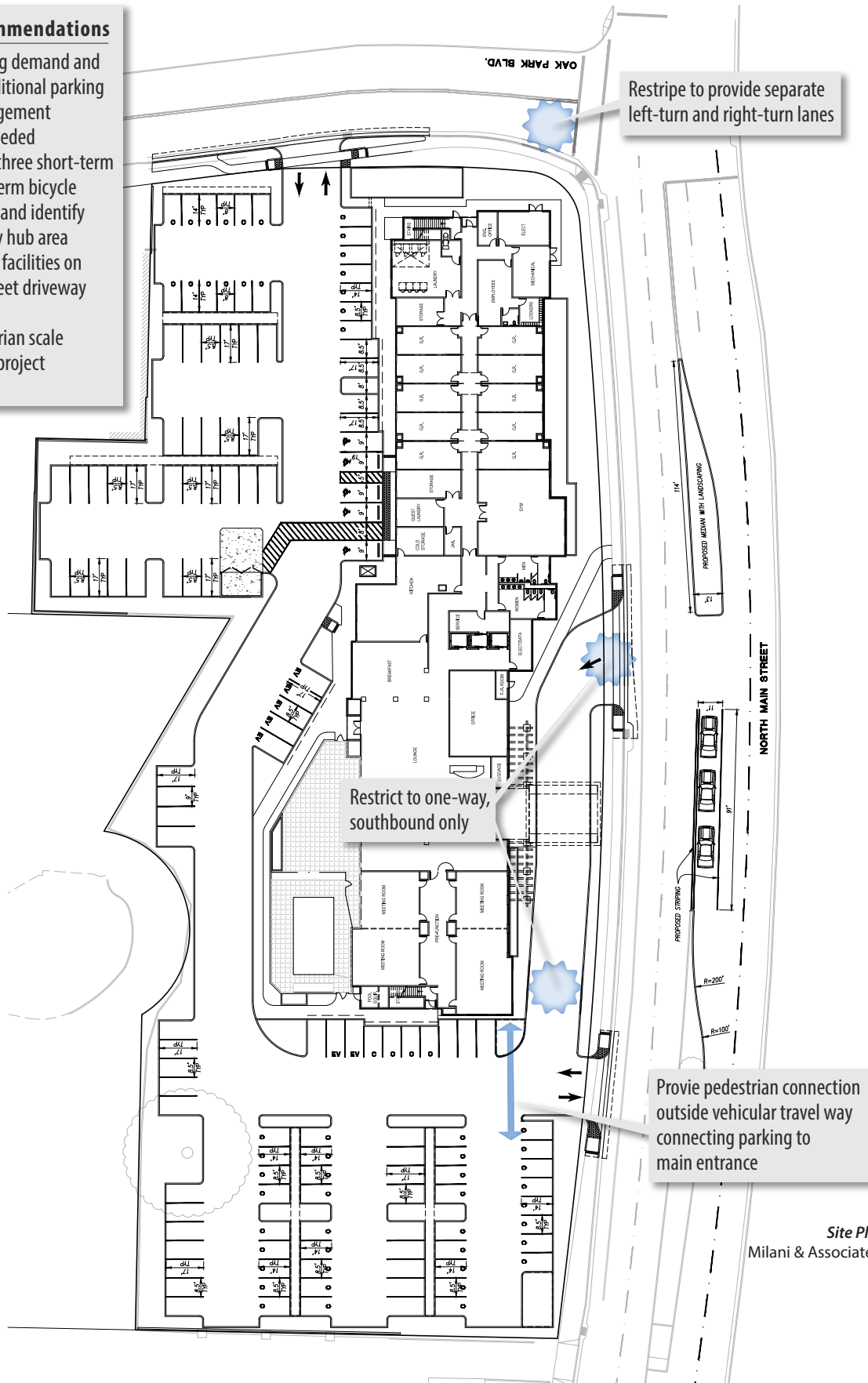
1. SSSC = side-street stop controlled intersection
2. Average and worst movement delay calculated using the 2010 HCM method.
3. For SSSC intersections, average delay or LOS is listed first followed by the delay or LOS for the worst approach in parentheses.

Source: Fehr & Peers, 2018.

Recommendation 1: Provide signage on-site noting that the northern entry driveway provides for inbound travel only.

General Recommendations

- Monitor parking demand and implement additional parking demand management strategies, if needed
- Install at least three short-term and five long-term bicycle parking spaces and identify shared mobility hub area
- Provide bicycle facilities on North Main Street driveway influence areas
- Provide pedestrian scale lighting along project frongages



Site Plan Source:
Milani & Associates, 12/4/18

Figure 13

Consultant Site Plan Recommendations



Recommendation 2: Within the existing pavement cross-section, restripe Oak Park Boulevard east of the project driveway along the project frontage to provide separate left-and right-turn lanes to North Main Street.

Pedestrian Facilities

The conceptual project site plan shows pedestrian facilities along the project frontages on Oak Park Boulevard and North Main Street with reconstructed directional curb ramps at the project driveways. A six-foot walkway connecting the public sidewalk to the main entry is also proposed. A pedestrian path does not completely encircle the building and guests may need to walk in the primary travel way to access the building entrance. Insufficient details are provided to fully evaluate the proposed pedestrian network.

Recommendation 3: Provide a pedestrian connection from the southern parking area to the main entrance so guests do not need to walk in the main entry travel way.

Recommendation 4: Restrict landscaping in the driveway influence areas to maintain visibility between vehicles and pedestrians. Install pedestrian scale lighting along project frontages.

Bicycle Facilities

The project would not alter existing bicycle facilities within the project area, although it would increase potential bicycle/vehicle conflicts in the driveway influence areas.

Recommendation 5: Modify bicycle facilities along the North Main Street project frontage with a focus on driveway area conflict zones. Potential improvements could include a bike ramp to the sidewalk and widening the sidewalk to 10-feet, or providing skip-stripe pavement marking within the driveway influence area to provide a space for cyclists and to alert drivers to the potential presence of cyclists.

Transit Accessibility

County Connection bus service provides local access to the area via Route 9. Based on the existing County Connection ridership data (Chapter 2), there is sufficient excess capacity to accommodate potential transit demand from the project.

A County Connection transit stop is located on the north side of Oak Park Boulevard, just east of the Pleasant Valley Drive for eastbound travel and west of Pleasant Valley Drive for westbound travel. The project does not propose to make any changes in the vicinity of the bus stops in the area.

Emergency Vehicles

Several factors determine whether a project has sufficient access for emergency vehicles, including:

1. Location of closest fire stations
2. Number of access points (both public and emergency access only)
3. Width of access points
4. Width of internal roadways

Each of these factors is discussed in further detail below.

The fire station closest to the site is located on Boyd Road, approximately 1.2 miles from the site via Cleaveland Road and North Main Street. A second fire station is located at 2012 Geary Road approximately 1.5-miles from the project site via Putnam Boulevard/Geary Road or Main Street/Geary Road. Primary access to the project site would occur from existing roadways that would not be changed as part of the project. The conceptual project site plan shows drive aisles throughout the site of at least 24-feet with at least 26-foot drive aisles surrounding the building, which provides the required clear-way for fire access.

Parking

Off-street parking requirements and design guidance are outlined in the City of Pleasant Hill Municipal Code Chapter 18.55.30. Surface parking is proposed to support the proposed project with 133 parking spaces. Parking itself is not a CEQA issue. Potential parking short-falls could result in parking demand spillover along the project frontage and potentially the adjacent neighborhood, which, while not rising to the level of a CEQA impact, could be considered undesirable from the perspective of the City and neighbors. A discussion of parking supply and demand, and recommendations related to parking are included below for informational purposes.

Vehicle Parking Requirements

For hotel uses, one off-street parking space per room plus one off-street space per each 50 square-feet of banquet facilities is required. No banquet facilities are proposed as part of the project. A 15 percent reduction to the parking supply is permitted for projects within the City's Priority Development Areas (PDAs). Based on the City Code requirements with a 15 percent PDA reduction, as presented in **Table 11**, 132 off-street parking spaces are required. The project proposes to provide 133-spaces, which is 1-space above code requirements.

Parking demand for the project is also likely to be influenced by the potential use of Transportation Network Companies such as UBER and Lyft (see project trip generation on Pages 25 and 26), as well as the proposed

shuttle between the site and BART. When considering these other travel options to the site, a greater surplus could be expected.

Table 11: Automobile Parking Requirements

Land Use	Size	Base Requirement	Total Requirement
Hotel	155-Room	1 per guest room + 1 per each 50 square feet of banquet area; less a 15 percent PDA reduction	132
Proposed Supply			133
Surplus/(Deficit)			1

Source: City Pleasant Hill Municipal Code, Fehr & Peers, 2018.

Although the project would provide sufficient parking to meet code requirements, and the use of TNCs and shuttles are expected to reduce overall site parking demand, variations in parking demand and unforeseen circumstances could result in periodic parking shortfalls.

Recommendation 6: Monitor project parking demand between 6 months and 1 year of occupancy. The parking monitoring shall include parking demand observations on a weekday and a weekend, establish the level of TNC activity, and use of the proposed shuttle. Based on the occupancy levels at the time of data collection, project parking demands with full occupancy. Should potential parking shortfalls be identified with full occupancy, implement additional parking demand management strategies, that could include:

- Valet Parking
- Employee Transit Passes
- Increased shuttle hours
- TNC Subsidies

With implementation of this measure, parking demand spillover to adjacent residential neighborhoods is expected to be minimal.

The City of Pleasant Hill requires that new commercial parking areas provide electric vehicle charging stations, at a rate of 1 space for each lot with between 25 and 50 spaces, and 1 EV charging station for each 50 additional spaces. Five electric vehicle parking stalls are identified on the site plan, which exceeds the requirement of at least four electric vehicle charging spaces.

Parking Stall Design

The design of parking stalls was reviewed based on City standards. For commercial uses, standard perpendicular parking stalls are required to be 8.5 feet by 19 feet, with small car spaces required to be 8.5 feet by 16 feet. When considering the planter overhang of 2-feet, the proposed stall dimensions meet code requirements. Up to 50 percent of spaces are allowed to be small car spaces. 58 small car spaces are proposed, which equates to 44 percent of the parking supply.

Bicycle Parking

The City of Pleasant Hill requires that for commercial developments bicycle parking be provided at a rate of 2 percent of the parking supply, which would result in 3 bicycle spaces based on the unadjusted code required parking. Secure employee bicycle parking could encourage employees to bicycle to work.

Recommendation 7: Provide at least 3-short term bicycle parking spaces and a bicycle locker. Identify a designed shared mobility hub where shared bicycles and scooters could be dropped-off outside of main pedestrian travel routes.

Other CEQA Considerations

Based on Appendix G of the CEQA guidelines, other CEQA criteria were also assessed based on the information presented above.

- Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?
 - The project is not located in proximity to an airport and would not result in a change to air traffic patterns. Therefore, there is no impact to air travel.
- Would the Project substantially increase traffic hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?
 - Although the project would be designed to meet City standards, the project could increase the potential for bicycle and pedestrian conflicts. While this would not rise to a level of a significant impact under CEQA, improvements to lessen the potential for conflicting vehicular movements are provided as part of **Recommendations 3, 4 and 5**.
- Would the project result in inadequate emergency access?
 - Three site access locations are provided with internal drive aisles that meet fire access standards.
- Would the Project conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

- The project site plan does not conflict with existing or planned transit, bicycle or pedestrian facilities in the area.
- The project could increase the potential for bicycle and pedestrian conflicts. While this would not rise to a level of a significant impact under CEQA, improvements to lessen the potential for conflicting vehicular movements are provided as part of **Recommendations 3, 4 and 5**.

7. Vehicle Miles of Travel

In response to Senate Bill 743 (SB 743), the Office of Planning and Research (OPR) updated the California Environmental Quality Act (CEQA) guidelines to include new transportation-related evaluation metrics. Draft guidelines were developed in August 2014, with updated draft guidelines prepared January 2016, which incorporated public comments from the August 2014 guidelines. OPR released final proposed Guidelines on November 27, 2017. The final proposed Guidelines include a new Section 15064.3 on VMT analysis and thresholds for land use developments. OPR also released a Technical Advisory on Evaluating Transportation Impacts in CEQA. New Guidelines section 15064.3 states that they do not take effect until July 1, 2020 unless the lead agency adopts them earlier. Neither the City of Pleasant Hill nor Contra Costa Transportation Authority nor Contra Costa County has established any standards or thresholds on VMT. Therefore, the new guidelines have not yet been adopted and are not in effect at this time.

The final guidelines may change based on the comments received during the Natural Resources Agency formal administrative rulemaking process for adoption under the Administrative Procedure Act. Since there are no standards in effect on VMT analysis, a preliminary assessment of the vehicle miles of travel (VMT) generated by the proposed project was prepared for information and disclosure purposes only. No determination on the significance of VMT impacts is made in this document since none is legally required.

CEQA Guidelines

Proposed changes to Appendix G of the CEQA guidelines, as presented in *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA (November 2017)*⁶ provides the potential basis for the evaluation of vehicle miles of travel generated by a project.

Text of Proposed Amendments to Appendix G

b) For a land use project, would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)(1)?

(b) Criteria for Analyzing Transportation Impacts.

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a

⁶ Additional information can be found here:
<http://opr.ca.gov/ceqa/updates/sb-743/>

less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact.

OPR has established a draft threshold for the evaluation of residential, office and retail trips. For those uses, developments that have an estimated vehicle miles of travel 15 percent below **existing regional** (office and residential if the number of residential units exceeds allotted amount in the Sustainable Communities Strategy (SCS)) **and/or city** (residential if the number of residential units is within allotted amount in the (SCS)) **VMT/capita** (work-based) would be considered less than significant. For retail uses, a net-increase in VMT would be considered significant. As a Hotel use does not fall within the office, retail or residential category only the work-based trips were considered for the purposes of this SB 743 assessment.

Analysis Methods

To conduct the VMT assessment, Fehr & Peers used information from the Metropolitan Transportation Commission (MTC).⁷ The existing average trip lengths for the City of Pleasant Hill, Contra Costa County and the Bay Area based on the MTC data are presented in **Table 12**, along with home based trips for informational purposes. Trip length information for the travel analysis zone (TAZ)⁸ in which the project is located is also shown in Table 12. Home based trips in Pleasant Hill and Contra Costa County are slightly higher than the Bay Area average, while work based trips to jobs in Pleasant Hill are lower than the county average, but higher than the Bay Area average, indicating that people who have jobs in Pleasant Hill tend to commute longer than average distances than the remainder of the Bay Area.

Analysis Results

For the assessment of VMT for purposes of SB 743, only the work-based trips are considered as a hotel would have limited control over how guests access the hotel. Based on data published by MTC, the average VMT for workers in the project TAZ is **25.76 vehicle miles** worker per day. This level of vehicle travel is higher than the Bay Area average, but slightly lower than both the County average (lower by 5 percent) or city-wide average (lower by 0.5 percent).

⁷ <http://analytics.mtc.ca.gov/foswiki/Main/PlanBayAreaVmtPerCapita>

⁸Travel analysis zones are used in travel behavior models to represent specific geographic extents, and the various land use, demographic, and socioeconomic characteristics that area.

Table 12: Existing Average Trip Lengths

Land Use Type	Project TAZ	Pleasant Hill	Contra Costa County	Bay Area
Home Based VMT	16.7	17.5	18.0	15.3
Work VMT	25.76	25.9	27.2	22.7

Source: Source: MTC, Fehr & Peers, 2018.

VMT Conclusions

Results of the VMT analysis indicate that the project would contribute to a slight decrease in vehicle miles of travel on a per-employee basis; however, the VMT generated by the project employees is not expected to be 15 percent below the City baseline without implementation of employee-focused transportation demand management strategies. As there are no thresholds of significance, this analysis is being prepared for informational purposes only.

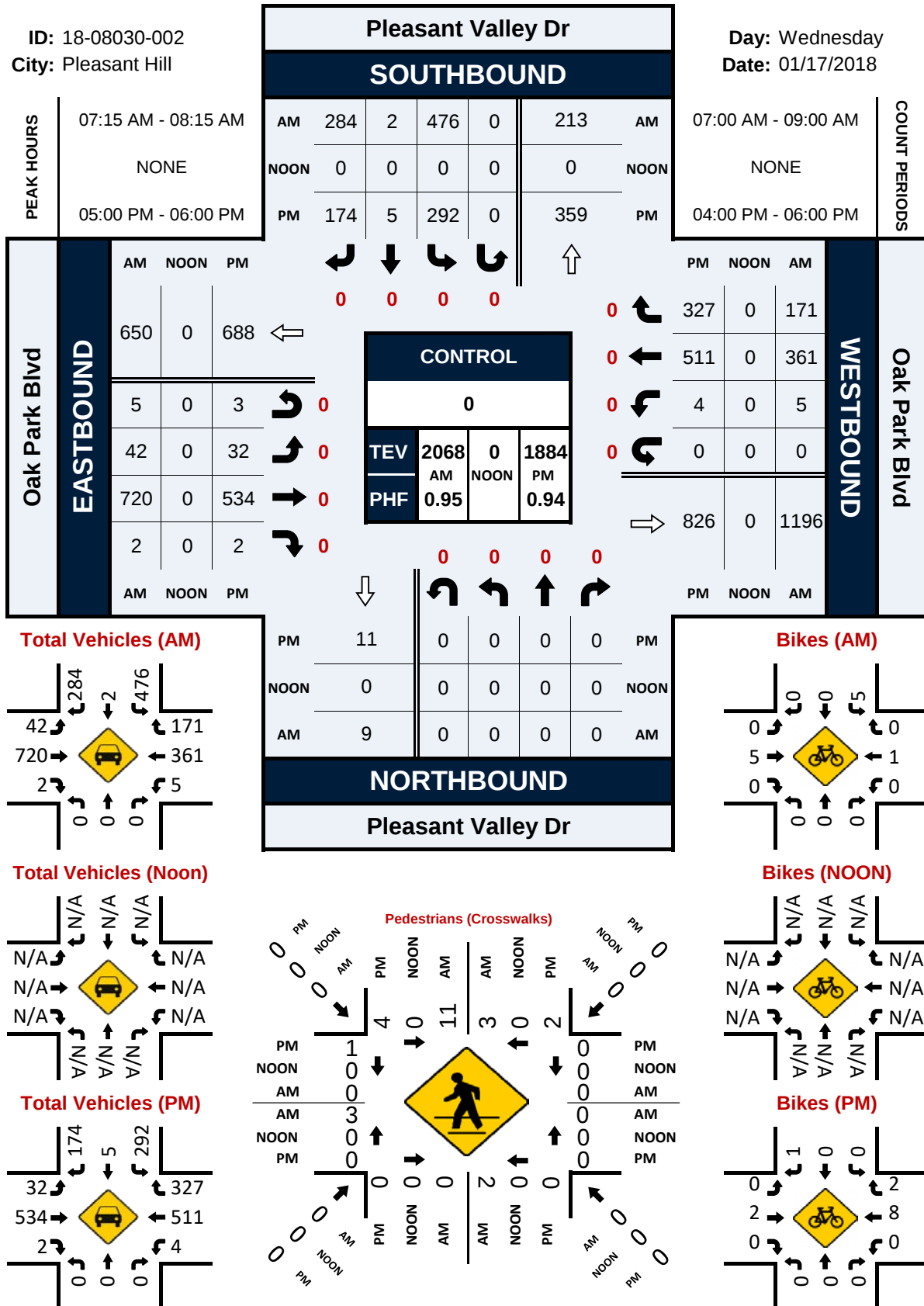
Appendix A: Traffic Counts

Pleasant Valley Dr & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08030-002
City: Pleasant Hill

Day: Wednesday
Date: 01/17/2018

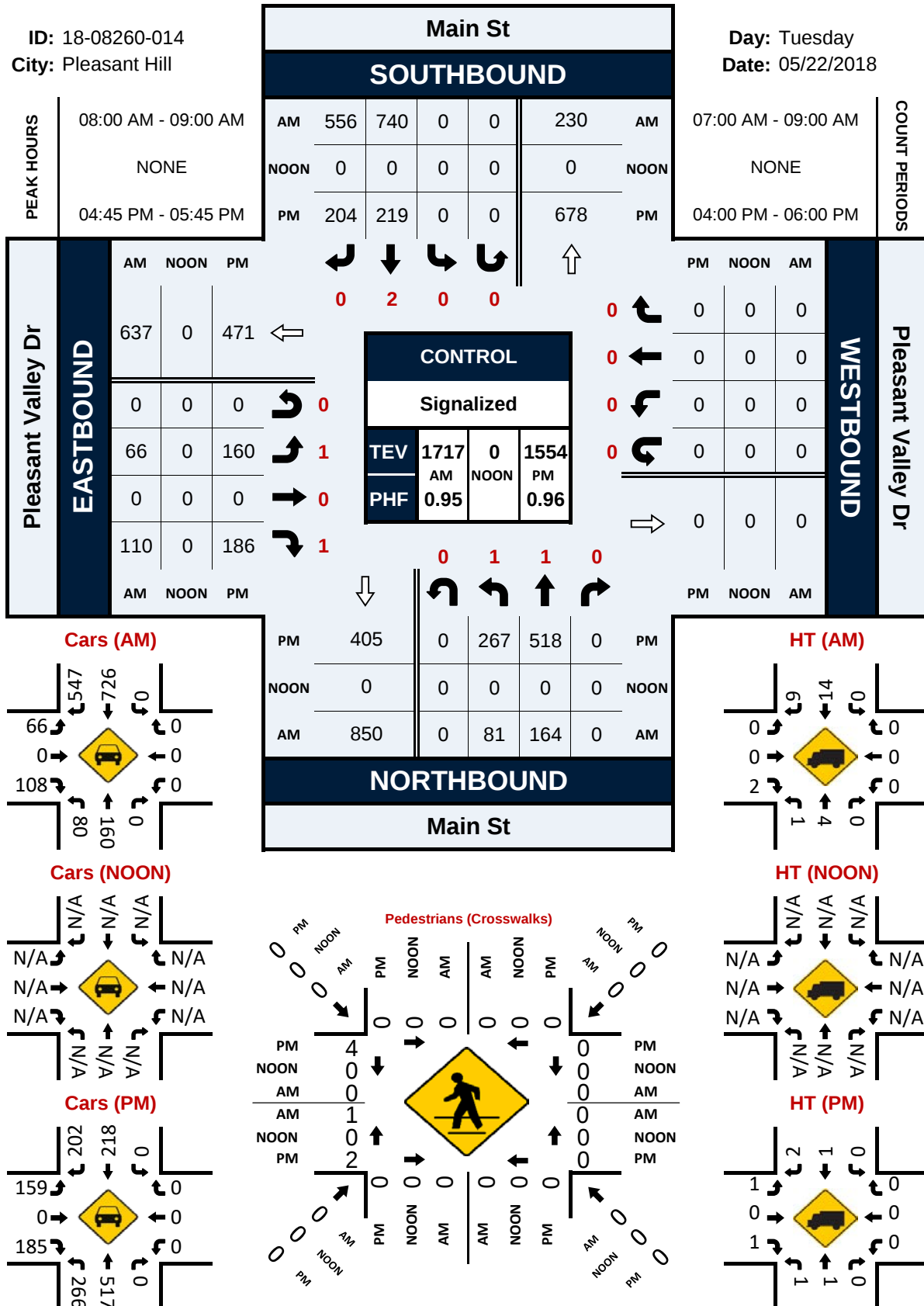


Main St & Pleasant Valley Dr

Peak Hour Turning Movement Count

ID: 18-08260-014
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

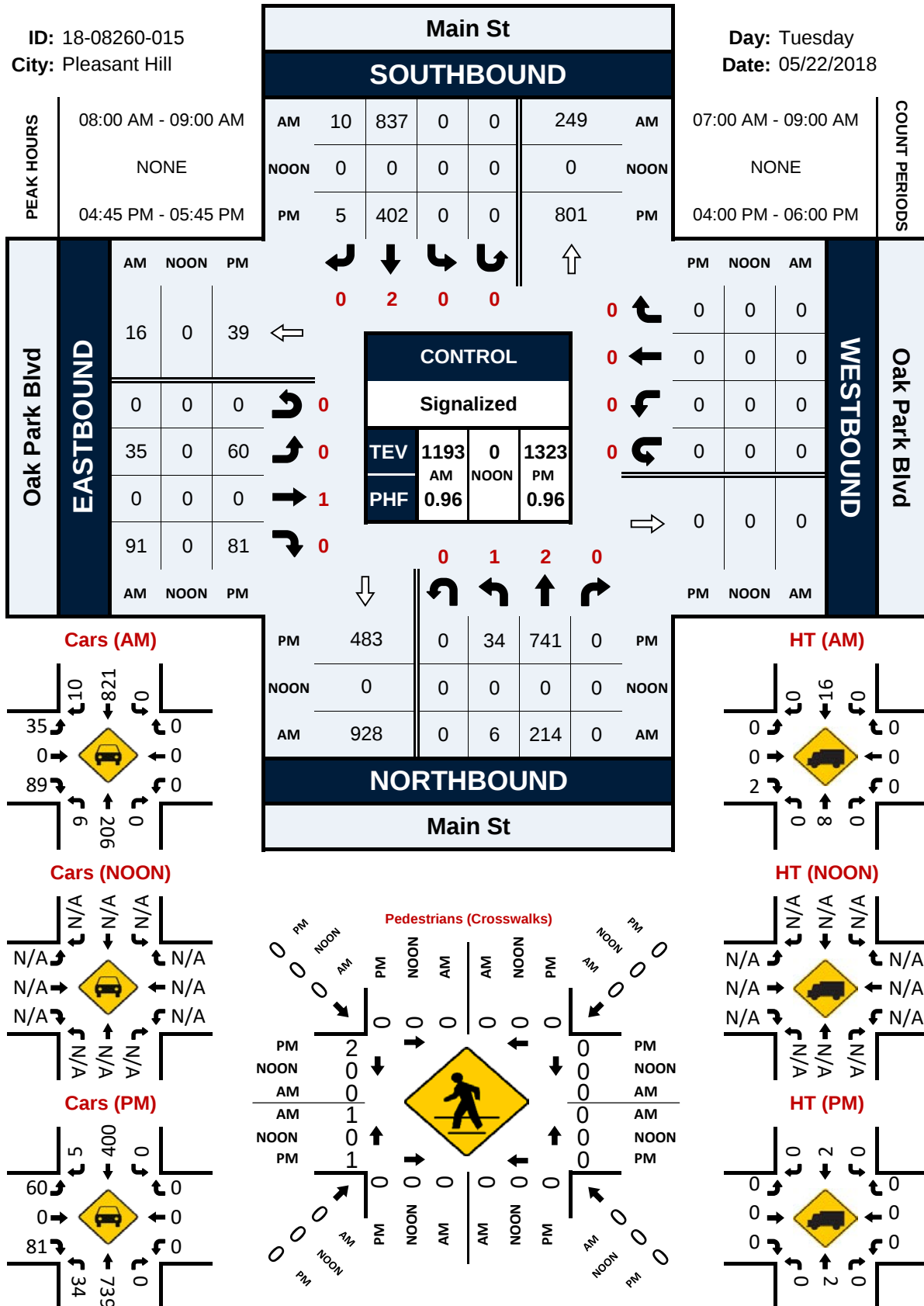


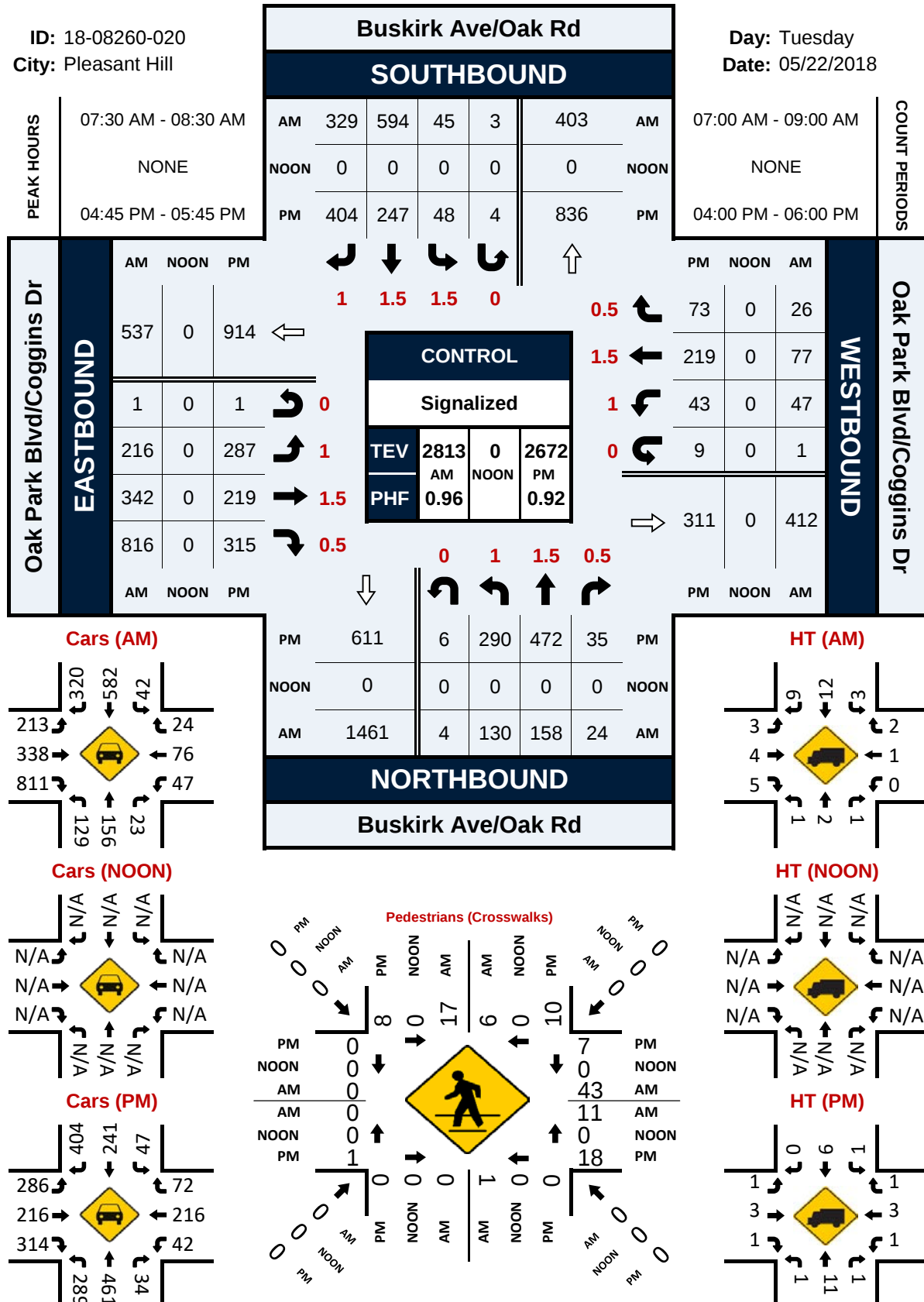
Main St & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-015
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018



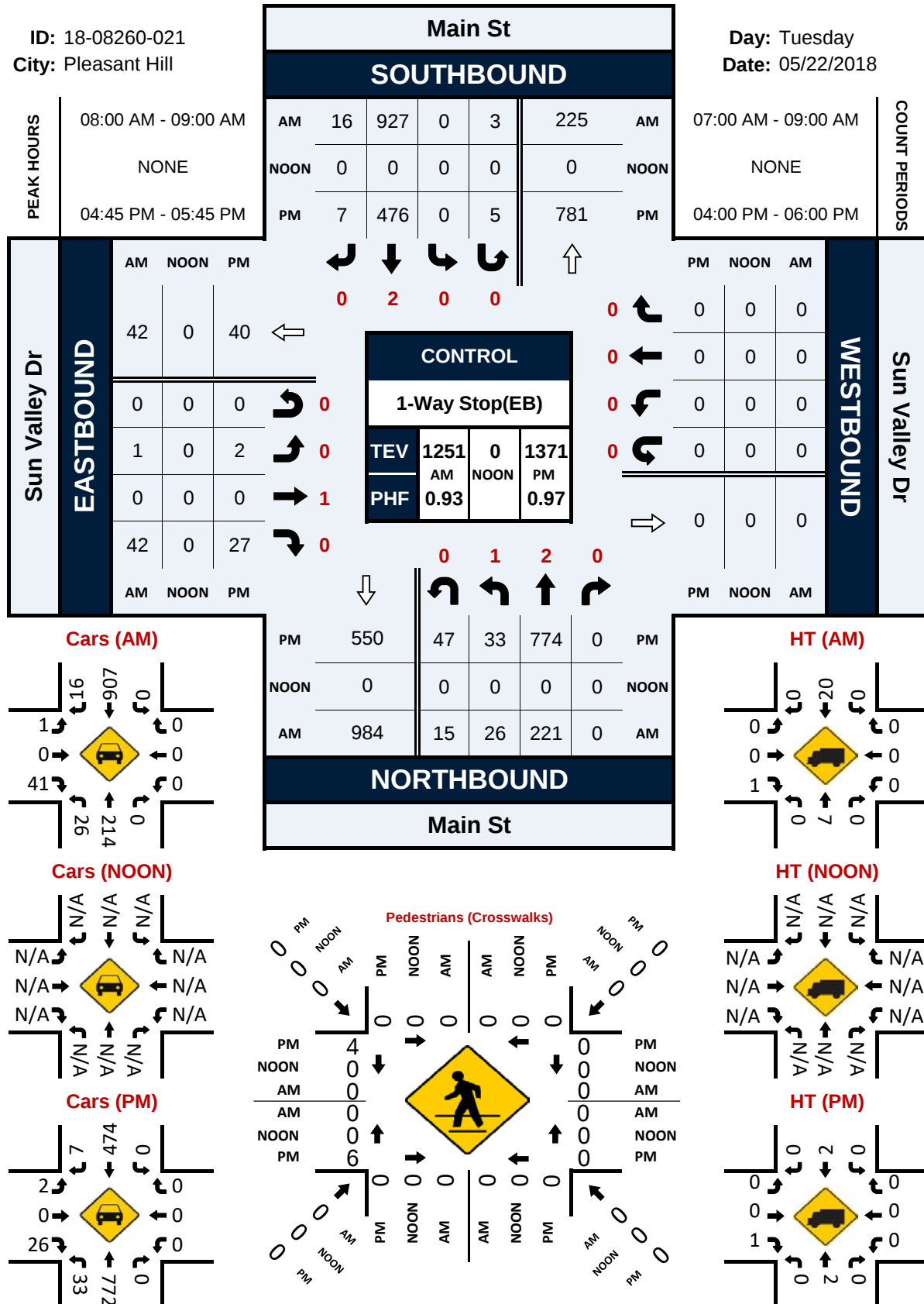


Main St & Sun Valley Dr

Peak Hour Turning Movement Count

ID: 18-08260-021
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

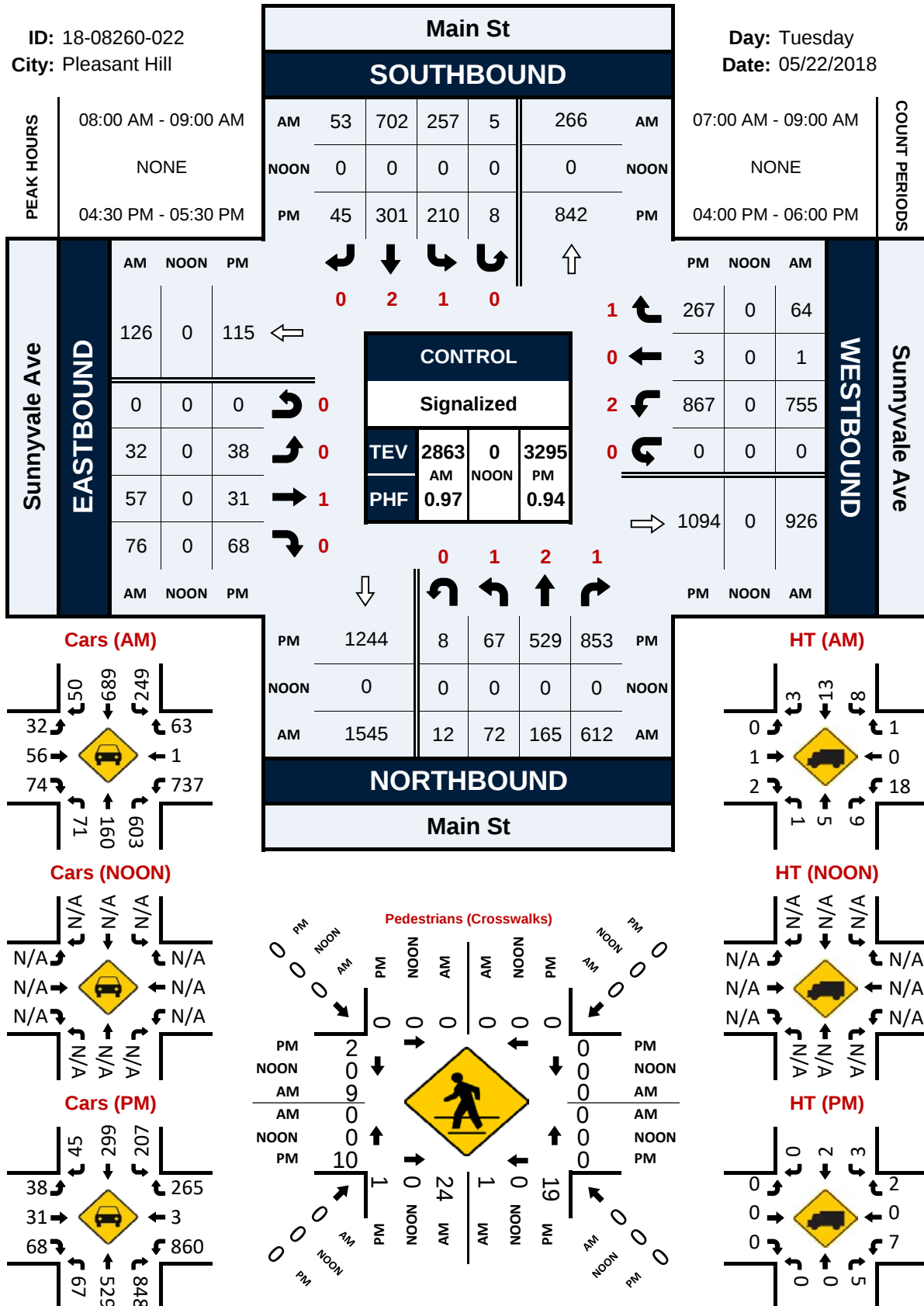


Main St & Sunnyvale Ave

Peak Hour Turning Movement Count

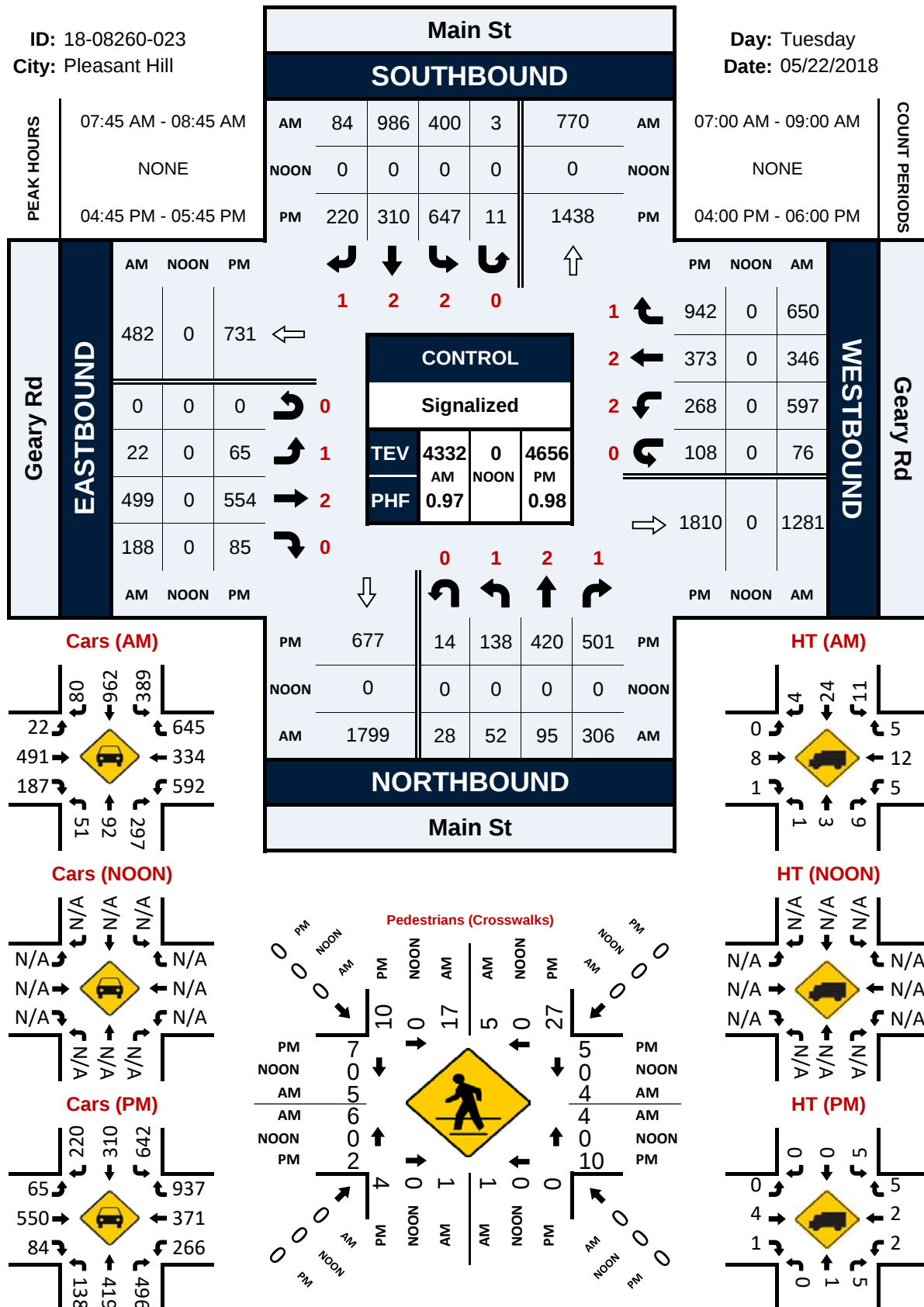
ID: 18-08260-022
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018



ID: 18-08260-023
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

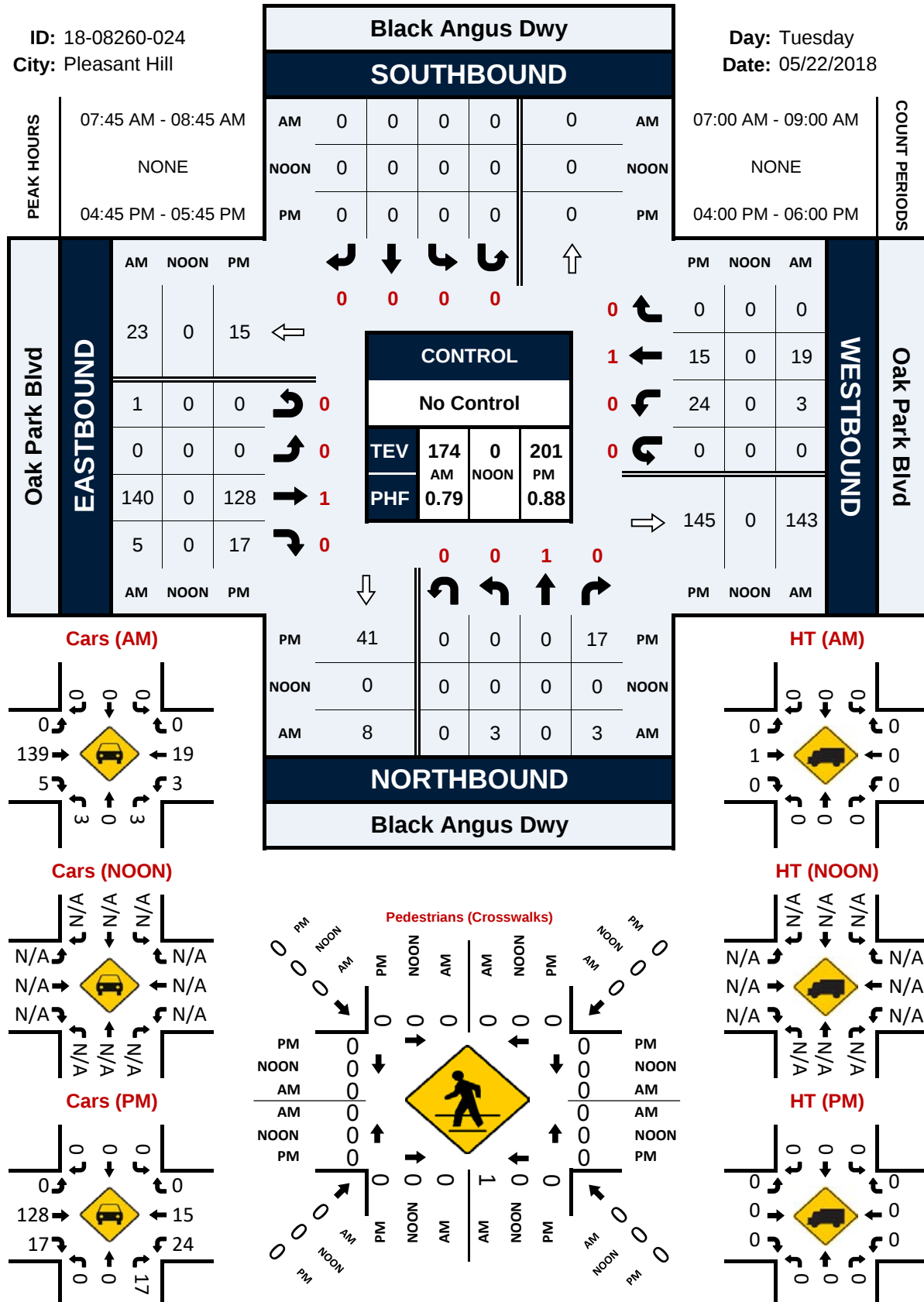


Black Angus Dwy & Oak Park Blvd

Peak Hour Turning Movement Count

ID: 18-08260-024
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018

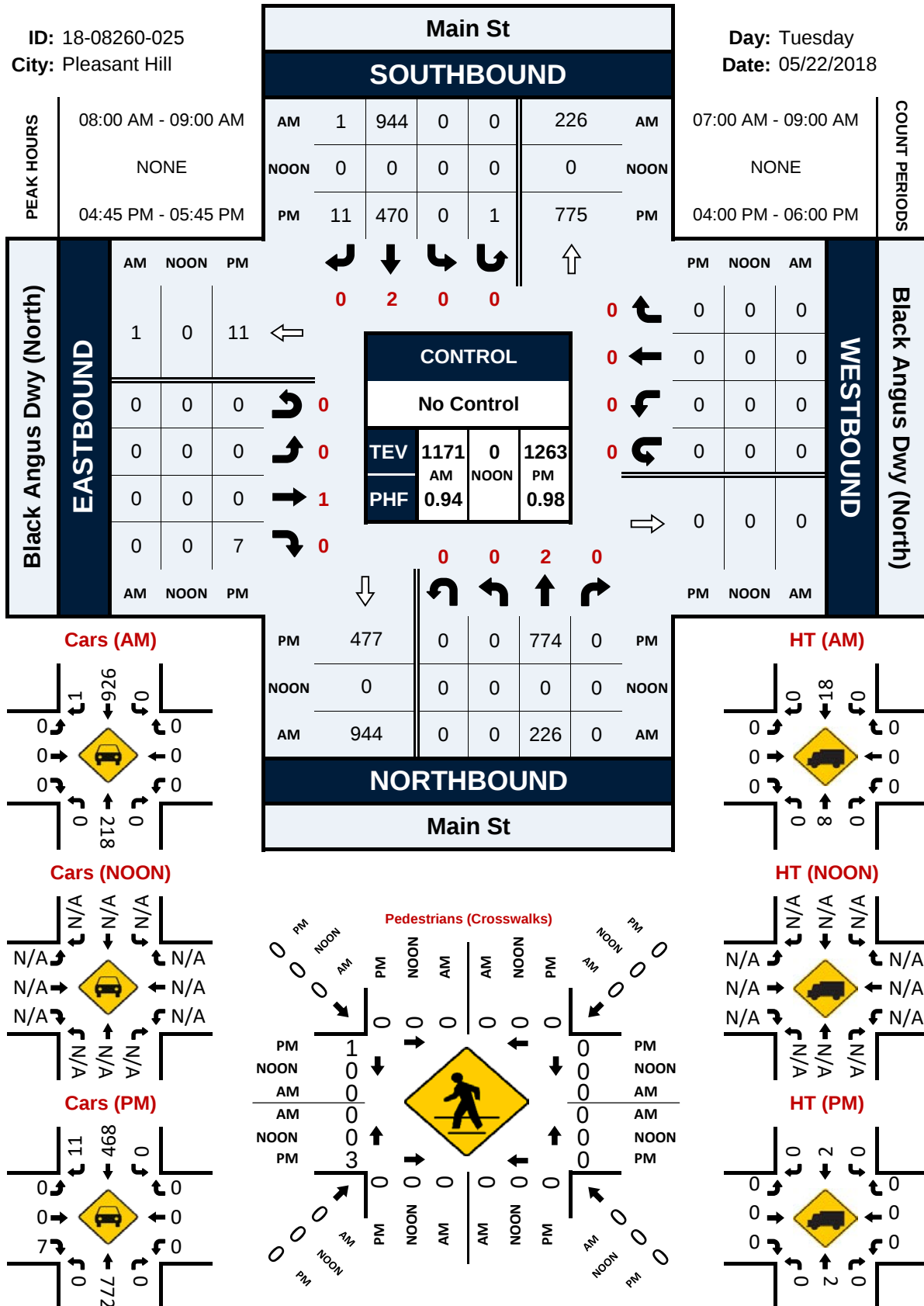


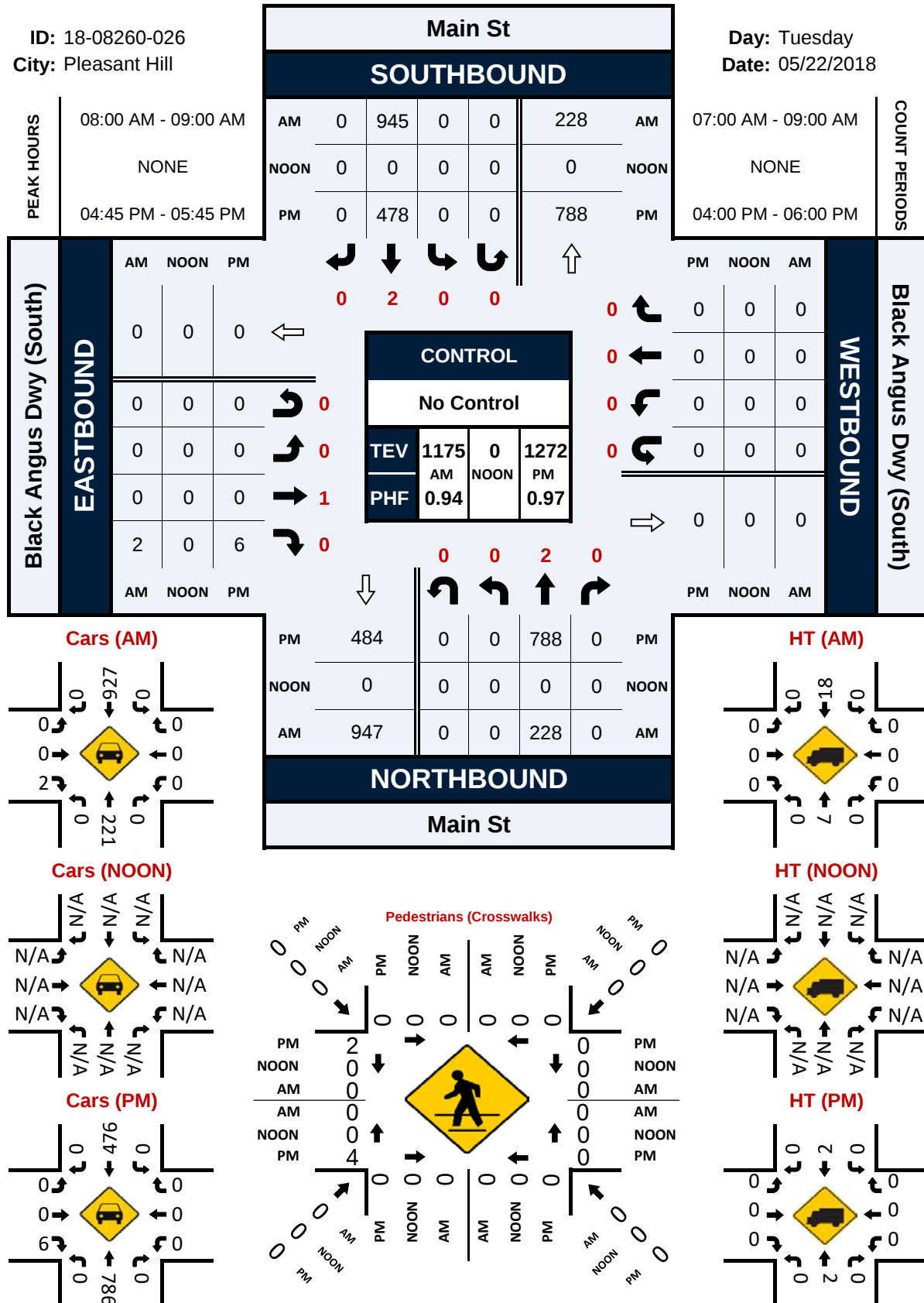
Main St & Black Angus Dwy (North)

Peak Hour Turning Movement Count

ID: 18-08260-025
City: Pleasant Hill

Day: Tuesday
Date: 05/22/2018





Appendix B: LOS and Queue Worksheets

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	902	28	5	692	9	23
Future Vol, veh/h	902	28	5	692	9	23
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	1037	32	6	795	10	26
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1073	0	1864	1058
Stage 1	-	-	-	-	1057	-
Stage 2	-	-	-	-	807	-
Critical Hdwy	-	-	4.11	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	654	-	81	276
Stage 1	-	-	-	-	337	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	652	-	79	275
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	330	-
Stage 2	-	-	-	-	442	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		33.6	
HCM LOS	D					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	162	-	-	652	-	
HCM Lane V/C Ratio	0.227	-	-	0.009	-	
HCM Control Delay (s)	33.6	-	-	10.6	0	
HCM Lane LOS	D	-	-	B	A	
HCM 95th %tile O(veh)	0.8	-	-	0	-	

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	818	2	12	361	171	0	0	2	481	2	284
Future Volume (veh/h)	47	818	2	12	361	171	0	0	2	481	2	284
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		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	49	861	1	13	380	124	0	0	0	507	0	156
Adj No. of Lanes	1	2	1	1	2	1	0	1	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	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	79	1420	635	25	1311	938	0	6	0	840	0	373
Arrive On Green	0.04	0.39	0.39	0.01	0.36	0.36	0.00	0.00	0.00	0.23	0.00	0.23
Sat Flow, veh/h	1810	3610	1615	1810	3610	1551	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	49	861	1	13	380	124	0	0	0	507	0	156
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1551	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.9	6.3	0.0	0.2	2.5	1.2	0.0	0.0	0.0	4.2	0.0	2.7
Cycle Q Clear(g_c), s	0.9	6.3	0.0	0.2	2.5	1.2	0.0	0.0	0.0	4.2	0.0	2.7
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	79	1420	635	25	1311	938	0	6	0	840	0	373
V/C Ratio(X)	0.62	0.61	0.00	0.53	0.29	0.13	0.00	0.00	0.00	0.60	0.00	0.42
Avail Cap(c_a), veh/h	816	3800	1700	1061	3800	2007	0	1057	0	3374	0	1500
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	8.0	6.1	16.3	7.5	3.0	0.0	0.0	0.0	11.4	0.0	10.9
Incr Delay (d2), s/veh	2.9	0.2	0.0	6.4	0.2	0.1	0.0	0.0	0.0	0.3	0.0	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	0.5	3.1	0.0	0.2	1.2	0.8	0.0	0.0	0.0	2.1	0.0	1.2
LnGrp Delay(d),s/veh	18.5	8.2	6.1	22.7	7.7	3.0	0.0	0.0	0.0	11.7	0.0	11.1
LnGrp LOS	B	A	A	C	A	A				B		B
Approach Vol, veh/h		911			517			0			663	
Approach Delay, s/veh		8.7			7.0			0.0			11.5	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	17.1		11.7	5.5	16.1		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.2	8.3		6.2	2.9	4.5		0.0				
Green Ext Time (p_c), s	0.0	4.4		1.3	0.0	4.5		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			9.2									
HCM 2010 LOS			A									
Notes												

HCM Signalized Intersection Capacity Analysis

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing - AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	109	82	144	728	539
Future Volume (vph)	70	109	82	144	728	539
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3325	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3325	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	77	120	90	158	800	592
RTOR Reduction (vph)	0	27	0	0	96	0
Lane Group Flow (vph)	77	93	90	158	1296	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	6.9	19.3	8.4	43.0	30.6	
Effective Green, g (s)	6.9	19.3	8.4	43.0	32.6	
Actuated g/C Ratio	0.11	0.31	0.14	0.69	0.53	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	195	488	240	2458	1751	
v/s Ratio Prot	c0.04	0.06	c0.05	c0.04	c0.39	
v/s Ratio Perm						
v/c Ratio	0.39	0.19	0.38	0.06	0.74	
Uniform Delay, d1	25.6	15.6	24.4	3.0	11.4	
Progression Factor	1.00	1.00	0.83	0.89	1.00	
Incremental Delay, d2	0.5	0.1	0.7	0.0	1.5	
Delay (s)	26.0	15.7	21.0	2.7	12.9	
Level of Service	C	B	C	A	B	
Approach Delay (s)	19.7			9.3	12.9	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			13.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			61.9		Sum of lost time (s)	16.0
Intersection Capacity Utilization			58.0%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Existing - AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	83	9	187	829	8
Future Volume (vph)	39	83	9	187	829	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1770	3539	3534	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	46	98	11	220	975	9
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	46	98	11	220	984	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	6.9	6.9	5.8	43.0	33.2	
Effective Green, g (s)	6.9	6.9	5.8	43.0	33.2	
Actuated g/C Ratio	0.11	0.11	0.09	0.69	0.54	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	201	180	165	2458	1895	
v/s Ratio Prot	0.03		0.01	c0.06	c0.28	
v/s Ratio Perm		c0.06				
v/c Ratio	0.23	0.54	0.07	0.09	0.52	
Uniform Delay, d1	25.1	26.0	25.6	3.1	9.2	
Progression Factor	1.00	1.00	1.00	1.00	0.55	
Incremental Delay, d2	0.2	1.8	0.1	0.0	0.1	
Delay (s)	25.3	27.8	25.6	3.1	5.1	
Level of Service	C	C	C	A	A	
Approach Delay (s)	27.0			4.2	5.1	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			7.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			61.9		Sum of lost time (s)	16.0
Intersection Capacity Utilization			38.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Existing - AM Peak

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	199	328	797	47	69	23	125	133	19	50	596	346						
Future Volume (veh/h)	199	328	797	47	69	23	125	133	19	50	596	346						
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		1.00	1.00		0.97	0.97		1.00						
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1881	1881	1900	1827	1827	1827	1881	1881	1900	1863	1863	1863						
Adj Flow Rate, veh/h	214	353	495	51	74	-1	134	143	7	54	641	177						
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1						
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, %	1	1	1	4	4	4	1	1	1	2	2	2						
Cap, veh/h	240	639	560	89	954	374	297	1262	61	552	1438	611						
Arrive On Green	0.13	0.36	0.36	0.05	0.27	0.00	0.39	0.39	0.39	0.39	0.39	0.39						
Sat Flow, veh/h	1792	1787	1569	1740	3471	1361	672	3268	159	1199	3725	1583						
Grp Volume(v), veh/h	214	353	495	51	74	-1	134	78	72	54	641	177						
Grp Sat Flow(s),veh/h/ln	1792	1787	1569	1740	1736	1361	672	1787	1640	1199	1863	1583						
Q Serve(g_s), s	6.9	9.2	17.3	1.7	0.9	0.0	10.8	1.6	1.7	1.8	7.5	4.5						
Cycle Q Clear(g_c), s	6.9	9.2	17.3	1.7	0.9	0.0	18.2	1.6	1.7	3.4	7.5	4.5						
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00						
Lane Grp Cap(c), veh/h	240	639	560	89	954	374	297	690	633	552	1438	611						
V/C Ratio(X)	0.89	0.55	0.88	0.57	0.08	0.00	0.45	0.11	0.11	0.10	0.45	0.29						
Avail Cap(c_a), veh/h	582	673	590	566	1366	536	354	841	771	552	1438	611						
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	24.9	15.0	17.6	27.1	15.7	0.0	20.1	11.5	11.5	12.6	13.3	12.4						
Incr Delay (d2), s/veh	4.6	1.0	14.5	2.1	0.0	0.0	0.4	0.0	0.0	0.0	0.1	0.1						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	3.7	4.7	9.7	0.9	0.4	0.0	2.0	0.8	0.7	0.6	3.8	2.0						
LnGrp Delay(d),s/veh	29.5	16.1	32.1	29.2	15.7	0.0	20.5	11.5	11.5	12.7	13.4	12.5						
LnGrp LOS	C	B	C	C	B		C	B	B	B	B	B						
Approach Vol, veh/h	1062				124			284			872							
Approach Delay, s/veh	26.3				21.4			15.8			13.2							
Approach LOS	C				C			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	7.0	24.9			26.6	11.8	20.1	26.6										
Change Period (Y+Rc), s	3.0	4.0			3.5	3.0	4.0	3.5										
Max Green Setting (Gmax), s	20.0	22.0			23.0	20.0	23.0	28.0										
Max Q Clear Time (g_c+I1), s	3.7	19.3			9.5	8.9	2.9	20.2										
Green Ext Time (p_c), s	0.0	1.6			3.0	0.2	0.4	0.8										
Intersection Summary																		
HCM 2010 Ctrl Delay													19.9					
HCM 2010 LOS													B					
Notes																		

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	42	41	221	930	16
Future Vol, veh/h	1	42	41	221	930	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	3	3	2	2
Mvmt Flow	1	45	44	238	1000	17
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1216	509	1017	0	-	0
Stage 1	1009	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	173	509	672	-	-	-
Stage 1	313	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	162	509	672	-	-	-
Mov Cap-2 Maneuver	162	-	-	-	-	-
Stage 1	293	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.2	1.7		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	672	-	485	-	-	
HCM Lane V/C Ratio	0.066	-	0.095	-	-	
HCM Control Delay (s)	10.7	-	13.2	-	-	
HCM Lane LOS	B	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-	

HCM 2010 Signalized Intersection Summary
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	57	76	755	1	64	84	165	612	262	702	53
Future Volume (veh/h)	32	57	76	755	1	64	84	165	612	262	702	53
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	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	0.87
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	33	59	52	779	0	21	87	170	457	270	724	52
Adj No. of Lanes	0	1	0	2	0	1	1	2	1	1	2	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	58	103	91	1527	0	681	101	504	888	292	780	56
Arrive On Green	0.15	0.15	0.15	0.43	0.00	0.43	0.06	0.14	0.14	0.16	0.25	0.24
Sat Flow, veh/h	389	695	613	3548	0	1583	1774	3539	1547	1774	3122	224
Grp Volume(v), veh/h	144	0	0	779	0	21	87	170	457	270	410	366
Grp Sat Flow(s),veh/h/ln	1697	0	0	1774	0	1583	1774	1770	1547	1774	1770	1576
Q Serve(g_s), s	11.1	0.0	0.0	22.4	0.0	1.1	6.8	6.1	18.9	21.0	31.7	31.7
Cycle Q Clear(g_c), s	11.1	0.0	0.0	22.4	0.0	1.1	6.8	6.1	18.9	21.0	31.7	31.7
Prop In Lane	0.23		0.36	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	251	0	0	1527	0	681	101	504	888	292	442	394
V/C Ratio(X)	0.57	0.00	0.00	0.51	0.00	0.03	0.86	0.34	0.51	0.92	0.93	0.93
Avail Cap(c_a), veh/h	400	0	0	1527	0	681	101	504	888	317	442	394
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	0.00	0.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.5	0.0	0.0	29.1	0.0	23.0	65.4	54.1	17.4	57.6	51.3	51.3
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.2	0.0	0.1	43.5	1.7	2.0	29.2	28.0	30.4
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	5.3	0.0	0.0	11.2	0.0	0.5	4.6	3.1	18.1	12.6	18.9	17.2
LnGrp Delay(d),s/veh	56.3	0.0	0.0	30.3	0.0	23.1	109.0	55.8	19.4	86.8	79.2	81.8
LnGrp LOS	E			C		C	F	E	B	F	E	F
Approach Vol, veh/h		144			800			714			1046	
Approach Delay, s/veh		56.3			30.1			39.0			82.1	
Approach LOS		E			C			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.1	23.9		64.3	12.0	39.0		24.7				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		* 48	8.0	34.0		33.0				
Max Q Clear Time (g_c+I1), s	23.0	20.9		24.4	8.8	33.7		13.1				
Green Ext Time (p_c), s	0.1	0.0		9.4	0.0	0.2		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			53.9									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	499	181	623	338	678	81	104	282	445	967	102
Future Volume (veh/h)	27	499	181	623	338	678	81	104	282	445	967	102
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	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	1881	1881	1881	1845	1845	1845	1863	1863	1863
Adj Flow Rate, veh/h	28	514	161	642	348	0	84	107	68	459	997	38
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	35	661	206	687	1529	684	104	888	388	512	1315	574
Arrive On Green	0.02	0.25	0.24	0.20	0.43	0.00	0.06	0.25	0.25	0.30	0.74	0.74
Sat Flow, veh/h	1774	2643	823	3476	3574	1599	1757	3505	1531	3442	3539	1546
Grp Volume(v), veh/h	28	343	332	642	348	0	84	107	68	459	997	38
Grp Sat Flow(s),veh/h/ln	1774	1770	1696	1738	1787	1599	1757	1752	1531	1721	1770	1546
Q Serve(g_s), s	2.2	25.3	25.6	25.4	8.6	0.0	6.6	3.3	4.9	17.9	23.2	0.9
Cycle Q Clear(g_c), s	2.2	25.3	25.6	25.4	8.6	0.0	6.6	3.3	4.9	17.9	23.2	0.9
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	35	442	424	687	1529	684	104	888	388	512	1315	574
V/C Ratio(X)	0.79	0.78	0.78	0.93	0.23	0.00	0.81	0.12	0.18	0.90	0.76	0.07
Avail Cap(c_a), veh/h	177	442	424	695	1529	684	113	888	388	639	1315	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.46	0.46	0.46
Uniform Delay (d), s/veh	68.3	48.8	49.2	55.3	25.4	0.0	65.1	40.2	40.8	48.2	14.3	11.4
Incr Delay (d2), s/veh	13.5	12.5	13.4	19.9	0.3	0.0	31.8	0.3	1.0	6.9	1.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	13.9	13.6	14.1	4.3	0.0	4.1	1.6	2.2	8.9	11.2	0.4
LnGrp Delay(d),s/veh	81.8	61.4	62.6	75.2	25.7	0.0	96.8	40.5	41.8	55.0	16.2	11.5
LnGrp LOS	F	E	E	E	C		F	D	D	E	B	B
Approach Vol, veh/h		703			990			259			1494	
Approach Delay, s/veh		62.8			57.8			59.1			28.0	
Approach LOS		E			E			E			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	28.8	39.5	31.7	39.0	12.3	56.0	6.8	63.9				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.0	30.0	28.0	34.0	9.0	51.0	14.0	48.0				
Max Q Clear Time (g_c+I1), s	19.9	6.9	27.4	27.6	8.6	25.2	4.2	10.6				
Green Ext Time (p_c), s	0.9	2.0	0.2	3.8	0.0	16.2	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			46.0									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	128	2	2	14	0	1
Future Vol, veh/h	128	2	2	14	0	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	171	3	3	19	0	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	175
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1414
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1413
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	874	-	-	1413	-
HCM Lane V/C Ratio	0.002	-	-	0.002	-
HCM Control Delay (s)	9.1	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	222	944	1
Future Vol, veh/h	0	0	0	222	944	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	0	0	0	236	1004	1
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	503	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	514	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	514	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕↕	↕↗	
Traffic Vol, veh/h	0	2	0	222	944	0
Future Vol, veh/h	0	2	0	222	944	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	0	2	0	236	1004	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 502	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.9	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.3	- -	- -
Pot Cap-1 Maneuver	0 520	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 520	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 520	- -	- -
HCM Lane V/C Ratio	- 0.004	- -	- -
HCM Control Delay (s)	- 12	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	676	12	9	777	23	19
Future Vol, veh/h	676	12	9	777	23	19
Conflicting Peds, #/hr	0	3	3	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	719	13	10	827	24	20

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	735
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	875
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	873
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	32.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	176	-	-	873	-
HCM Lane V/C Ratio	0.254	-	-	0.011	-
HCM Control Delay (s)	32.3	-	-	9.2	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	616	3	8	502	333	0	0	9	285	4	183
Future Volume (veh/h)	34	616	3	8	502	333	0	0	9	285	4	183
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		1.00	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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	37	662	1	9	540	224	0	0	0	309	0	52
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	2	0	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	64	1577	706	17	1485	907	0	6	0	593	0	264
Arrive On Green	0.04	0.44	0.44	0.01	0.41	0.41	0.00	0.00	0.00	0.16	0.00	0.16
Sat Flow, veh/h	1810	3610	1615	1810	3610	1561	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	37	662	1	9	540	224	0	0	0	309	0	52
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1561	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.6	3.9	0.0	0.2	3.2	2.2	0.0	0.0	0.0	2.4	0.0	0.9
Cycle Q Clear(g_c), s	0.6	3.9	0.0	0.2	3.2	2.2	0.0	0.0	0.0	2.4	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	64	1577	706	17	1485	907	0	6	0	593	0	264
V/C Ratio(X)	0.58	0.42	0.00	0.52	0.36	0.25	0.00	0.00	0.00	0.52	0.00	0.20
Avail Cap(c_a), veh/h	881	4101	1835	1145	4101	2038	0	1141	0	3642	0	1619
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.6	6.0	4.9	15.2	6.3	3.2	0.0	0.0	0.0	11.8	0.0	11.1
Incr Delay (d2), s/veh	3.1	0.1	0.0	8.5	0.2	0.2	0.0	0.0	0.0	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.9	0.0	0.1	1.6	1.4	0.0	0.0	0.0	1.2	0.0	0.4
LnGrp Delay(d),s/veh	17.7	6.0	4.9	23.7	6.5	3.4	0.0	0.0	0.0	12.0	0.0	11.3
LnGrp LOS	B	A	A	C	A	A				B		B
Approach Vol, veh/h		700			773			0			361	
Approach Delay, s/veh		6.7			5.8			0.0			11.9	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	17.5		9.1	5.1	16.7		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.2	5.9		4.4	2.6	5.2		0.0				
Green Ext Time (p_c), s	0.0	3.2		0.7	0.0	7.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			7.3									
HCM 2010 LOS			A									
Notes												

HCM Signalized Intersection Capacity Analysis

3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA

Existing - PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	186	267	534	219	204
Future Volume (vph)	160	186	267	534	219	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3287	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3287	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	194	278	556	228	212
RTOR Reduction (vph)	0	87	0	0	157	0
Lane Group Flow (vph)	167	107	278	556	284	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	10.0	30.5	16.5	33.1	12.6	
Effective Green, g (s)	10.0	30.5	16.5	33.1	14.6	
Actuated g/C Ratio	0.18	0.55	0.30	0.60	0.26	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	324	885	540	2168	870	
v/s Ratio Prot	c0.09	0.07	c0.15	0.15	c0.09	
v/s Ratio Perm						
v/c Ratio	0.52	0.12	0.51	0.26	0.33	
Uniform Delay, d1	20.4	5.9	16.0	5.2	16.3	
Progression Factor	1.00	1.00	0.79	0.46	1.00	
Incremental Delay, d2	0.6	0.0	0.6	0.0	0.1	
Delay (s)	20.9	5.9	13.2	2.4	16.4	
Level of Service	C	A	B	A	B	
Approach Delay (s)	12.9			6.0	16.4	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			10.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			55.1		Sum of lost time (s)	16.0
Intersection Capacity Utilization			48.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Existing - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	81	34	741	400	5
Future Volume (vph)	60	81	34	741	400	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3602	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3602	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	62	84	35	772	417	5
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	63	84	35	772	421	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	10.0	10.0	11.5	33.1	17.6	
Effective Green, g (s)	10.0	10.0	11.5	33.1	17.6	
Actuated g/C Ratio	0.18	0.18	0.21	0.60	0.32	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	327	293	376	2168	1150	
v/s Ratio Prot	0.03		0.02	c0.21	c0.12	
v/s Ratio Perm		c0.05				
v/c Ratio	0.19	0.29	0.09	0.36	0.37	
Uniform Delay, d1	19.1	19.5	17.6	5.6	14.4	
Progression Factor	1.00	1.00	1.00	1.00	0.79	
Incremental Delay, d2	0.1	0.2	0.0	0.0	0.1	
Delay (s)	19.2	19.7	17.6	5.6	11.5	
Level of Service	B	B	B	A	B	
Approach Delay (s)	19.5			6.1	11.5	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			9.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			55.1		Sum of lost time (s)	16.0
Intersection Capacity Utilization			31.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Existing - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	288	219	315	52	219	73	296	472	35	52	247	404
Future Volume (veh/h)	288	219	315	52	219	73	296	472	35	52	247	404
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		1.00	1.00		0.95	1.00		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1863	1863	1900	1881	1881	1881
Adj Flow Rate, veh/h	313	238	124	57	238	13	322	513	33	57	268	88
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	346	704	355	99	599	222	514	1331	85	396	1575	669
Arrive On Green	0.19	0.31	0.31	0.06	0.17	0.17	0.42	0.42	0.43	0.42	0.42	0.42
Sat Flow, veh/h	1792	2303	1160	1792	3574	1325	1021	3180	204	859	3762	1599
Grp Volume(v), veh/h	313	183	179	57	238	13	322	285	261	57	268	88
Grp Sat Flow(s),veh/h/ln	1792	1787	1676	1792	1787	1325	1021	1770	1615	859	1881	1599
Q Serve(g_s), s	9.3	4.3	4.5	1.7	3.2	0.4	15.7	6.1	6.1	2.7	2.4	1.8
Cycle Q Clear(g_c), s	9.3	4.3	4.5	1.7	3.2	0.4	18.1	6.1	6.1	8.8	2.4	1.8
Prop In Lane	1.00		0.69	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	346	546	512	99	599	222	514	741	676	396	1575	669
V/C Ratio(X)	0.90	0.33	0.35	0.58	0.40	0.06	0.63	0.38	0.39	0.14	0.17	0.13
Avail Cap(c_a), veh/h	626	723	678	626	1511	560	603	894	816	396	1575	669
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	14.6	14.7	25.1	20.2	19.0	15.6	11.0	10.9	14.0	9.9	9.7
Incr Delay (d2), s/veh	3.6	0.4	0.5	2.0	0.6	0.2	0.8	0.1	0.1	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	4.9	2.1	2.2	0.9	1.6	0.2	4.5	3.0	2.7	0.6	1.3	0.8
LnGrp Delay(d),s/veh	25.1	15.0	15.2	27.1	20.8	19.2	16.4	11.1	11.1	14.1	9.9	9.8
LnGrp LOS	C	B	B	C	C	B	B	B	B	B	A	A
Approach Vol, veh/h		675			308			868			413	
Approach Delay, s/veh		19.7			21.9			13.1			10.5	
Approach LOS		B			C			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	7.0	20.6		26.8	14.5	13.1		26.8				
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5				
Max Green Setting (Gmax), s	20.0	22.0		23.0	20.0	23.0		28.0				
Max Q Clear Time (g_c+I1), s	3.7	6.5		10.8	11.3	5.2		20.1				
Green Ext Time (p_c), s	0.0	2.2		1.2	0.3	1.8		2.2				
Intersection Summary												
HCM 2010 Ctrl Delay				15.8								
HCM 2010 LOS				B								
Notes												

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	27	80	774	476	7
Future Vol, veh/h	2	27	80	774	476	7
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	0	0	0	0
Mvmt Flow	2	28	82	798	491	7
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1068	259	508	0	-	0
Stage 1	505	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.1	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.2	-	-	-
Pot Cap-1 Maneuver	215	737	1067	-	-	-
Stage 1	568	-	-	-	-	-
Stage 2	531	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	194	730	1057	-	-	-
Mov Cap-2 Maneuver	194	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.2	0.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1057	-	613	-	-	
HCM Lane V/C Ratio	0.078	-	0.049	-	-	
HCM Control Delay (s)	8.7	-	11.2	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.2	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing - PM Peak

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	29	28	75	837	4	262	69	560	847	215	285	41						
Future Volume (veh/h)	29	28	75	837	4	262	69	560	847	215	285	41						
Number	3	8	18	7	4	14	5	2	12	1	6	16						
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	1.00		0.95						
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	0.87						
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1881	1881	1900	1900	1900	1881	1881	1900						
Adj Flow Rate, veh/h	32	30	37	913	0	121	75	609	716	234	310	37						
Adj No. of Lanes	0	1	0	2	0	1	1	2	1	1	2	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, %	0	0	0	1	1	1	0	0	0	1	1	1						
Cap, veh/h	72	68	84	1440	0	643	96	722	950	259	872	103						
Arrive On Green	0.13	0.13	0.13	0.40	0.00	0.40	0.05	0.20	0.19	0.14	0.29	0.28						
Sat Flow, veh/h	555	520	642	3583	0	1599	1810	3610	1580	1792	2989	352						
Grp Volume(v), veh/h	99	0	0	913	0	121	75	609	716	234	184	163						
Grp Sat Flow(s),veh/h/ln	1717	0	0	1792	0	1599	1810	1805	1580	1792	1787	1554						
Q Serve(g_s), s	6.9	0.0	0.0	26.6	0.0	6.4	5.3	21.1	25.0	16.7	10.6	10.8						
Cycle Q Clear(g_c), s	6.9	0.0	0.0	26.6	0.0	6.4	5.3	21.1	25.0	16.7	10.6	10.8						
Prop In Lane	0.32		0.37	1.00		1.00	1.00		1.00	1.00		0.23						
Lane Grp Cap(c), veh/h	224	0	0	1440	0	643	96	722	950	259	522	454						
V/C Ratio(X)	0.44	0.00	0.00	0.63	0.00	0.19	0.78	0.84	0.75	0.90	0.35	0.36						
Avail Cap(c_a), veh/h	436	0	0	1440	0	643	223	722	950	303	522	454						
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	0.00	0.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00						
Uniform Delay (d), s/veh	52.2	0.0	0.0	31.2	0.0	25.2	60.8	50.0	15.9	54.7	36.3	36.5						
Incr Delay (d2), s/veh	0.5	0.0	0.0	2.1	0.0	0.6	4.2	9.5	4.5	24.1	1.9	2.2						
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	3.3	0.0	0.0	13.6	0.0	2.9	2.8	11.4	26.8	10.0	5.5	4.9						
LnGrp Delay(d),s/veh	52.7	0.0	0.0	33.3	0.0	25.8	65.0	59.5	20.3	78.8	38.2	38.7						
LnGrp LOS	D			C		C	E	E	C	E	D	D						
Approach Vol, veh/h	99		1034				1400				581							
Approach Delay, s/veh	52.7		32.5				39.8				54.7							
Approach LOS	D		C				D				D							
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	22.8	30.0			56.2	10.9	41.9	20.9										
Change Period (Y+Rc), s	4.0	5.0	* 4.2		4.0	5.0	5.0	4.0										
Max Green Setting (Gmax), s	22.0	25.0	* 33		16.0	31.0	31.0	33.0										
Max Q Clear Time (g_c+I1), s	18.7	27.0			28.6	7.3	12.8	8.9										
Green Ext Time (p_c), s	0.1	0.0			3.1	0.0	3.3	0.3										
Intersection Summary																		
HCM 2010 Ctrl Delay 40.5																		
HCM 2010 LOS D																		
Notes																		

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	554	85	376	373	942	152	420	501	658	310	220
Future Volume (veh/h)	65	554	85	376	373	942	152	420	501	658	310	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	1.00		0.98	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	1881	1881	1900	1881	1881	1881	1881	1881	1881	1900	1900	1900
Adj Flow Rate, veh/h	66	565	78	384	381	0	155	429	412	671	316	79
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	85	751	103	457	1153	516	183	852	374	615	1325	588
Arrive On Green	0.05	0.24	0.23	0.13	0.32	0.00	0.10	0.24	0.24	0.07	0.12	0.12
Sat Flow, veh/h	1792	3148	433	3476	3574	1599	1792	3574	1569	3076	3610	1603
Grp Volume(v), veh/h	66	320	323	384	381	0	155	429	412	671	316	79
Grp Sat Flow(s),veh/h/ln	1792	1787	1794	1738	1787	1599	1792	1787	1569	1538	1805	1603
Q Serve(g_s), s	4.7	21.6	21.7	14.0	10.5	0.0	11.1	13.5	31.0	26.0	10.3	5.7
Cycle Q Clear(g_c), s	4.7	21.6	21.7	14.0	10.5	0.0	11.1	13.5	31.0	26.0	10.3	5.7
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	426	428	457	1153	516	183	852	374	615	1325	588
V/C Ratio(X)	0.78	0.75	0.75	0.84	0.33	0.00	0.85	0.50	1.10	1.09	0.24	0.13
Avail Cap(c_a), veh/h	193	426	428	588	1153	516	331	852	374	615	1325	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	61.3	45.9	46.1	55.1	33.4	0.0	57.4	42.8	49.5	60.7	40.7	38.7
Incr Delay (d2), s/veh	5.7	11.5	11.7	9.5	0.6	0.0	10.2	2.1	76.7	59.6	0.3	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	2.5	12.0	12.2	7.3	5.3	0.0	6.0	6.9	21.4	16.2	5.2	2.6
LnGrp Delay(d),s/veh	67.0	57.5	57.8	64.7	34.0	0.0	67.6	45.0	126.2	120.3	41.0	39.0
LnGrp LOS	E	E	E	E	C		E	D	F	F	D	D
Approach Vol, veh/h		709			765			996			1066	
Approach Delay, s/veh		58.5			49.4			82.1			90.8	
Approach LOS		E			D			F			F	
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	34.0	35.0	21.1	35.0	17.3	51.7	10.1	45.9				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.0	30.0	22.0	30.0	24.0	36.0	14.0	38.0				
Max Q Clear Time (g_c+I1), s	28.0	33.0	16.0	23.7	13.1	12.3	6.7	12.5				
Green Ext Time (p_c), s	0.0	0.0	1.1	3.6	0.3	5.3	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay				72.9								
HCM 2010 LOS				E								
Notes												

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	124	17	24	15	0	17
Future Vol, veh/h	124	17	24	15	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	141	19	27	17	0	19

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	160
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1432
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1432
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.7	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	901	-	-	1432	-
HCM Lane V/C Ratio	0.021	-	-	0.019	-
HCM Control Delay (s)	9.1	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	7	0	775	470	11
Future Vol, veh/h	0	7	0	775	470	11
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	0	791	480	11

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 250	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.9	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.3	- -	- -
Pot Cap-1 Maneuver	0 756	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 753	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 753	- -	- -
HCM Lane V/C Ratio	- 0.009	- -	- -
HCM Control Delay (s)	- 9.8	- -	- -
HCM Lane LOS	- A	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	6	0	775	477	0
Future Vol, veh/h	0	6	0	775	477	0
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	6	0	799	492	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 252	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.9	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.3	- -	- -
Pot Cap-1 Maneuver	0 754	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 750	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 750	- -	- -
HCM Lane V/C Ratio	- 0.008	- -	- -
HCM Control Delay (s)	- 9.8	- -	- -
HCM Lane LOS	- A	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	905	28	5	694	9	25
Future Vol, veh/h	905	28	5	694	9	25
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	1040	32	6	798	10	29

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1076
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	652
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	650
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	33.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	164	-	-	650	-
HCM Lane V/C Ratio	0.238	-	-	0.009	-
HCM Control Delay (s)	33.7	-	-	10.6	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.9	-	-	0	-

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	820	5	38	361	173	0	0	2	498	2	286
Future Volume (veh/h)	47	820	5	38	361	173	0	0	2	498	2	286
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		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	49	863	4	40	380	126	0	0	0	525	0	158
Adj No. of Lanes	1	2	1	1	2	1	0	1	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	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	78	1394	624	67	1371	966	0	5	0	845	0	376
Arrive On Green	0.04	0.39	0.39	0.04	0.38	0.38	0.00	0.00	0.00	0.23	0.00	0.23
Sat Flow, veh/h	1810	3610	1615	1810	3610	1552	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	49	863	4	40	380	126	0	0	0	525	0	158
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1552	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.9	6.7	0.1	0.8	2.5	1.2	0.0	0.0	0.0	4.5	0.0	2.9
Cycle Q Clear(g_c), s	0.9	6.7	0.1	0.8	2.5	1.2	0.0	0.0	0.0	4.5	0.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	1394	624	67	1371	966	0	5	0	845	0	376
V/C Ratio(X)	0.62	0.62	0.01	0.60	0.28	0.13	0.00	0.00	0.00	0.62	0.00	0.42
Avail Cap(c_a), veh/h	777	3616	1618	1010	3616	1932	0	1006	0	3211	0	1427
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	8.7	6.6	16.6	7.5	2.8	0.0	0.0	0.0	12.0	0.0	11.4
Incr Delay (d2), s/veh	3.0	0.2	0.0	3.2	0.2	0.1	0.0	0.0	0.0	0.3	0.0	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	0.5	3.3	0.0	0.4	1.3	0.8	0.0	0.0	0.0	2.3	0.0	1.3
LnGrp Delay(d),s/veh	19.5	8.8	6.6	19.8	7.7	2.9	0.0	0.0	0.0	12.3	0.0	11.7
LnGrp LOS	B	A	A	B	A	A				B		B
Approach Vol, veh/h		916			546			0			683	
Approach Delay, s/veh		9.4			7.5			0.0			12.1	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	17.5		12.2	5.5	17.3		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.8	8.7		6.5	2.9	4.5		0.0				
Green Ext Time (p_c), s	0.0	4.4		1.3	0.0	4.5		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			9.8									
HCM 2010 LOS			A									
Notes												

HCM Signalized Intersection Capacity Analysis

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing Plus Project- AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	70	111	100	146	736	540
Future Volume (vph)	70	111	100	146	736	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3327	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3327	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	77	122	110	160	809	593
RTOR Reduction (vph)	0	26	0	0	97	0
Lane Group Flow (vph)	77	96	110	160	1305	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	7.4	20.6	9.2	43.8	30.6	
Effective Green, g (s)	7.4	20.6	9.2	43.8	32.6	
Actuated g/C Ratio	0.12	0.33	0.15	0.69	0.52	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	205	511	257	2452	1716	
v/s Ratio Prot	c0.04	0.06	c0.06	c0.05	c0.39	
v/s Ratio Perm						
v/c Ratio	0.38	0.19	0.43	0.07	0.76	
Uniform Delay, d1	25.8	15.3	24.6	3.1	12.2	
Progression Factor	1.00	1.00	0.80	1.08	1.00	
Incremental Delay, d2	0.4	0.1	0.8	0.0	1.8	
Delay (s)	26.2	15.4	20.4	3.4	14.0	
Level of Service	C	B	C	A	B	
Approach Delay (s)	19.6			10.3	14.0	
Approach LOS	B			B	B	
Intersection Summary						
HCM 2000 Control Delay			14.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			63.2		Sum of lost time (s)	16.0
Intersection Capacity Utilization			58.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	95	11	187	838	8
Future Volume (vph)	59	95	11	187	838	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1770	3539	3534	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	69	112	13	220	986	9
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	69	112	13	220	995	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	7.4	7.4	5.8	43.8	34.0	
Effective Green, g (s)	7.4	7.4	5.8	43.8	34.0	
Actuated g/C Ratio	0.12	0.12	0.09	0.69	0.54	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	211	189	162	2452	1901	
v/s Ratio Prot	0.04		0.01	c0.06	c0.28	
v/s Ratio Perm		c0.07				
v/c Ratio	0.33	0.59	0.08	0.09	0.52	
Uniform Delay, d1	25.6	26.5	26.3	3.2	9.4	
Progression Factor	1.00	1.00	1.00	1.00	0.55	
Incremental Delay, d2	0.3	3.3	0.1	0.0	0.1	
Delay (s)	25.9	29.8	26.3	3.2	5.2	
Level of Service	C	C	C	A	A	
Approach Delay (s)	28.3			4.5	5.2	
Approach LOS	C			A	A	
Intersection Summary						
HCM 2000 Control Delay			8.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			63.2		Sum of lost time (s)	16.0
Intersection Capacity Utilization			39.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Existing Plus Project- AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	330	811	47	72	23	146	133	19	50	596	349
Future Volume (veh/h)	201	330	811	47	72	23	146	133	19	50	596	349
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		1.00	1.00		0.97	0.97		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1827	1827	1827	1881	1881	1900	1863	1863	1863
Adj Flow Rate, veh/h	216	355	510	51	77	-1	157	143	7	54	641	180
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	4	4	4	1	1	1	2	2	2
Cap, veh/h	241	632	555	85	930	365	303	1312	64	566	1495	635
Arrive On Green	0.13	0.35	0.35	0.05	0.27	0.00	0.40	0.40	0.41	0.40	0.40	0.40
Sat Flow, veh/h	1792	1787	1568	1740	3471	1361	670	3268	159	1200	3725	1583
Grp Volume(v), veh/h	216	355	510	51	77	-1	157	78	72	54	641	180
Grp Sat Flow(s),veh/h/ln	1792	1787	1568	1740	1736	1361	670	1787	1640	1200	1863	1583
Q Serve(g_s), s	7.3	9.8	19.1	1.8	1.0	0.0	13.5	1.7	1.7	1.8	7.6	4.7
Cycle Q Clear(g_c), s	7.3	9.8	19.1	1.8	1.0	0.0	21.2	1.7	1.7	3.5	7.6	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	241	632	555	85	930	365	303	717	658	566	1495	635
V/C Ratio(X)	0.90	0.56	0.92	0.60	0.08	0.00	0.52	0.11	0.11	0.10	0.43	0.28
Avail Cap(c_a), veh/h	556	642	564	540	1304	511	335	803	737	566	1495	635
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	16.0	18.9	28.5	16.8	0.0	20.9	11.5	11.5	12.6	13.3	12.4
Incr Delay (d2), s/veh	4.6	1.2	20.4	2.5	0.1	0.0	0.5	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	5.0	11.4	0.9	0.5	0.0	2.5	0.8	0.8	0.6	3.9	2.0
LnGrp Delay(d),s/veh	30.7	17.2	39.3	31.0	16.8	0.0	21.4	11.5	11.5	12.6	13.3	12.5
LnGrp LOS	C	B	D	C	B		C	B	B	B	B	B
Approach Vol, veh/h	1081				127		307				875	
Approach Delay, s/veh	30.3				22.7		16.6				13.1	
Approach LOS	C				C		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	7.0	25.7	28.6		12.2	20.4	28.6					
Change Period (Y+Rc), s	3.0	4.0	3.5		3.0	4.0	3.5					
Max Green Setting (Gmax), s	20.0	22.0	23.0		20.0	23.0	28.0					
Max Q Clear Time (g_c+I), s	13.8	21.1	9.6		9.3	3.0	23.2					
Green Ext Time (p_c), s	0.0	0.6	3.0		0.2	0.4	0.6					
Intersection Summary												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			C									
Notes												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	42	41	242	954	18
Future Vol, veh/h	1	42	41	242	954	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	3	3	2	2
Mvmt Flow	1	45	44	260	1026	19
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1254	523	1045	0	-	0
Stage 1	1036	-	-	-	-	-
Stage 2	218	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	164	499	655	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	153	499	655	-	-	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.4	1.6		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	655	-	474	-	-	
HCM Lane V/C Ratio	0.067	-	0.098	-	-	
HCM Control Delay (s)	10.9	-	13.4	-	-	
HCM Lane LOS	B	-	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing Plus Project- AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	32	57	76	755	1	64	84	186	612	269	719	53
Future Volume (veh/h)	32	57	76	755	1	64	84	186	612	269	719	53
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	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	0.87
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	33	59	52	779	0	21	87	192	457	277	741	52
Adj No. of Lanes	0	1	0	2	0	1	1	2	1	1	2	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	58	103	91	1527	0	681	101	490	882	299	782	55
Arrive On Green	0.15	0.15	0.15	0.43	0.00	0.43	0.06	0.14	0.13	0.17	0.25	0.24
Sat Flow, veh/h	389	695	613	3548	0	1583	1774	3539	1547	1774	3127	219
Grp Volume(v), veh/h	144	0	0	779	0	21	87	192	457	277	419	374
Grp Sat Flow(s),veh/h/ln	1697	0	0	1774	0	1583	1774	1770	1547	1774	1770	1577
Q Serve(g_s), s	11.1	0.0	0.0	22.4	0.0	1.1	6.8	6.9	18.4	21.5	32.6	32.6
Cycle Q Clear(g_c), s	11.1	0.0	0.0	22.4	0.0	1.1	6.8	6.9	18.4	21.5	32.6	32.6
Prop In Lane	0.23		0.36	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	251	0	0	1527	0	681	101	490	882	299	442	394
V/C Ratio(X)	0.57	0.00	0.00	0.51	0.00	0.03	0.86	0.39	0.52	0.93	0.95	0.95
Avail Cap(c_a), veh/h	400	0	0	1527	0	681	101	490	882	317	442	394
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	0.00	0.00	1.00	0.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.5	0.0	0.0	29.1	0.0	23.0	65.4	54.9	17.6	57.3	51.6	51.7
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.2	0.0	0.1	43.4	2.2	2.0	30.3	31.5	34.0
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	5.3	0.0	0.0	11.2	0.0	0.5	4.6	3.5	18.1	13.1	19.8	18.0
LnGrp Delay(d),s/veh	56.3	0.0	0.0	30.3	0.0	23.1	108.8	57.1	19.6	87.6	83.1	85.7
LnGrp LOS	E			C		C	F	E	B	F	F	F
Approach Vol, veh/h		144			800			736			1070	
Approach Delay, s/veh		56.3			30.1			39.9			85.2	
Approach LOS		E			C			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.6	23.4		64.3	12.0	39.0		24.7				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	25.0	17.0		* 48	8.0	34.0		33.0				
Max Q Clear Time (g_c+I1), s	23.5	20.4		24.4	8.8	34.6		13.1				
Green Ext Time (p_c), s	0.1	0.0		9.4	0.0	0.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				55.5								
HCM 2010 LOS				E								
Notes												

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	499	181	623	338	690	81	110	282	455	972	104
Future Volume (veh/h)	30	499	181	623	338	690	81	110	282	455	972	104
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	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	1881	1881	1881	1845	1845	1845	1863	1863	1863
Adj Flow Rate, veh/h	31	514	161	642	348	0	84	113	68	469	1002	40
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	39	661	206	687	1521	680	104	879	384	521	1315	574
Arrive On Green	0.02	0.25	0.24	0.20	0.43	0.00	0.06	0.25	0.25	0.30	0.74	0.74
Sat Flow, veh/h	1774	2643	823	3476	3574	1599	1757	3505	1531	3442	3539	1546
Grp Volume(v), veh/h	31	343	332	642	348	0	84	113	68	469	1002	40
Grp Sat Flow(s),veh/h/ln	1774	1770	1696	1738	1787	1599	1757	1752	1531	1721	1770	1546
Q Serve(g_s), s	2.4	25.3	25.6	25.4	8.7	0.0	6.6	3.5	4.9	18.3	23.5	1.0
Cycle Q Clear(g_c), s	2.4	25.3	25.6	25.4	8.7	0.0	6.6	3.5	4.9	18.3	23.5	1.0
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	442	424	687	1521	680	104	879	384	521	1315	574
V/C Ratio(X)	0.79	0.78	0.78	0.93	0.23	0.00	0.81	0.13	0.18	0.90	0.76	0.07
Avail Cap(c_a), veh/h	177	442	424	695	1521	680	113	879	384	639	1315	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.43	0.43	0.43
Uniform Delay (d), s/veh	68.1	48.8	49.2	55.3	25.6	0.0	65.1	40.6	41.1	47.8	14.3	11.4
Incr Delay (d2), s/veh	11.9	12.5	13.4	19.9	0.3	0.0	31.8	0.3	1.0	6.8	1.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	13.9	13.6	14.1	4.4	0.0	4.1	1.7	2.2	9.1	11.5	0.4
LnGrp Delay(d),s/veh	80.0	61.4	62.6	75.2	25.9	0.0	96.8	40.9	42.1	54.6	16.2	11.5
LnGrp LOS	F	E	E	E	C		F	D	D	D	B	B
Approach Vol, veh/h		706			990			265			1511	
Approach Delay, s/veh		62.8			57.9			58.9			28.0	
Approach LOS		E			E			E			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	29.2	39.1	31.7	39.0	12.3	56.0	7.1	63.6				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.6	30.0	28.0	34.0	9.0	51.0	14.0	48.0				
Max Q Clear Time (g_c+20), s	20.3	6.9	27.4	27.6	8.6	25.5	4.4	10.7				
Green Ext Time (p_c), s	0.9	2.1	0.2	3.8	0.0	16.2	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay			46.0									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	134	26	4	14	0	27
Future Vol, veh/h	134	26	4	14	0	27
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	179	35	5	19	0	36

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	215
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1367
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1366
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	1366	-
HCM Lane V/C Ratio	0.043	-	-	0.004	-
HCM Control Delay (s)	9.4	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
10: N Main St & Black Angus Dwy N

Cambria Hotel TIA
Existing Plus Project- AM Peak

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	20	224	958	8
Future Vol, veh/h	0	0	20	224	958	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	0	0	21	238	1019	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1185	514	1028	0	-	0
Stage 1	1024	-	-	-	-	-
Stage 2	161	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.18	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.24	-	-	-
Pot Cap-1 Maneuver	182	505	659	-	-	-
Stage 1	307	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	176	505	659	-	-	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	297	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	659	-	-	-	-	
HCM Lane V/C Ratio	0.032	-	-	-	-	
HCM Control Delay (s)	10.6	-	0	-	-	
HCM Lane LOS	B	-	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	-	-	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	22	0	243	950	8
Future Vol, veh/h	0	22	0	243	950	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	0	23	0	259	1011	9
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	510	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	514	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	514	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	12.3	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	514	-	-		
HCM Lane V/C Ratio	-	0.046	-	-		
HCM Control Delay (s)	-	12.3	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	677	12	9	779	23	22
Future Vol, veh/h	677	12	9	779	23	22
Conflicting Peds, #/hr	0	3	3	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	720	13	10	829	24	23
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	736	0	1580	731
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	850	-
Critical Hdwy	-	-	4.11	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	874	-	121	425
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	872	-	118	423
Mov Cap-2 Maneuver	-	-	-	-	118	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	422	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		31.7	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	182	-	-	872	-	
HCM Lane V/C Ratio	0.263	-	-	0.011	-	
HCM Control Delay (s)	31.7	-	-	9.2	0	
HCM Lane LOS	D	-	-	A	A	
HCM 95th %tile Q(veh)	1	-	-	0	-	

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	619	4	14	502	333	0	0	9	298	4	185
Future Volume (veh/h)	34	619	4	14	502	333	0	0	9	298	4	185
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		1.00	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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	37	666	2	15	540	224	0	0	0	323	0	54
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	2	0	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	64	1549	693	28	1478	911	0	6	0	611	0	271
Arrive On Green	0.04	0.43	0.43	0.02	0.41	0.41	0.00	0.00	0.00	0.17	0.00	0.17
Sat Flow, veh/h	1810	3610	1615	1810	3610	1561	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	37	666	2	15	540	224	0	0	0	323	0	54
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1561	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.6	4.0	0.0	0.3	3.2	2.2	0.0	0.0	0.0	2.5	0.0	0.9
Cycle Q Clear(g_c), s	0.6	4.0	0.0	0.3	3.2	2.2	0.0	0.0	0.0	2.5	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	64	1549	693	28	1478	911	0	6	0	611	0	271
V/C Ratio(X)	0.58	0.43	0.00	0.53	0.37	0.25	0.00	0.00	0.00	0.53	0.00	0.20
Avail Cap(c_a), veh/h	875	4072	1822	1137	4072	2033	0	1133	0	3615	0	1608
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	6.2	5.1	15.2	6.4	3.2	0.0	0.0	0.0	11.8	0.0	11.1
Incr Delay (d2), s/veh	3.1	0.1	0.0	5.6	0.2	0.2	0.0	0.0	0.0	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.0	0.0	0.2	1.6	1.4	0.0	0.0	0.0	1.3	0.0	0.4
LnGrp Delay(d),s/veh	17.8	6.3	5.1	20.8	6.6	3.4	0.0	0.0	0.0	12.0	0.0	11.2
LnGrp LOS	B	A	A	C	A	A				B		B
Approach Vol, veh/h		705			779			0			377	
Approach Delay, s/veh		6.9			5.9			0.0			11.9	
Approach LOS		A			A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	17.3		9.2	5.1	16.7		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.3	6.0		4.5	2.6	5.2		0.0				
Green Ext Time (p_c), s	0.0	3.3		0.7	0.0	7.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			7.5									
HCM 2010 LOS			A									
Notes												

HCM Signalized Intersection Capacity Analysis

3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing Plus Project - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	186	282	536	221	204
Future Volume (vph)	160	186	282	536	221	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3288	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3288	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	167	194	294	558	230	212
RTOR Reduction (vph)	0	86	0	0	157	0
Lane Group Flow (vph)	167	108	294	558	286	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	10.1	31.2	17.1	33.7	12.6	
Effective Green, g (s)	10.1	31.2	17.1	33.7	14.6	
Actuated g/C Ratio	0.18	0.56	0.31	0.60	0.26	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	323	894	553	2180	860	
v/s Ratio Prot	c0.09	0.07	c0.16	0.15	c0.09	
v/s Ratio Perm						
v/c Ratio	0.52	0.12	0.53	0.26	0.33	
Uniform Delay, d1	20.6	5.8	16.0	5.2	16.7	
Progression Factor	1.00	1.00	0.79	0.50	1.00	
Incremental Delay, d2	0.6	0.0	0.8	0.0	0.1	
Delay (s)	21.2	5.8	13.4	2.7	16.7	
Level of Service	C	A	B	A	B	
Approach Delay (s)	13.0			6.4	16.7	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			10.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			55.8		Sum of lost time (s)	16.0
Intersection Capacity Utilization			49.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Existing Plus Project - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	77	87	35	741	402	5
Future Volume (vph)	77	87	35	741	402	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3603	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3603	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	80	91	36	772	419	5
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	80	91	36	772	423	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	10.1	10.1	11.5	33.7	18.2	
Effective Green, g (s)	10.1	10.1	11.5	33.7	18.2	
Actuated g/C Ratio	0.18	0.18	0.21	0.60	0.33	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	326	292	371	2180	1175	
v/s Ratio Prot	0.04		0.02	c0.21	c0.12	
v/s Ratio Perm		c0.06				
v/c Ratio	0.25	0.31	0.10	0.35	0.36	
Uniform Delay, d1	19.6	19.8	17.9	5.6	14.4	
Progression Factor	1.00	1.00	1.00	1.00	0.79	
Incremental Delay, d2	0.1	0.2	0.0	0.0	0.1	
Delay (s)	19.7	20.1	18.0	5.6	11.4	
Level of Service	B	C	B	A	B	
Approach Delay (s)	19.9			6.2	11.4	
Approach LOS	B			A	B	
Intersection Summary						
HCM 2000 Control Delay			9.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			55.8		Sum of lost time (s)	16.0
Intersection Capacity Utilization			32.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Existing Plus Project - PM Peak

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	290	221	326	52	220	73	300	472	35	52	247	405				
Future Volume (veh/h)	290	221	326	52	220	73	300	472	35	52	247	405				
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		1.00	1.00		0.94	1.00		0.97	0.99		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1863	1863	1900	1881	1881	1881				
Adj Flow Rate, veh/h	315	240	136	57	239	13	326	513	33	57	268	89				
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1				
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, %	1	1	1	1	1	1	2	2	2	1	1	1				
Cap, veh/h	348	685	375	98	597	221	514	1337	86	396	1581	672				
Arrive On Green	0.19	0.31	0.31	0.05	0.17	0.17	0.42	0.42	0.43	0.42	0.42	0.42				
Sat Flow, veh/h	1792	2232	1221	1792	3574	1324	1020	3180	204	859	3762	1599				
Grp Volume(v), veh/h	315	190	186	57	239	13	326	285	261	57	268	89				
Grp Sat Flow(s),veh/h/ln	1792	1787	1666	1792	1787	1324	1020	1770	1615	859	1881	1599				
Q Serve(g_s), s	9.4	4.5	4.8	1.7	3.3	0.5	16.1	6.1	6.1	2.7	2.4	1.9				
Cycle Q Clear(g_c), s	9.4	4.5	4.8	1.7	3.3	0.5	18.6	6.1	6.1	8.8	2.4	1.9				
Prop In Lane	1.00		0.73	1.00		1.00	1.00		0.13	1.00		1.00				
Lane Grp Cap(c), veh/h	348	548	511	98	597	221	514	744	679	396	1581	672				
V/C Ratio(X)	0.90	0.35	0.36	0.58	0.40	0.06	0.63	0.38	0.38	0.14	0.17	0.13				
Avail Cap(c_a), veh/h	619	715	667	619	1496	554	596	885	808	396	1581	672				
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	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	21.6	14.8	14.9	25.4	20.4	19.3	15.7	11.0	11.0	14.1	9.9	9.8				
Incr Delay (d2), s/veh	4.3	0.5	0.5	2.0	0.6	0.2	1.0	0.1	0.1	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	5.1	2.3	2.2	0.9	1.7	0.2	4.7	3.0	2.7	0.6	1.3	0.8				
LnGrp Delay(d),s/veh	25.9	15.2	15.4	27.4	21.1	19.4	16.7	11.1	11.1	14.1	10.0	9.8				
LnGrp LOS	C	B	B	C	C	B	B	B	B	B	A	A				
Approach Vol, veh/h	691			309			872			414						
Approach Delay, s/veh	20.1			22.2			13.2			10.5						
Approach LOS	C			C			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	7.0	20.9			27.1	14.7	13.2	27.1								
Change Period (Y+Rc), s	3.0	4.0			3.5	3.0	4.0	3.5								
Max Green Setting (Gmax), s	20.0	22.0			23.0	20.0	23.0	28.0								
Max Q Clear Time (g_c+I), s	13.7	6.8			10.8	11.4	5.3	20.6								
Green Ext Time (p_c), s	0.0	2.3			1.2	0.3	1.8	2.1								
Intersection Summary																
HCM 2010 Ctrl Delay	16.0															
HCM 2010 LOS	B															
Notes																

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	27	80	778	493	10
Future Vol, veh/h	2	27	80	778	493	10
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	0	0	0	0
Mvmt Flow	2	28	82	802	508	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1088	269	528	0	-	0
Stage 1	523	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.1	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.2	-	-	-
Pot Cap-1 Maneuver	209	726	1049	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	189	719	1039	-	-	-
Mov Cap-2 Maneuver	189	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.3	0.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1039	-	602	-	-	
HCM Lane V/C Ratio	0.079	-	0.05	-	-	
HCM Control Delay (s)	8.8	-	11.3	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.2	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	28	75	837	4	262	69	564	847	220	297	41
Future Volume (veh/h)	29	28	75	837	4	262	69	564	847	220	297	41
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	1.00		0.95
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	0.87
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1881	1881	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	32	30	37	913	0	121	75	613	716	239	323	37
Adj No. of Lanes	0	1	0	2	0	1	1	2	1	1	2	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, %	0	0	0	1	1	1	0	0	0	1	1	1
Cap, veh/h	72	68	84	1430	0	638	96	722	946	264	885	100
Arrive On Green	0.13	0.13	0.13	0.40	0.00	0.40	0.05	0.20	0.19	0.15	0.29	0.29
Sat Flow, veh/h	555	520	642	3583	0	1599	1810	3610	1580	1792	3004	340
Grp Volume(v), veh/h	99	0	0	913	0	121	75	613	716	239	191	169
Grp Sat Flow(s),veh/h/ln	1717	0	0	1792	0	1599	1810	1805	1580	1792	1787	1557
Q Serve(g_s), s	6.9	0.0	0.0	26.7	0.0	6.4	5.3	21.3	25.0	17.1	11.0	11.2
Cycle Q Clear(g_c), s	6.9	0.0	0.0	26.7	0.0	6.4	5.3	21.3	25.0	17.1	11.0	11.2
Prop In Lane	0.32		0.37	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	224	0	0	1430	0	638	96	722	946	264	526	459
V/C Ratio(X)	0.44	0.00	0.00	0.64	0.00	0.19	0.78	0.85	0.76	0.90	0.36	0.37
Avail Cap(c_a), veh/h	436	0	0	1430	0	638	223	722	946	303	526	459
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	0.00	0.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.2	0.0	0.0	31.5	0.0	25.4	60.8	50.1	16.1	54.5	36.2	36.4
Incr Delay (d2), s/veh	0.5	0.0	0.0	2.2	0.0	0.7	4.2	9.8	4.5	25.0	1.9	2.3
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	3.3	0.0	0.0	13.6	0.0	2.9	2.8	11.6	26.9	10.3	5.7	5.1
LnGrp Delay(d),s/veh	52.7	0.0	0.0	33.7	0.0	26.0	65.0	59.9	20.6	79.5	38.1	38.7
LnGrp LOS	D			C		C	E	E	C	E	D	D
Approach Vol, veh/h	99				1034				1404			
Approach Delay, s/veh	52.7				32.8				40.1			
Approach LOS	D				C				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	23.2	30.0			55.9	10.9	42.3	20.9				
Change Period (Y+Rc), s	4.0	5.0			* 4.2	4.0	5.0	4.0				
Max Green Setting (Gmax), s	22.0	25.0			* 33	16.0	31.0	33.0				
Max Q Clear Time (g_c+I1), s	19.1	27.0			28.7	7.3	13.2	8.9				
Green Ext Time (p_c), s	0.1	0.0			3.0	0.0	3.4	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay	40.9											
HCM 2010 LOS	D											
Notes												

HCM 2010 Signalized Intersection Summary 8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	554	85	376	373	944	152	421	501	664	314	222
Future Volume (veh/h)	66	554	85	376	373	944	152	421	501	664	314	222
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	1.00		0.98	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	1881	1881	1900	1881	1881	1881	1881	1881	1881	1900	1900	1900
Adj Flow Rate, veh/h	67	565	78	384	381	0	155	430	412	678	320	82
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	86	751	103	457	1151	515	183	852	374	615	1325	588
Arrive On Green	0.05	0.24	0.23	0.13	0.32	0.00	0.10	0.24	0.24	0.07	0.12	0.12
Sat Flow, veh/h	1792	3148	433	3476	3574	1599	1792	3574	1569	3076	3610	1603
Grp Volume(v), veh/h	67	320	323	384	381	0	155	430	412	678	320	82
Grp Sat Flow(s),veh/h/ln	1792	1787	1794	1738	1787	1599	1792	1787	1569	1538	1805	1603
Q Serve(g_s), s	4.8	21.6	21.7	14.0	10.5	0.0	11.1	13.5	31.0	26.0	10.4	5.9
Cycle Q Clear(g_c), s	4.8	21.6	21.7	14.0	10.5	0.0	11.1	13.5	31.0	26.0	10.4	5.9
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	86	426	428	457	1151	515	183	852	374	615	1325	588
V/C Ratio(X)	0.78	0.75	0.75	0.84	0.33	0.00	0.85	0.50	1.10	1.10	0.24	0.14
Avail Cap(c_a), veh/h	193	426	428	588	1151	515	331	852	374	615	1325	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	61.2	45.9	46.1	55.1	33.5	0.0	57.4	42.9	49.5	60.7	40.7	38.8
Incr Delay (d2), s/veh	5.6	11.5	11.7	9.5	0.6	0.0	10.2	2.1	76.7	63.6	0.3	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	2.5	12.0	12.2	7.3	5.3	0.0	6.0	6.9	21.4	16.5	5.3	2.7
LnGrp Delay(d),s/veh	66.9	57.5	57.8	64.7	34.1	0.0	67.6	45.0	126.2	124.3	41.1	39.2
LnGrp LOS	E	E	E	E	C		E	D	F	F	D	D
Approach Vol, veh/h		710			765			997			1080	
Approach Delay, s/veh		58.5			49.4			82.0			93.2	
Approach LOS		E			D			F			F	
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	34.0	35.0	21.1	35.0	17.3	51.7	10.2	45.8				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.0	30.0	22.0	30.0	24.0	36.0	14.0	38.0				
Max Q Clear Time (g_c+20.0), s	26.0	33.0	16.0	23.7	13.1	12.4	6.8	12.5				
Green Ext Time (p_c), s	0.0	0.0	1.1	3.6	0.3	5.4	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			73.7									
HCM 2010 LOS			E									
Notes												

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	23	25	15	0	38
Future Vol, veh/h	125	23	25	15	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	142	26	28	17	0	43
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	228	155
Stage 1	-	-	-	-	155	-
Stage 2	-	-	-	-	73	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1422	-	765	896
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1422	-	750	896
Mov Cap-2 Maneuver	-	-	-	-	750	-
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	955	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.7		9.2	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	896	-	-	1422	-	
HCM Lane V/C Ratio	0.048	-	-	0.02	-	
HCM Control Delay (s)	9.2	-	-	7.6	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	

HCM 2010 TWSC
10: N Main St & Black Angus Dwy N

Cambria Hotel TIA
Existing Plus Project - PM Peak

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	3	776	476	12
Future Vol, veh/h	0	7	3	776	476	12
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	3	792	486	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	898	253	502	0	-	0
Stage 1	496	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	283	753	1073	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	650	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	280	750	1069	-	-	-
Mov Cap-2 Maneuver	280	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1069	-	750	-	-	
HCM Lane V/C Ratio	0.003	-	0.01	-	-	
HCM Control Delay (s)	8.4	-	9.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	21	0	779	481	2
Future Vol, veh/h	0	21	0	779	481	2
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	22	0	803	496	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	255	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	750	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	746	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 746		-	-		
HCM Lane V/C Ratio	- 0.029		-	-		
HCM Control Delay (s)	- 10		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1140	30	10	880	10	30
Future Vol, veh/h	1140	30	10	880	10	30
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	1239	33	11	957	11	33
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1276	0	2239	1261
Stage 1	-	-	-	-	1260	-
Stage 2	-	-	-	-	979	-
Critical Hdwy	-	-	4.11	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	548	-	47	210
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	546	-	45	209
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	367	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		58.4	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	109	-	-	546	-	
HCM Lane V/C Ratio	0.399	-	-	0.02	-	
HCM Control Delay (s)	58.4	-	-	11.7	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile O(veh)	1.7	-	-	0.1	-	

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1240	10	20	500	180	0	0	10	500	10	300
Future Volume (veh/h)	50	1240	10	20	500	180	0	0	10	500	10	300
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		1.00	1.00		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	53	1305	6	21	526	135	0	0	0	534	0	76
Adj No. of Lanes	1	2	1	1	2	1	0	1	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	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	78	1777	795	37	1695	1080	0	4	0	781	0	347
Arrive On Green	0.04	0.49	0.49	0.02	0.47	0.47	0.00	0.00	0.00	0.22	0.00	0.22
Sat Flow, veh/h	1810	3610	1615	1810	3610	1558	0	1900	0	3619	0	1608
Grp Volume(v), veh/h	53	1305	6	21	526	135	0	0	0	534	0	76
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1558	0	1900	0	1810	0	1608
Q Serve(g_s), s	1.3	12.7	0.1	0.5	4.0	1.3	0.0	0.0	0.0	6.0	0.0	1.7
Cycle Q Clear(g_c), s	1.3	12.7	0.1	0.5	4.0	1.3	0.0	0.0	0.0	6.0	0.0	1.7
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	1777	795	37	1695	1080	0	4	0	781	0	347
V/C Ratio(X)	0.68	0.73	0.01	0.56	0.31	0.12	0.00	0.00	0.00	0.68	0.00	0.22
Avail Cap(c_a), veh/h	614	2857	1278	798	2857	1581	0	795	0	2536	0	1127
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	8.9	5.7	21.5	7.3	2.4	0.0	0.0	0.0	16.0	0.0	14.3
Incr Delay (d2), s/veh	3.8	0.2	0.0	4.9	0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	6.2	0.0	0.3	2.0	1.0	0.0	0.0	0.0	3.0	0.0	0.8
LnGrp Delay(d),s/veh	24.6	9.2	5.7	26.4	7.4	2.5	0.0	0.0	0.0	16.3	0.0	14.4
LnGrp LOS	C	A	A	C	A	A				B		B
Approach Vol, veh/h	1364				682				0			
Approach Delay, s/veh	9.7				7.0				0.0			
Approach LOS	A				A				B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	25.8		13.5	5.9	24.8		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.5	14.7		8.0	3.3	6.0		0.0				
Green Ext Time (p_c), s	0.0	7.1		1.2	0.0	6.2		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	10.5											
HCM 2010 LOS	B											
Notes												

HCM Signalized Intersection Capacity Analysis

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative - AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	140	110	270	1180	680
Future Volume (vph)	100	140	110	270	1180	680
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3359	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3359	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	110	154	121	297	1297	747
RTOR Reduction (vph)	0	29	0	0	56	0
Lane Group Flow (vph)	110	125	121	297	1988	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	13.4	30.0	12.6	78.9	62.3	
Effective Green, g (s)	13.4	30.0	12.6	78.9	64.3	
Actuated g/C Ratio	0.13	0.29	0.12	0.76	0.62	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	225	451	213	2677	2070	
v/s Ratio Prot	c0.06	0.08	c0.07	0.08	c0.59	
v/s Ratio Perm						
v/c Ratio	0.49	0.28	0.57	0.11	0.96	
Uniform Delay, d1	42.3	28.8	43.3	3.4	18.8	
Progression Factor	1.00	1.00	0.85	1.02	1.00	
Incremental Delay, d2	0.6	0.1	2.8	0.0	11.8	
Delay (s)	42.9	28.9	39.8	3.5	30.6	
Level of Service	D	C	D	A	C	
Approach Delay (s)	34.7			14.0	30.6	
Approach LOS	C			B	C	
Intersection Summary						
HCM 2000 Control Delay			28.4		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			104.3		Sum of lost time (s)	16.0
Intersection Capacity Utilization			77.8%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Cumulative - AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	130	20	320	1310	10
Future Volume (vph)	60	130	20	320	1310	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1770	3539	3534	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	71	153	24	376	1541	12
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	71	153	24	376	1553	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	13.4	13.4	7.1	78.9	67.8	
Effective Green, g (s)	13.4	13.4	7.1	78.9	67.8	
Actuated g/C Ratio	0.13	0.13	0.07	0.76	0.65	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	231	207	120	2677	2297	
v/s Ratio Prot	0.04		c0.01	0.11	c0.44	
v/s Ratio Perm		c0.09				
v/c Ratio	0.31	0.74	0.20	0.14	0.68	
Uniform Delay, d1	41.2	43.8	45.9	3.5	11.4	
Progression Factor	1.00	1.00	1.00	1.00	0.42	
Incremental Delay, d2	0.3	11.2	0.3	0.0	0.3	
Delay (s)	41.5	55.0	46.2	3.5	5.1	
Level of Service	D	E	D	A	A	
Approach Delay (s)	50.7			6.0	5.1	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			10.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.65			
Actuated Cycle Length (s)			104.3		Sum of lost time (s)	16.0
Intersection Capacity Utilization			54.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Cumulative - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	410	990	60	90	30	180	170	30	70	730	430
Future Volume (veh/h)	250	410	990	60	90	30	180	170	30	70	730	430
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		0.97	1.00		0.97	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1827	1827	1827	1881	1881	1900	1863	1863	1863
Adj Flow Rate, veh/h	255	418	718	61	92	5	184	173	21	71	745	240
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	4	4	4	1	1	1	2	2	2
Cap, veh/h	273	771	677	68	1104	419	223	1245	148	505	1534	652
Arrive On Green	0.15	0.43	0.43	0.04	0.32	0.32	0.41	0.41	0.42	0.41	0.41	0.41
Sat Flow, veh/h	1792	1787	1571	1740	3471	1317	575	3023	361	1158	3725	1583
Grp Volume(v), veh/h	255	418	718	61	92	5	184	101	93	71	745	240
Grp Sat Flow(s),veh/h/ln	1792	1787	1571	1740	1736	1317	575	1787	1596	1158	1863	1583
Q Serve(g_s), s	14.3	17.7	44.0	3.6	1.9	0.3	27.0	3.6	3.7	4.2	15.0	10.7
Cycle Q Clear(g_c), s	14.3	17.7	44.0	3.6	1.9	0.3	42.0	3.6	3.7	7.9	15.0	10.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	273	771	677	68	1104	419	223	736	657	505	1534	652
V/C Ratio(X)	0.93	0.54	1.06	0.89	0.08	0.01	0.83	0.14	0.14	0.14	0.49	0.37
Avail Cap(c_a), veh/h	386	771	677	68	1104	419	223	736	657	528	1607	683
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	21.5	29.0	48.8	24.4	23.8	39.8	18.7	18.7	21.2	22.1	20.8
Incr Delay (d2), s/veh	20.5	0.9	51.5	71.6	0.0	0.0	20.7	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	8.9	28.7	3.1	0.9	0.1	6.4	1.8	1.6	1.3	7.7	4.7
LnGrp Delay(d),s/veh	63.3	22.4	80.5	120.4	24.4	23.8	60.5	18.7	18.7	21.2	22.1	20.9
LnGrp LOS	E	C	F	F	C	C	E	B	B	C	C	C
Approach Vol, veh/h	1391				158			378			1056	
Approach Delay, s/veh	59.9				61.4			39.1			21.8	
Approach LOS	E				E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	8.0	48.0	46.0		19.6	36.4	46.0					
Change Period (Y+Rc), s	3.0	4.0	3.5		3.0	4.0	3.5					
Max Green Setting (Gmax), s	5.0	44.0	44.5		23.0	26.0	42.5					
Max Q Clear Time (g_c+I1), s	5.6	46.0	17.0		16.3	3.9	44.0					
Green Ext Time (p_c), s	0.0	0.0	4.3		0.2	0.6	0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			43.9									
HCM 2010 LOS			D									
Notes												

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	50	50	330	1420	20
Future Vol, veh/h	10	50	50	330	1420	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	3	3	2	2
Mvmt Flow	11	54	54	355	1527	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1824	775	1549	0	-	0
Stage 1	1538	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	69	341	419	-	-	-
Stage 1	163	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	60	341	419	-	-	-
Mov Cap-2 Maneuver	60	-	-	-	-	-
Stage 1	142	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	33	2		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	419	-	192	-	-	
HCM Lane V/C Ratio	0.128	-	0.336	-	-	
HCM Control Delay (s)	14.9	-	33	-	-	
HCM Lane LOS	B	-	D	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.4	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	70	80	760	10	70	90	250	620	420	730	60
Future Volume (veh/h)	40	70	80	760	10	70	90	250	620	420	730	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	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	0.87
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	71	62	783	0	23	92	255	447	429	745	57
Adj No. of Lanes	0	1	0	2	0	1	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	64	110	96	1237	0	552	113	441	731	450	976	75
Arrive On Green	0.16	0.16	0.16	0.35	0.00	0.35	0.06	0.12	0.12	0.25	0.31	0.31
Sat Flow, veh/h	401	694	606	3548	0	1583	1774	3539	1547	1774	3107	238
Grp Volume(v), veh/h	174	0	0	783	0	23	92	255	447	429	424	378
Grp Sat Flow(s),veh/h/ln	1700	0	0	1774	0	1583	1774	1770	1547	1774	1770	1575
Q Serve(g_s), s	13.4	0.0	0.0	25.8	0.0	1.3	7.2	9.5	16.4	33.3	30.3	30.3
Cycle Q Clear(g_c), s	13.4	0.0	0.0	25.8	0.0	1.3	7.2	9.5	16.4	33.3	30.3	30.3
Prop In Lane	0.24		0.36	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	270	0	0	1237	0	552	113	441	731	450	556	495
V/C Ratio(X)	0.64	0.00	0.00	0.63	0.00	0.04	0.81	0.58	0.61	0.95	0.76	0.76
Avail Cap(c_a), veh/h	389	0	0	1237	0	552	127	441	731	469	556	495
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	0.00	0.00	1.00	0.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	0.0	0.0	38.1	0.0	30.1	64.7	57.8	24.5	51.5	43.3	43.4
Incr Delay (d2), s/veh	1.0	0.0	0.0	2.5	0.0	0.1	21.7	4.3	3.0	29.1	9.6	10.7
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	6.4	0.0	0.0	13.0	0.0	0.6	4.2	4.9	17.9	20.0	16.2	14.7
LnGrp Delay(d),s/veh	56.1	0.0	0.0	40.6	0.0	30.3	86.4	62.2	27.5	80.5	52.8	54.0
LnGrp LOS	E			D		C	F	E	C	F	D	D
Approach Vol, veh/h		174			806			794			1231	
Approach Delay, s/veh		56.1			40.3			45.4			62.9	
Approach LOS		E			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	39.5	21.4		52.8	12.9	48.0		26.3				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	37.0	16.0		* 38	10.0	43.0		32.0				
Max Q Clear Time (g_c+I1), s	35.3	18.4		27.8	9.2	32.3		15.4				
Green Ext Time (p_c), s	0.2	0.0		5.4	0.0	5.7		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				51.8								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	720	270	900	490	990	120	160	410	660	1410	160
Future Volume (veh/h)	40	720	270	900	490	990	120	160	410	660	1410	160
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	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	1881	1881	1881	1845	1845	1845	1863	1863	1863
Adj Flow Rate, veh/h	41	735	248	918	500	0	122	163	142	673	1439	95
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	53	628	212	720	1502	672	88	826	361	590	1365	597
Arrive On Green	0.03	0.24	0.24	0.21	0.42	0.00	0.05	0.24	0.24	0.34	0.77	0.77
Sat Flow, veh/h	1774	2584	872	3476	3574	1599	1757	3505	1530	3442	3539	1547
Grp Volume(v), veh/h	41	503	480	918	500	0	122	163	142	673	1439	95
Grp Sat Flow(s),veh/h/ln	1774	1770	1686	1738	1787	1599	1757	1752	1530	1721	1770	1547
Q Serve(g_s), s	3.2	34.0	34.0	29.0	13.2	0.0	7.0	5.2	10.9	24.0	54.0	2.2
Cycle Q Clear(g_c), s	3.2	34.0	34.0	29.0	13.2	0.0	7.0	5.2	10.9	24.0	54.0	2.2
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	53	430	410	720	1502	672	88	826	361	590	1365	597
V/C Ratio(X)	0.78	1.17	1.17	1.28	0.33	0.00	1.39	0.20	0.39	1.14	1.05	0.16
Avail Cap(c_a), veh/h	114	430	410	720	1502	672	88	826	361	590	1365	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.56	0.56	0.56
Uniform Delay (d), s/veh	67.5	53.0	53.3	55.5	27.4	0.0	66.5	42.9	45.1	46.0	16.0	10.1
Incr Delay (d2), s/veh	8.8	99.3	100.2	134.4	0.5	0.0	230.5	0.5	3.2	75.0	34.5	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	1.7	28.4	27.2	27.3	6.6	0.0	9.0	2.6	4.9	17.5	31.6	1.0
LnGrp Delay(d),s/veh	76.3	152.3	153.5	189.9	27.8	0.0	297.0	43.4	48.3	121.0	50.5	10.4
LnGrp LOS	E	F	F	F	C		F	D	D	F	F	B
Approach Vol, veh/h	1024				1418			427			2207	
Approach Delay, s/veh	149.8				132.8			117.5			70.3	
Approach LOS	F				F			F			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	32.0	37.0	33.0	38.0	11.0	58.0	8.2	62.8				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	24.0	32.0	29.0	33.0	7.0	53.0	9.0	53.0				
Max Q Clear Time (g_c+I1), s	26.0	12.9	31.0	36.0	9.0	56.0	5.2	15.2				
Green Ext Time (p_c), s	0.0	3.3	0.0	0.0	0.0	0.0	0.0	8.9				
Intersection Summary												
HCM 2010 Ctrl Delay	107.8											
HCM 2010 LOS	F											
Notes												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	10	10	20	0	10
Future Vol, veh/h	180	10	10	20	0	10
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	240	13	13	27	0	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	254	0	301	248
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1323	-	695	796
Stage 1	-	-	-	-	798	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1322	-	687	795
Mov Cap-2 Maneuver	-	-	-	-	687	-
Stage 1	-	-	-	-	789	-
Stage 2	-	-	-	-	975	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.6		9.6	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	795	-	-	1322	-	
HCM Lane V/C Ratio	0.017	-	-	0.01	-	
HCM Control Delay (s)	9.6	-	-	7.8	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile O(veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	340	1430	10
Future Vol, veh/h	0	0	0	340	1430	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	0	0	0	362	1521	11
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	766	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	345	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	345	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	10	0	340	1430	0
Future Vol, veh/h	0	10	0	340	1430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	0	11	0	362	1521	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	761	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	352	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	352	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-		352	-		
HCM Lane V/C Ratio	-		0.03	-		
HCM Control Delay (s)	-		15.5	-		
HCM Lane LOS	-		C	-		
HCM 95th %tile O(veh)	-		0.1	-		

Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	910	20	10	1000	30	20
Future Vol, veh/h	910	20	10	1000	30	20
Conflicting Peds, #/hr	0	3	3	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	929	20	10	1020	31	20

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	952
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	726
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	724
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	77.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	97	-	-	724	-
HCM Lane V/C Ratio	0.526	-	-	0.014	-
HCM Control Delay (s)	77.4	-	-	10	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	2.4	-	-	0	-

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	950	10	10	810	370	0	0	10	290	10	210
Future Volume (veh/h)	40	950	10	10	810	370	0	0	10	290	10	210
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		1.00	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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	43	1022	5	11	871	274	0	0	0	320	0	51
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	2	0	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	69	1915	857	21	1819	1037	0	5	0	558	0	248
Arrive On Green	0.04	0.53	0.53	0.01	0.50	0.50	0.00	0.00	0.00	0.15	0.00	0.15
Sat Flow, veh/h	1810	3610	1615	1810	3610	1565	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	43	1022	5	11	871	274	0	0	0	320	0	51
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1565	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.9	7.3	0.1	0.2	6.2	2.9	0.0	0.0	0.0	3.2	0.0	1.1
Cycle Q Clear(g_c), s	0.9	7.3	0.1	0.2	6.2	2.9	0.0	0.0	0.0	3.2	0.0	1.1
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	69	1915	857	21	1819	1037	0	5	0	558	0	248
V/C Ratio(X)	0.62	0.53	0.01	0.53	0.48	0.26	0.00	0.00	0.00	0.57	0.00	0.21
Avail Cap(c_a), veh/h	688	3201	1432	894	3201	1637	0	890	0	2842	0	1263
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	6.1	4.4	19.4	6.4	2.8	0.0	0.0	0.0	15.5	0.0	14.6
Incr Delay (d2), s/veh	3.4	0.1	0.0	7.5	0.3	0.2	0.0	0.0	0.0	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.6	0.0	0.2	3.1	1.8	0.0	0.0	0.0	1.6	0.0	0.5
LnGrp Delay(d),s/veh	22.1	6.2	4.4	26.9	6.7	3.0	0.0	0.0	0.0	15.8	0.0	14.7
LnGrp LOS	C	A	A	C	A	A				B		B
Approach Vol, veh/h	1070				1156				0		371	
Approach Delay, s/veh	6.8				6.0				0.0		15.7	
Approach LOS	A				A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	24.9		10.1	5.5	23.9		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+I1), s	2.2	9.3		5.2	2.9	8.2		0.0				
Green Ext Time (p_c), s	0.0	5.5		0.7	0.0	11.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	7.7											
HCM 2010 LOS	A											
Notes												

HCM Signalized Intersection Capacity Analysis

3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	230	340	860	410	280
Future Volume (vph)	230	230	340	860	410	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3329	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3329	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	240	240	354	896	427	292
RTOR Reduction (vph)	0	98	0	0	150	0
Lane Group Flow (vph)	240	142	354	896	569	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	16.2	44.0	23.8	50.2	22.4	
Effective Green, g (s)	16.2	44.0	23.8	50.2	24.4	
Actuated g/C Ratio	0.21	0.56	0.30	0.64	0.31	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	369	897	547	2311	1036	
v/s Ratio Prot	c0.13	0.09	c0.20	0.25	c0.17	
v/s Ratio Perm						
v/c Ratio	0.65	0.16	0.65	0.39	0.55	
Uniform Delay, d1	28.5	8.3	23.7	6.7	22.4	
Progression Factor	1.00	1.00	0.81	0.39	1.00	
Incremental Delay, d2	3.1	0.0	2.3	0.1	0.3	
Delay (s)	31.6	8.3	21.3	2.7	22.8	
Level of Service	C	A	C	A	C	
Approach Delay (s)	20.0			8.0	22.8	
Approach LOS	B			A	C	
Intersection Summary						
HCM 2000 Control Delay			14.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			78.4		Sum of lost time (s)	16.0
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Cumulative - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	90	140	50	1110	630	10
Future Volume (vph)	90	140	50	1110	630	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3600	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3600	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	94	146	52	1156	656	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	94	146	52	1156	665	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	16.2	16.2	15.9	50.2	30.3	
Effective Green, g (s)	16.2	16.2	15.9	50.2	30.3	
Actuated g/C Ratio	0.21	0.21	0.20	0.64	0.39	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	372	333	366	2311	1391	
v/s Ratio Prot	0.05		0.03	c0.32	0.18	
v/s Ratio Perm		c0.09				
v/c Ratio	0.25	0.44	0.14	0.50	0.48	
Uniform Delay, d1	26.0	27.1	25.7	7.5	18.1	
Progression Factor	1.00	1.00	1.00	1.00	0.64	
Incremental Delay, d2	0.1	0.3	0.1	0.1	0.1	
Delay (s)	26.2	27.5	25.7	7.5	11.7	
Level of Service	C	C	C	A	B	
Approach Delay (s)	27.0			8.3	11.7	
Approach LOS	C			A	B	
Intersection Summary						
HCM 2000 Control Delay			11.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			78.4		Sum of lost time (s)	16.0
Intersection Capacity Utilization			42.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Cumulative - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	280	420	70	280	90	410	580	50	70	310	500
Future Volume (veh/h)	360	280	420	70	280	90	410	580	50	70	310	500
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		1.00	1.00		0.94	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1863	1863	1900	1881	1881	1881
Adj Flow Rate, veh/h	391	304	268	76	304	13	446	630	50	76	337	303
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	408	594	511	95	541	200	424	1533	121	354	1844	784
Arrive On Green	0.23	0.33	0.33	0.05	0.15	0.15	0.49	0.49	0.50	0.49	0.49	0.49
Sat Flow, veh/h	1792	1823	1568	1792	3574	1318	786	3128	248	762	3762	1599
Grp Volume(v), veh/h	391	298	274	76	304	13	446	356	324	76	337	303
Grp Sat Flow(s),veh/h/ln	1792	1787	1604	1792	1787	1318	786	1770	1606	762	1881	1599
Q Serve(g_s), s	19.8	12.4	12.8	3.9	7.2	0.8	40.4	11.8	11.8	6.5	4.6	10.9
Cycle Q Clear(g_c), s	19.8	12.4	12.8	3.9	7.2	0.8	45.0	11.8	11.8	18.3	4.6	10.9
Prop In Lane	1.00		0.98	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	408	583	523	95	541	200	424	868	787	354	1844	784
V/C Ratio(X)	0.96	0.51	0.52	0.80	0.56	0.07	1.05	0.41	0.41	0.21	0.18	0.39
Avail Cap(c_a), veh/h	429	759	682	156	973	359	424	868	787	354	1844	784
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	25.0	25.1	43.0	36.1	33.4	29.4	14.9	14.9	20.8	13.1	14.7
Incr Delay (d2), s/veh	31.7	0.8	1.0	5.7	1.3	0.2	57.8	0.1	0.1	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	6.3	5.8	2.1	3.7	0.3	17.4	5.8	5.2	1.4	2.4	4.8
LnGrp Delay(d),s/veh	66.7	25.9	26.1	48.7	37.4	33.6	87.3	15.0	15.0	20.9	13.1	14.8
LnGrp LOS	E	C	C	D	D	C	F	B	B	C	B	B
Approach Vol, veh/h		963			393			1126			716	
Approach Delay, s/veh		42.5			39.5			43.6			14.7	
Approach LOS		D			D			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	33.9		49.0	24.9	17.9		49.0				
Change Period (Y+Rc), s	3.0	4.0		3.5	3.0	4.0		3.5				
Max Green Setting (Gmax), s	9.0	39.0		42.5	23.0	25.0		45.5				
Max Q Clear Time (g_c+I1), s	5.9	14.8		20.3	21.8	9.2		47.0				
Green Ext Time (p_c), s	0.0	4.5		2.4	0.1	2.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				36.3								
HCM 2010 LOS				D								
Notes												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	80	1150	760	10
Future Vol, veh/h	10	30	80	1150	760	10
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	0	0	0	0
Mvmt Flow	10	31	82	1186	784	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1556	407	804	0	-	0
Stage 1	799	-	-	-	-	-
Stage 2	757	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.1	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.2	-	-	-
Pot Cap-1 Maneuver	103	591	829	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	585	821	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	417	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	22.4	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	821	-	248	-	-	
HCM Lane V/C Ratio	0.1	-	0.166	-	-	
HCM Control Delay (s)	9.9	-	22.4	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile O(veh)	0.3	-	0.6	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative - PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩		↩	↩	↩	↩	↩↩	↩	↩	↩↩	
Traffic Volume (veh/h)	30	40	80	840	10	270	70	840	850	360	310	50
Future Volume (veh/h)	30	40	80	840	10	270	70	840	850	360	310	50
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	1.00		0.96
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	0.87
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1881	1881	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	31	41	47	864	0	88	71	857	645	367	316	42
Adj No. of Lanes	0	1	0	2	0	1	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, %	0	0	0	1	1	1	0	0	0	1	1	1
Cap, veh/h	62	82	94	1295	0	578	91	750	897	303	963	126
Arrive On Green	0.14	0.14	0.14	0.36	0.00	0.36	0.05	0.21	0.20	0.17	0.33	0.32
Sat Flow, veh/h	447	591	678	3583	0	1599	1810	3610	1580	1792	2948	387
Grp Volume(v), veh/h	119	0	0	864	0	88	71	857	645	367	190	168
Grp Sat Flow(s),veh/h/ln	1716	0	0	1792	0	1599	1810	1805	1580	1792	1787	1548
Q Serve(g_s), s	8.3	0.0	0.0	26.4	0.0	4.8	5.0	27.0	26.0	22.0	10.4	10.7
Cycle Q Clear(g_c), s	8.3	0.0	0.0	26.4	0.0	4.8	5.0	27.0	26.0	22.0	10.4	10.7
Prop In Lane	0.26		0.39	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	238	0	0	1295	0	578	91	750	897	303	584	506
V/C Ratio(X)	0.50	0.00	0.00	0.67	0.00	0.15	0.78	1.14	0.72	1.21	0.33	0.33
Avail Cap(c_a), veh/h	422	0	0	1295	0	578	153	750	897	303	584	506
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	0.00	0.00	1.00	0.00	1.00	0.42	0.42	0.42	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	0.0	0.0	34.9	0.0	28.0	61.0	51.5	18.3	54.0	33.0	33.2
Incr Delay (d2), s/veh	0.6	0.0	0.0	2.7	0.0	0.6	2.4	71.7	2.1	121.3	1.5	1.8
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	4.0	0.0	0.0	13.6	0.0	2.2	2.6	20.9	23.6	21.1	5.4	4.8
LnGrp Delay(d),s/veh	52.4	0.0	0.0	37.6	0.0	28.6	63.4	123.2	20.4	175.3	34.4	34.9
LnGrp LOS	D			D		C	E	F	C	F	C	C
Approach Vol, veh/h		119			952			1573			725	
Approach Delay, s/veh		52.4			36.8			78.3			105.9	
Approach LOS		D			D			E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.0	31.0		51.0	10.5	46.5		22.0				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	22.0	26.0		* 33	11.0	37.0		32.0				
Max Q Clear Time (g_c+I1), s	24.0	29.0		28.4	7.0	12.7		10.3				
Green Ext Time (p_c), s	0.0	0.0		3.1	0.0	3.9		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				71.6								
HCM 2010 LOS				E								
Notes												

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	800	130	550	540	1380	220	620	730	970	460	320
Future Volume (veh/h)	100	800	130	550	540	1380	220	620	730	970	460	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	1.00		0.98	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	1881	1881	1900	1881	1881	1881	1881	1881	1881	1900	1900	1900
Adj Flow Rate, veh/h	102	816	123	561	551	0	224	633	646	990	469	116
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	125	741	112	588	1207	540	252	852	374	615	1187	526
Arrive On Green	0.07	0.24	0.23	0.17	0.34	0.00	0.14	0.24	0.24	0.07	0.11	0.11
Sat Flow, veh/h	1792	3106	468	3476	3574	1599	1792	3574	1569	3076	3610	1602
Grp Volume(v), veh/h	102	469	470	561	551	0	224	633	646	990	469	116
Grp Sat Flow(s),veh/h/ln	1792	1787	1787	1738	1787	1599	1792	1787	1569	1538	1805	1602
Q Serve(g_s), s	7.3	31.0	31.0	20.8	15.7	0.0	16.0	21.3	31.0	26.0	15.7	8.6
Cycle Q Clear(g_c), s	7.3	31.0	31.0	20.8	15.7	0.0	16.0	21.3	31.0	26.0	15.7	8.6
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	125	426	426	588	1207	540	252	852	374	615	1187	526
V/C Ratio(X)	0.81	1.10	1.10	0.95	0.46	0.00	0.89	0.74	1.73	1.61	0.40	0.22
Avail Cap(c_a), veh/h	193	426	426	588	1207	540	331	852	374	615	1187	526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	59.6	49.5	49.6	53.5	33.7	0.0	54.9	45.8	49.5	60.7	45.9	42.7
Incr Delay (d2), s/veh	7.6	74.0	74.0	26.2	1.0	0.0	20.2	5.8	338.1	280.0	0.8	0.8
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	3.9	24.0	24.0	12.1	7.9	0.0	9.3	11.2	48.5	35.0	8.0	3.9
LnGrp Delay(d),s/veh	67.2	123.5	123.7	79.7	34.7	0.0	75.1	51.6	387.6	340.7	46.7	43.5
LnGrp LOS	E	F	F	E	C		E	D	F	F	D	D
Approach Vol, veh/h	1041					1112		1503		1575		
Approach Delay, s/veh	118.1					57.4		199.5		231.3		
Approach LOS	F					E		F		F		
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	34.0	35.0	26.0	35.0	22.3	46.7	13.1	47.9				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.0	30.0	22.0	30.0	24.0	36.0	14.0	38.0				
Max Q Clear Time (g_c+I1), s	28.0	33.0	22.8	33.0	18.0	17.7	9.3	17.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.3	7.1	0.0	7.6				
Intersection Summary												
HCM 2010 Ctrl Delay	162.7											
HCM 2010 LOS	F											
Notes												

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	210	20	30	30	0	20
Future Vol, veh/h	210	20	30	30	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	239	23	34	34	0	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	262
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1314
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1314
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.9	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	793	-	-	1314	-
HCM Lane V/C Ratio	0.029	-	-	0.026	-
HCM Control Delay (s)	9.7	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	10	0	1160	750	20
Future Vol, veh/h	0	10	0	1160	750	20
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	10	0	1184	765	20
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	397	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	608	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	606	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	11	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	606	-	-		
HCM Lane V/C Ratio	-	0.017	-	-		
HCM Control Delay (s)	-	11	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	10	0	1160	760	0
Future Vol, veh/h	0	10	0	1160	760	0
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	10	0	1196	784	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	398	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	607	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	604	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	604	-	-		
HCM Lane V/C Ratio	-	0.017	-	-		
HCM Control Delay (s)	-	11.1	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.1	-	-		

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1143	30	10	882	10	32
Future Vol, veh/h	1143	30	10	882	10	32
Conflicting Peds, #/hr	0	4	4	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	1242	33	11	959	11	35
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1279	0	2244	1264
Stage 1	-	-	-	-	1263	-
Stage 2	-	-	-	-	981	-
Critical Hdwy	-	-	4.11	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.209	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	546	-	47	209
Stage 1	-	-	-	-	269	-
Stage 2	-	-	-	-	366	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	544	-	45	208
Mov Cap-2 Maneuver	-	-	-	-	45	-
Stage 1	-	-	-	-	256	-
Stage 2	-	-	-	-	366	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		57.7	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	112	-	-	544	-	
HCM Lane V/C Ratio	0.408	-	-	0.02	-	
HCM Control Delay (s)	57.7	-	-	11.8	0	
HCM Lane LOS	F	-	-	B	A	
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-	

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	50	1242	13	46	500	182	0	0	10	517	10	302						
Future Volume (veh/h)	50	1242	13	46	500	182	0	0	10	517	10	302						
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		1.00	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	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900						
Adj Flow Rate, veh/h	53	1307	8	48	526	140	0	0	0	552	0	79						
Adj No. of Lanes	1	2	1	1	2	1	0	1	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	0.95	0.95	0.95						
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0						
Cap, veh/h	77	1749	783	72	1739	1103	0	4	0	789	0	351						
Arrive On Green	0.04	0.48	0.48	0.04	0.48	0.48	0.00	0.00	0.00	0.22	0.00	0.22						
Sat Flow, veh/h	1810	3610	1615	1810	3610	1558	0	1900	0	3619	0	1608						
Grp Volume(v), veh/h	53	1307	8	48	526	140	0	0	0	552	0	79						
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1558	0	1900	0	1810	0	1608						
Q Serve(g_s), s	1.3	13.6	0.1	1.2	4.1	1.4	0.0	0.0	0.0	6.6	0.0	1.9						
Cycle Q Clear(g_c), s	1.3	13.6	0.1	1.2	4.1	1.4	0.0	0.0	0.0	6.6	0.0	1.9						
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00						
Lane Grp Cap(c), veh/h	77	1749	783	72	1739	1103	0	4	0	789	0	351						
V/C Ratio(X)	0.69	0.75	0.01	0.67	0.30	0.13	0.00	0.00	0.00	0.70	0.00	0.23						
Avail Cap(c_a), veh/h	583	2713	1214	758	2713	1523	0	755	0	2409	0	1071						
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	0.00	0.00	0.00	1.00	0.00	1.00						
Uniform Delay (d), s/veh	22.0	9.7	6.2	22.1	7.3	2.3	0.0	0.0	0.0	16.8	0.0	15.0						
Incr Delay (d2), s/veh	4.0	0.2	0.0	3.9	0.1	0.1	0.0	0.0	0.0	0.4	0.0	0.1						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(50%),veh/ln	0.7	6.8	0.1	0.7	2.1	1.0	0.0	0.0	0.0	3.3	0.0	0.8						
LnGrp Delay(d),s/veh	26.0	9.9	6.2	26.0	7.5	2.4	0.0	0.0	0.0	17.2	0.0	15.1						
LnGrp LOS	C	A	A	C	A	A				B		B						
Approach Vol, veh/h	1368				714				0									
Approach Delay, s/veh	10.5				7.7				0.0									
Approach LOS	B				A				B									
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	5.9	26.6			14.2	6.0	26.4	0.0										
Change Period (Y+Rc), s	4.0	4.0			4.0	4.0	4.0	4.0										
Max Green Setting (Gmax), s	19.5	35.0			31.0	15.0	35.0	18.5										
Max Q Clear Time (g_c+I1), s	3.2	15.6			8.6	3.3	6.1	0.0										
Green Ext Time (p_c), s	0.0	6.9			1.2	0.0	6.3	0.0										
Intersection Summary																		
HCM 2010 Ctrl Delay																		
HCM 2010 LOS																		
Notes																		

HCM Signalized Intersection Capacity Analysis

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	142	128	272	1188	681
Future Volume (vph)	100	142	128	272	1188	681
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1752	1568	1770	3539	3359	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1752	1568	1770	3539	3359	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	110	156	141	299	1305	748
RTOR Reduction (vph)	0	28	0	0	57	0
Lane Group Flow (vph)	110	128	141	299	1996	0
Confl. Peds. (#/hr)						2
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	3%	3%	2%	2%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	14.1	32.0	13.9	80.2	62.3	
Effective Green, g (s)	14.1	32.0	13.9	80.2	64.3	
Actuated g/C Ratio	0.13	0.30	0.13	0.75	0.60	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	232	472	231	2670	2031	
v/s Ratio Prot	c0.06	0.08	c0.08	0.08	c0.59	
v/s Ratio Perm						
v/c Ratio	0.47	0.27	0.61	0.11	0.98	
Uniform Delay, d1	42.7	28.3	43.6	3.5	20.5	
Progression Factor	1.00	1.00	0.83	1.19	1.00	
Incremental Delay, d2	0.6	0.1	4.0	0.0	16.0	
Delay (s)	43.2	28.4	40.4	4.2	36.4	
Level of Service	D	C	D	A	D	
Approach Delay (s)	34.5			15.8	36.4	
Approach LOS	C			B	D	
Intersection Summary						
HCM 2000 Control Delay			32.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			106.3		Sum of lost time (s)	16.0
Intersection Capacity Utilization			79.0%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	142	22	320	1319	10
Future Volume (vph)	80	142	22	320	1319	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1770	3539	3534	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1770	3539	3534	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	94	167	26	376	1552	12
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	94	167	26	376	1564	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						2
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	14.1	14.1	7.2	80.2	69.0	
Effective Green, g (s)	14.1	14.1	7.2	80.2	69.0	
Actuated g/C Ratio	0.13	0.13	0.07	0.75	0.65	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	239	214	119	2670	2293	
v/s Ratio Prot	0.05		c0.01	0.11	c0.44	
v/s Ratio Perm		c0.10				
v/c Ratio	0.39	0.78	0.22	0.14	0.68	
Uniform Delay, d1	42.2	44.6	46.9	3.6	11.7	
Progression Factor	1.00	1.00	1.00	1.00	0.43	
Incremental Delay, d2	0.4	15.5	0.3	0.0	0.3	
Delay (s)	42.6	60.1	47.2	3.6	5.4	
Level of Service	D	E	D	A	A	
Approach Delay (s)	53.8			6.4	5.4	
Approach LOS	D			A	A	
Intersection Summary						
HCM 2000 Control Delay			11.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			106.3		Sum of lost time (s)	16.0
Intersection Capacity Utilization			55.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	412	1004	60	93	30	201	170	30	70	730	433
Future Volume (veh/h)	252	412	1004	60	93	30	201	170	30	70	730	433
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		0.97	1.00		0.97	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1827	1827	1827	1881	1881	1900	1863	1863	1863
Adj Flow Rate, veh/h	257	420	731	61	95	5	205	173	21	71	745	241
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	4	4	4	1	1	1	2	2	2
Cap, veh/h	275	771	677	68	1100	418	223	1245	148	505	1534	652
Arrive On Green	0.15	0.43	0.43	0.04	0.32	0.32	0.41	0.41	0.42	0.41	0.41	0.41
Sat Flow, veh/h	1792	1787	1571	1740	3471	1317	574	3023	361	1158	3725	1583
Grp Volume(v), veh/h	257	420	731	61	95	5	205	101	93	71	745	241
Grp Sat Flow(s),veh/h/ln	1792	1787	1571	1740	1736	1317	574	1787	1596	1158	1863	1583
Q Serve(g_s), s	14.5	17.8	44.0	3.6	2.0	0.3	27.0	3.6	3.7	4.2	15.0	10.8
Cycle Q Clear(g_c), s	14.5	17.8	44.0	3.6	2.0	0.3	42.0	3.6	3.7	7.9	15.0	10.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	275	771	677	68	1100	418	223	736	657	505	1534	652
V/C Ratio(X)	0.93	0.54	1.08	0.89	0.09	0.01	0.92	0.14	0.14	0.14	0.49	0.37
Avail Cap(c_a), veh/h	386	771	677	68	1100	418	223	736	657	528	1607	683
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	21.6	29.0	48.8	24.5	23.9	41.0	18.7	18.7	21.2	22.1	20.8
Incr Delay (d2), s/veh	20.9	0.9	57.9	71.6	0.0	0.0	38.6	0.0	0.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	8.9	29.9	3.1	0.9	0.1	8.1	1.8	1.6	1.3	7.7	4.7
LnGrp Delay(d),s/veh	63.5	22.5	86.9	120.4	24.5	23.9	79.6	18.7	18.7	21.2	22.1	20.9
LnGrp LOS	E	C	F	F	C	C	E	B	B	C	C	C
Approach Vol, veh/h	1408			161			399			1057		
Approach Delay, s/veh	63.4			60.8			50.0			21.8		
Approach LOS	E			E			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	8.0	48.0			46.0	19.7	36.3	46.0				
Change Period (Y+Rc), s	3.0	4.0			3.5	3.0	4.0	3.5				
Max Green Setting (Gmax), s	5.0	44.0			44.5	23.0	26.0	42.5				
Max Q Clear Time (g_c+I), s	5.0	46.0			17.0	16.5	4.0	44.0				
Green Ext Time (p_c), s	0.0	0.0			4.3	0.2	0.7	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				47.0								
HCM 2010 LOS				D								
Notes												

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	50	50	351	1444	22
Future Vol, veh/h	10	50	50	351	1444	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	3	3	2	2
Mvmt Flow	11	54	54	377	1553	24
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1862	789	1577	0	-	0
Stage 1	1565	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	65	333	409	-	-	-
Stage 1	158	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	56	333	409	-	-	-
Mov Cap-2 Maneuver	56	-	-	-	-	-
Stage 1	137	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	35	1.9		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	409	-	183	-	-	
HCM Lane V/C Ratio	0.131	-	0.353	-	-	
HCM Control Delay (s)	15.1	-	35	-	-	
HCM Lane LOS	C	-	E	-	-	
HCM 95th %tile Q(veh)	0.4	-	1.5	-	-	

HCM 2010 Signalized Intersection Summary
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	70	80	760	10	70	90	271	620	427	747	60
Future Volume (veh/h)	40	70	80	760	10	70	90	271	620	427	747	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	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	0.87
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	41	71	62	783	0	23	92	277	447	436	762	57
Adj No. of Lanes	0	1	0	2	0	1	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	64	110	96	1235	0	551	113	430	726	456	980	73
Arrive On Green	0.16	0.16	0.16	0.35	0.00	0.35	0.06	0.12	0.11	0.26	0.31	0.31
Sat Flow, veh/h	401	694	606	3548	0	1583	1774	3539	1547	1774	3112	233
Grp Volume(v), veh/h	174	0	0	783	0	23	92	277	447	436	433	386
Grp Sat Flow(s),veh/h/ln	1700	0	0	1774	0	1583	1774	1770	1547	1774	1770	1575
Q Serve(g_s), s	13.4	0.0	0.0	25.8	0.0	1.3	7.2	10.4	16.0	33.9	31.1	31.1
Cycle Q Clear(g_c), s	13.4	0.0	0.0	25.8	0.0	1.3	7.2	10.4	16.0	33.9	31.1	31.1
Prop In Lane	0.24		0.36	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	270	0	0	1235	0	551	113	430	726	456	557	496
V/C Ratio(X)	0.64	0.00	0.00	0.63	0.00	0.04	0.81	0.64	0.62	0.96	0.78	0.78
Avail Cap(c_a), veh/h	389	0	0	1235	0	551	127	430	726	469	557	496
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	0.00	0.00	1.00	0.00	1.00	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.2	0.0	0.0	38.2	0.0	30.2	64.7	58.6	24.6	51.2	43.5	43.6
Incr Delay (d2), s/veh	1.0	0.0	0.0	2.5	0.0	0.1	21.6	5.8	3.1	29.8	10.2	11.4
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	6.4	0.0	0.0	13.0	0.0	0.6	4.2	5.5	17.9	20.4	16.7	15.1
LnGrp Delay(d),s/veh	56.1	0.0	0.0	40.6	0.0	30.3	86.3	64.4	27.7	81.0	53.7	55.0
LnGrp LOS	E			D		C	F	E	C	F	D	D
Approach Vol, veh/h		174			806			816			1255	
Approach Delay, s/veh		56.1			40.4			46.8			63.6	
Approach LOS		E			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.0	21.0		52.7	12.9	48.1		26.3				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	37.0	16.0		* 38	10.0	43.0		32.0				
Max Q Clear Time (g_c+I1), s	35.9	18.0		27.8	9.2	33.1		15.4				
Green Ext Time (p_c), s	0.1	0.0		5.4	0.0	5.5		0.6				
Intersection Summary												
HCM 2010 Ctrl Delay				52.5								
HCM 2010 LOS				D								
Notes												

HCM 2010 Signalized Intersection Summary

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	720	270	900	490	1002	120	166	410	670	1415	162
Future Volume (veh/h)	43	720	270	900	490	1002	120	166	410	670	1415	162
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	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	1881	1881	1881	1845	1845	1845	1863	1863	1863
Adj Flow Rate, veh/h	44	735	248	918	500	0	122	169	142	684	1444	98
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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	1	1	1	3	3	3	2	2	2
Cap, veh/h	57	628	212	720	1494	669	88	826	361	590	1365	597
Arrive On Green	0.03	0.24	0.24	0.21	0.42	0.00	0.05	0.24	0.24	0.34	0.77	0.77
Sat Flow, veh/h	1774	2584	872	3476	3574	1599	1757	3505	1530	3442	3539	1547
Grp Volume(v), veh/h	44	503	480	918	500	0	122	169	142	684	1444	98
Grp Sat Flow(s),veh/h/ln	1774	1770	1686	1738	1787	1599	1757	1752	1530	1721	1770	1547
Q Serve(g_s), s	3.4	34.0	34.0	29.0	13.3	0.0	7.0	5.4	10.9	24.0	54.0	2.3
Cycle Q Clear(g_c), s	3.4	34.0	34.0	29.0	13.3	0.0	7.0	5.4	10.9	24.0	54.0	2.3
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	57	430	410	720	1494	669	88	826	361	590	1365	597
V/C Ratio(X)	0.78	1.17	1.17	1.28	0.33	0.00	1.39	0.20	0.39	1.16	1.06	0.16
Avail Cap(c_a), veh/h	114	430	410	720	1494	669	88	826	361	590	1365	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.54	0.54	0.54
Uniform Delay (d), s/veh	67.3	53.0	53.3	55.5	27.6	0.0	66.5	43.0	45.1	46.0	16.0	10.1
Incr Delay (d2), s/veh	8.2	99.3	100.2	134.4	0.5	0.0	230.5	0.6	3.2	82.2	35.6	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	1.8	28.4	27.2	27.3	6.6	0.0	9.0	2.7	4.9	18.0	31.8	1.0
LnGrp Delay(d),s/veh	75.5	152.3	153.5	189.9	28.0	0.0	297.0	43.5	48.3	128.2	51.6	10.4
LnGrp LOS	E	F	F	F	C		F	D	D	F	F	B
Approach Vol, veh/h	1027				1418				433		2226	
Approach Delay, s/veh	149.5				132.9				116.5		73.3	
Approach LOS	F				F				F		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	32.0	37.0	33.0	38.0	11.0	58.0	8.5	62.5				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	24.0	32.0	29.0	33.0	7.0	53.0	9.0	53.0				
Max Q Clear Time (g_c+20.0), s	20.0	12.9	31.0	36.0	9.0	56.0	5.4	15.3				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.0	0.0	0.0	8.9				
Intersection Summary												
HCM 2010 Ctrl Delay		108.9										
HCM 2010 LOS		F										
Notes												

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	186	34	12	20	0	36
Future Vol, veh/h	186	34	12	20	0	36
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	0	0	0	0
Mvmt Flow	248	45	16	27	0	48
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	294	0	331	272
Stage 1	-	-	-	-	272	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1279	-	668	772
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1278	-	659	771
Mov Cap-2 Maneuver	-	-	-	-	659	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	969	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.9		10	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	771	-	-	1278	-	
HCM Lane V/C Ratio	0.062	-	-	0.013	-	
HCM Control Delay (s)	10	-	-	7.9	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	20	342	1444	17
Future Vol, veh/h	0	0	20	342	1444	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	4	4	2	2
Mvmt Flow	0	0	21	364	1536	18
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1769	777	1554	0	-	0
Stage 1	1545	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.18	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.24	-	-	-
Pot Cap-1 Maneuver	75	340	413	-	-	-
Stage 1	162	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	71	340	413	-	-	-
Mov Cap-2 Maneuver	71	-	-	-	-	-
Stage 1	154	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	413	-	-	-	-	
HCM Lane V/C Ratio	0.052	-	-	-	-	
HCM Control Delay (s)	14.2	-	0	-	-	
HCM Lane LOS	B	-	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	-	-	-	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	30	0	361	1436	8
Future Vol, veh/h	0	30	0	361	1436	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	3	3	2	2
Mvmt Flow	0	32	0	384	1528	9
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	769	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	348	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	348	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.4	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 348		-	-		
HCM Lane V/C Ratio	- 0.092		-	-		
HCM Control Delay (s)	- 16.4		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	911	20	10	1002	30	23
Future Vol, veh/h	911	20	10	1002	30	23
Conflicting Peds, #/hr	0	3	3	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	1	1	1	1	0	0
Mvmt Flow	930	20	10	1022	31	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	953
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.11
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.209
Pot Cap-1 Maneuver	-	-	725
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	723
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	75.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	101	-	-	723	-
HCM Lane V/C Ratio	0.535	-	-	0.014	-
HCM Control Delay (s)	75.8	-	-	10.1	0
HCM Lane LOS	F	-	-	B	A
HCM 95th %tile Q(veh)	2.4	-	-	0	-

HCM 2010 Signalized Intersection Summary

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	953	11	16	810	370	0	0	10	303	10	212
Future Volume (veh/h)	40	953	11	16	810	370	0	0	10	303	10	212
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		1.00	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	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	43	1025	6	17	871	276	0	0	0	334	0	54
Adj No. of Lanes	1	2	1	1	2	1	0	1	0	2	0	1
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	69	1887	844	31	1812	1041	0	5	0	573	0	255
Arrive On Green	0.04	0.52	0.52	0.02	0.50	0.50	0.00	0.00	0.00	0.16	0.00	0.16
Sat Flow, veh/h	1810	3610	1615	1810	3610	1565	0	1900	0	3619	0	1609
Grp Volume(v), veh/h	43	1025	6	17	871	276	0	0	0	334	0	54
Grp Sat Flow(s),veh/h/ln	1810	1805	1615	1810	1805	1565	0	1900	0	1810	0	1609
Q Serve(g_s), s	0.9	7.5	0.1	0.4	6.3	2.9	0.0	0.0	0.0	3.4	0.0	1.2
Cycle Q Clear(g_c), s	0.9	7.5	0.1	0.4	6.3	2.9	0.0	0.0	0.0	3.4	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	0.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	69	1887	844	31	1812	1041	0	5	0	573	0	255
V/C Ratio(X)	0.62	0.54	0.01	0.55	0.48	0.27	0.00	0.00	0.00	0.58	0.00	0.21
Avail Cap(c_a), veh/h	682	3177	1421	887	3177	1633	0	884	0	2821	0	1254
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.8	6.3	4.5	19.4	6.5	2.8	0.0	0.0	0.0	15.5	0.0	14.6
Incr Delay (d2), s/veh	3.4	0.1	0.0	5.4	0.3	0.2	0.0	0.0	0.0	0.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.7	0.0	0.2	3.1	1.8	0.0	0.0	0.0	1.7	0.0	0.5
LnGrp Delay(d),s/veh	22.3	6.4	4.5	24.8	6.8	3.0	0.0	0.0	0.0	15.9	0.0	14.7
LnGrp LOS	C	A	A	C	A	A				B		B
Approach Vol, veh/h	1074				1164				0		388	
Approach Delay, s/veh	7.0				6.1				0.0		15.7	
Approach LOS	A				A						B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	24.8		10.3	5.5	24.0		0.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	19.5	35.0		31.0	15.0	35.0		18.5				
Max Q Clear Time (g_c+l1), s	2.4	9.5		5.4	2.9	8.3		0.0				
Green Ext Time (p_c), s	0.0	5.5		0.7	0.0	11.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	7.9											
HCM 2010 LOS	A											
Notes												

HCM Signalized Intersection Capacity Analysis

3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	230	230	355	862	412	280
Future Volume (vph)	230	230	355	862	412	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.94	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1805	3610	3330	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1787	1599	1805	3610	3330	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	240	240	370	898	429	292
RTOR Reduction (vph)	0	97	0	0	149	0
Lane Group Flow (vph)	240	143	370	898	572	0
Confl. Peds. (#/hr)						6
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	1%	1%	0%	0%	1%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	
Protected Phases	8	8 5	5	5 6	6	
Permitted Phases						
Actuated Green, G (s)	16.2	45.1	24.9	51.5	22.6	
Effective Green, g (s)	16.2	45.1	24.9	51.5	24.6	
Actuated g/C Ratio	0.20	0.57	0.31	0.65	0.31	
Clearance Time (s)	4.0		4.0		8.0	
Vehicle Extension (s)	2.0		2.5		2.0	
Lane Grp Cap (vph)	363	904	563	2332	1027	
v/s Ratio Prot	c0.13	0.09	c0.20	0.25	c0.17	
v/s Ratio Perm						
v/c Ratio	0.66	0.16	0.66	0.39	0.56	
Uniform Delay, d1	29.2	8.2	23.7	6.6	23.0	
Progression Factor	1.00	1.00	0.81	0.46	1.00	
Incremental Delay, d2	3.5	0.0	2.4	0.1	0.4	
Delay (s)	32.7	8.3	21.5	3.1	23.4	
Level of Service	C	A	C	A	C	
Approach Delay (s)	20.5			8.5	23.4	
Approach LOS	C			A	C	
Intersection Summary						
HCM 2000 Control Delay			15.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			79.7		Sum of lost time (s)	16.0
Intersection Capacity Utilization			64.7%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	107	146	51	1110	632	10
Future Volume (vph)	107	146	51	1110	632	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	8.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1805	3610	3600	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1805	3610	3600	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	111	152	53	1156	658	10
RTOR Reduction (vph)	0	0	0	0	1	0
Lane Group Flow (vph)	111	152	53	1156	667	0
Confl. Peds. (#/hr)						3
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		1	1 2	2	
Permitted Phases		4				
Actuated Green, G (s)	16.2	16.2	15.8	51.5	31.7	
Effective Green, g (s)	16.2	16.2	15.8	51.5	31.7	
Actuated g/C Ratio	0.20	0.20	0.20	0.65	0.40	
Clearance Time (s)	4.0	4.0	4.0		8.0	
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)	366	328	357	2332	1431	
v/s Ratio Prot	0.06		0.03	0.32	0.19	
v/s Ratio Perm		0.09				
v/c Ratio	0.30	0.46	0.15	0.50	0.47	
Uniform Delay, d1	27.0	27.9	26.4	7.3	17.7	
Progression Factor	1.00	1.00	1.00	1.00	0.64	
Incremental Delay, d2	0.2	0.4	0.1	0.1	0.1	
Delay (s)	27.1	28.3	26.5	7.4	11.4	
Level of Service	C	C	C	A	B	
Approach Delay (s)	27.8			8.2	11.4	
Approach LOS	C			A	B	
Intersection Summary						
HCM 2000 Control Delay			11.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.52			
Actuated Cycle Length (s)			79.7		Sum of lost time (s)	16.0
Intersection Capacity Utilization			43.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM 2010 Signalized Intersection Summary
5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	362	282	431	70	281	90	414	580	50	70	310	501
Future Volume (veh/h)	362	282	431	70	281	90	414	580	50	70	310	501
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		1.00	1.00		0.94	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.88	1.00	1.00	0.89	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1881	1863	1863	1900	1881	1881	1881
Adj Flow Rate, veh/h	393	307	278	76	305	13	450	630	50	76	337	306
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	1
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, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	410	588	520	95	542	200	422	1530	121	353	1841	782
Arrive On Green	0.23	0.33	0.33	0.05	0.15	0.15	0.49	0.49	0.49	0.49	0.49	0.49
Sat Flow, veh/h	1792	1798	1590	1792	3574	1318	784	3128	248	762	3762	1599
Grp Volume(v), veh/h	393	305	280	76	305	13	450	356	324	76	337	306
Grp Sat Flow(s),veh/h/ln	1792	1787	1601	1792	1787	1318	784	1770	1606	762	1881	1599
Q Serve(g_s), s	19.9	12.7	13.1	3.9	7.3	0.8	40.4	11.8	11.9	6.5	4.6	11.1
Cycle Q Clear(g_c), s	19.9	12.7	13.1	3.9	7.3	0.8	45.0	11.8	11.9	18.4	4.6	11.1
Prop In Lane	1.00		0.99	1.00		1.00	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	410	585	524	95	542	200	422	866	786	353	1841	782
V/C Ratio(X)	0.96	0.52	0.53	0.80	0.56	0.07	1.07	0.41	0.41	0.22	0.18	0.39
Avail Cap(c_a), veh/h	429	758	679	156	972	358	422	866	786	353	1841	782
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.0	25.1	25.2	43.1	36.2	33.4	29.5	15.0	15.0	20.9	13.2	14.8
Incr Delay (d2), s/veh	32.0	0.9	1.0	5.7	1.3	0.2	62.3	0.1	0.1	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	6.4	5.9	2.1	3.7	0.3	18.0	5.8	5.2	1.4	2.4	4.9
LnGrp Delay(d),s/veh	67.0	26.0	26.3	48.8	37.5	33.6	91.8	15.1	15.1	21.0	13.2	14.9
LnGrp LOS	E	C	C	D	D	C	F	B	B	C	B	B
Approach Vol, veh/h	978				394				1130		719	
Approach Delay, s/veh	42.6				39.5				45.7		14.8	
Approach LOS	D				D				D		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6			8		
Phs Duration (G+Y+Rc), s	8.9	34.1			49.0	25.0	17.9			49.0		
Change Period (Y+Rc), s	3.0	4.0			3.5	3.0	4.0			3.5		
Max Green Setting (Gmax), s	39.0	39.0			42.5	23.0	25.0			45.5		
Max Q Clear Time (g_c+I), s	15.1	15.1			20.4	21.9	9.3			47.0		
Green Ext Time (p_c), s	0.0	4.6			2.4	0.1	2.3			0.0		
Intersection Summary												
HCM 2010 Ctrl Delay			37.1									
HCM 2010 LOS			D									
Notes												

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	80	1154	777	13
Future Vol, veh/h	10	30	80	1154	777	13
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	160	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	3	0	0	0	0
Mvmt Flow	10	31	82	1190	801	13
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1577	417	824	0	-	0
Stage 1	818	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.1	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.2	-	-	-
Pot Cap-1 Maneuver	99	582	815	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	576	807	-	-	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	348	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23.2	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	807	-	239	-	-	
HCM Lane V/C Ratio	0.102	-	0.173	-	-	
HCM Control Delay (s)	10	-	23.2	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-	

HCM 2010 Signalized Intersection Summary

7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	40	80	840	10	270	70	844	850	365	322	50
Future Volume (veh/h)	30	40	80	840	10	270	70	844	850	365	322	50
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		1.00	1.00		0.98	1.00		0.96
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	0.87
Adj Sat Flow, veh/h/ln	1900	1900	1900	1881	1881	1881	1900	1900	1900	1881	1881	1900
Adj Flow Rate, veh/h	31	41	47	864	0	88	71	861	645	372	329	43
Adj No. of Lanes	0	1	0	2	0	1	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, %	0	0	0	1	1	1	0	0	0	1	1	1
Cap, veh/h	62	82	94	1295	0	578	91	750	897	303	965	125
Arrive On Green	0.14	0.14	0.14	0.36	0.00	0.36	0.05	0.21	0.20	0.17	0.33	0.32
Sat Flow, veh/h	447	591	678	3583	0	1599	1810	3610	1580	1792	2955	381
Grp Volume(v), veh/h	119	0	0	864	0	88	71	861	645	372	197	175
Grp Sat Flow(s),veh/h/ln	1716	0	0	1792	0	1599	1810	1805	1580	1792	1787	1549
Q Serve(g_s), s	8.3	0.0	0.0	26.4	0.0	4.8	5.0	27.0	26.0	22.0	10.9	11.1
Cycle Q Clear(g_c), s	8.3	0.0	0.0	26.4	0.0	4.8	5.0	27.0	26.0	22.0	10.9	11.1
Prop In Lane	0.26		0.39	1.00		1.00	1.00		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	238	0	0	1295	0	578	91	750	897	303	584	506
V/C Ratio(X)	0.50	0.00	0.00	0.67	0.00	0.15	0.78	1.15	0.72	1.23	0.34	0.35
Avail Cap(c_a), veh/h	422	0	0	1295	0	578	153	750	897	303	584	506
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	0.00	0.00	1.00	0.00	1.00	0.42	0.42	0.42	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	0.0	0.0	34.9	0.0	28.0	61.0	51.5	18.3	54.0	33.1	33.3
Incr Delay (d2), s/veh	0.6	0.0	0.0	2.7	0.0	0.6	2.4	73.8	2.1	127.8	1.6	1.9
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	4.0	0.0	0.0	13.6	0.0	2.2	2.6	21.1	23.6	21.6	5.6	5.0
LnGrp Delay(d),s/veh	52.4	0.0	0.0	37.6	0.0	28.6	63.4	125.3	20.4	181.8	34.7	35.2
LnGrp LOS	D			D		C	E	F	C	F	C	D
Approach Vol, veh/h		119			952			1577			744	
Approach Delay, s/veh		52.4			36.8			79.6			108.3	
Approach LOS		D			D			E			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.0	31.0		51.0	10.5	46.5		22.0				
Change Period (Y+Rc), s	4.0	5.0		* 4.2	4.0	5.0		4.0				
Max Green Setting (Gmax), s	22.0	26.0		* 33	11.0	37.0		32.0				
Max Q Clear Time (g_c+I1), s	24.0	29.0		28.4	7.0	13.1		10.3				
Green Ext Time (p_c), s	0.0	0.0		3.1	0.0	4.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay				73.0								
HCM 2010 LOS				E								
Notes												

HCM 2010 Signalized Intersection Summary 8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	800	130	550	540	1382	220	621	730	976	464	322
Future Volume (veh/h)	101	800	130	550	540	1382	220	621	730	976	464	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
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		1.00	1.00		0.98	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	1881	1881	1900	1881	1881	1881	1881	1881	1881	1900	1900	1900
Adj Flow Rate, veh/h	103	816	123	561	551	0	224	634	646	996	473	118
Adj No. of Lanes	1	2	0	2	2	1	1	2	1	2	2	1
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, %	1	1	1	1	1	1	1	1	1	0	0	0
Cap, veh/h	127	741	112	588	1205	539	252	852	374	615	1187	526
Arrive On Green	0.07	0.24	0.23	0.17	0.34	0.00	0.14	0.24	0.24	0.07	0.11	0.11
Sat Flow, veh/h	1792	3106	468	3476	3574	1599	1792	3574	1569	3076	3610	1602
Grp Volume(v), veh/h	103	469	470	561	551	0	224	634	646	996	473	118
Grp Sat Flow(s),veh/h/ln	1792	1787	1787	1738	1787	1599	1792	1787	1569	1538	1805	1602
Q Serve(g_s), s	7.4	31.0	31.0	20.8	15.7	0.0	16.0	21.3	31.0	26.0	15.9	8.8
Cycle Q Clear(g_c), s	7.4	31.0	31.0	20.8	15.7	0.0	16.0	21.3	31.0	26.0	15.9	8.8
Prop In Lane	1.00		0.26	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	426	426	588	1205	539	252	852	374	615	1187	526
V/C Ratio(X)	0.81	1.10	1.10	0.95	0.46	0.00	0.89	0.74	1.73	1.62	0.40	0.22
Avail Cap(c_a), veh/h	193	426	426	588	1205	539	331	852	374	615	1187	526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	59.6	49.5	49.6	53.5	33.8	0.0	54.9	45.8	49.5	60.7	46.0	42.8
Incr Delay (d2), s/veh	8.1	74.0	74.0	26.2	1.0	0.0	20.2	5.8	338.1	284.3	0.8	0.8
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	8.9	24.0	24.0	12.1	7.9	0.0	9.3	11.3	48.5	35.4	8.1	4.0
LnGrp Delay(d),s/veh	67.6	123.5	123.7	79.7	34.8	0.0	75.1	51.7	387.6	345.0	46.8	43.6
LnGrp LOS	E	F	F	E	C		E	D	F	F	D	D
Approach Vol, veh/h	1042		1112				1504				1587	
Approach Delay, s/veh	118.1		57.4				199.4				233.7	
Approach LOS	F		E				F				F	
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	34.0	35.0	26.0	35.0	22.3	46.7	13.2	47.8				
Change Period (Y+Rc), s	8.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	26.0	30.0	22.0	30.0	24.0	36.0	14.0	38.0				
Max Q Clear Time (g_c+20.0), s	26.0	33.0	22.8	33.0	18.0	17.9	9.4	17.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.3	7.1	0.0	7.6				
Intersection Summary												
HCM 2010 Ctrl Delay	163.5											
HCM 2010 LOS	F											
Notes												

Intersection

Int Delay, s/veh 1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	211	26	31	30	0	41
Future Vol, veh/h	211	26	31	30	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	240	30	35	34	0	47

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	270
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1305
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1305
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	789	-	-	1305	-
HCM Lane V/C Ratio	0.059	-	-	0.027	-
HCM Control Delay (s)	9.8	-	-	7.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	3	1161	756	21
Future Vol, veh/h	0	10	3	1161	756	21
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	10	3	1185	771	21
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1385	400	796	0	-	0
Stage 1	786	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	137	605	835	-	-	-
Stage 1	415	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	135	603	832	-	-	-
Mov Cap-2 Maneuver	135	-	-	-	-	-
Stage 1	412	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	832	-	603	-	-	
HCM Lane V/C Ratio	0.004	-	0.017	-	-	
HCM Control Delay (s)	9.3	-	11.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	25	0	1164	764	2
Future Vol, veh/h	0	25	0	1164	764	2
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	26	0	1200	788	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	401	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	604	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	601	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

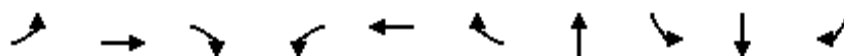
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	601	-	-
HCM Lane V/C Ratio	-	0.043	-	-
HCM Control Delay (s)	-	11.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Queues

Cambria Hotel TIA

2: Pleasant Valley Dr & Oak Park Blvd

Existing - AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	49	861	2	13	380	180	2	253	255	299
v/c Ratio	0.19	0.55	0.00	0.06	0.31	0.16	0.00	0.44	0.45	0.41
Control Delay	28.6	13.9	0.0	30.5	15.9	1.1	0.0	18.6	18.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	13.9	0.0	30.5	15.9	1.1	0.0	18.6	18.7	4.7
Queue Length 50th (ft)	12	71	0	3	42	0	0	51	52	0
Queue Length 95th (ft)	60	272	0	25	119	17	0	194	196	55
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	648	2765	1264	843	2935	1423	865	1214	1218	1213
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.31	0.00	0.02	0.13	0.13	0.00	0.21	0.21	0.25
Intersection Summary										

Queues

Cambria Hotel TIA

3: N. Main St/N Main St & Pleasant Valley Dr

Existing - AM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	77	120	90	158	1392
v/c Ratio	0.33	0.24	0.37	0.06	0.75
Control Delay	29.4	11.8	25.6	2.3	14.4
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	29.4	11.8	25.6	2.4	14.5
Queue Length 50th (ft)	27	21	28	7	173
Queue Length 95th (ft)	65	53	59	14	#343
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	466	1203	1061	2788	1865
Starvation Cap Reductn	0	0	78	2027	0
Spillback Cap Reductn	0	160	0	0	20
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.12	0.09	0.21	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Existing - AM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	46	98	11	220	984
v/c Ratio	0.19	0.45	0.07	0.08	0.51
Control Delay	26.7	32.8	28.9	2.5	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	26.7	32.8	28.9	2.5	6.4
Queue Length 50th (ft)	16	35	4	8	53
Queue Length 95th (ft)	41	75	18	18	91
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	480	430	471	3476	2914
Starvation Cap Reductn	0	0	0	0	666
Spillback Cap Reductn	0	0	0	5	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.23	0.02	0.06	0.44
Intersection Summary					



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	214	1210	51	74	25	134	163	49	646	372
v/c Ratio	0.57	1.05dr	0.44	0.13	0.09	0.80	0.22	0.67	0.98	0.57
Control Delay	44.7	37.2	56.8	34.4	0.7	68.9	27.7	82.5	68.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	37.2	56.8	34.4	0.7	68.9	27.7	82.5	68.9	9.5
Queue Length 50th (ft)	125	~288	30	20	0	69	34	29	~218	13
Queue Length 95th (ft)	#226	#416	73	42	0	#181	71	#116	#413	105
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	424	1281	363	826	383	224	1006	73	659	650
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.94	0.14	0.09	0.07	0.60	0.16	0.67	0.98	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing - AM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	170	389	390	66	87	170	631	270	779
v/c Ratio	0.55	0.57	0.57	0.09	0.86	0.34	0.60	0.91	0.95
Control Delay	48.6	38.2	38.2	1.2	116.9	58.3	12.0	90.4	72.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	38.2	38.2	1.2	116.9	58.3	12.0	90.4	72.8
Queue Length 50th (ft)	110	314	315	0	80	77	116	241	367
Queue Length 95th (ft)	183	441	442	7	#187	116	272	#393	#498
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	421	688	689	712	101	493	1053	316	819
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.57	0.57	0.09	0.86	0.34	0.60	0.85	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing - AM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	28	701	642	348	699	84	107	291	459	997	105
v/c Ratio	0.33	0.81	0.93	0.23	0.45	0.76	0.13	0.49	0.81	0.75	0.16
Control Delay	74.1	55.0	76.4	27.0	0.9	103.3	43.0	7.8	59.2	26.3	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	55.0	76.4	27.0	0.9	103.3	43.0	7.8	59.2	26.3	3.5
Queue Length 50th (ft)	25	303	298	109	0	77	40	0	203	342	15
Queue Length 95th (ft)	58	380	#410	152	0	#166	68	79	m236	m371	m25
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	177	870	693	1523	1569	112	852	591	637	1324	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.81	0.93	0.23	0.45	0.75	0.13	0.49	0.72	0.75	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

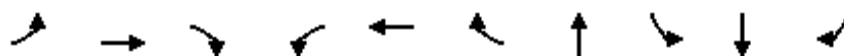
m Volume for 95th percentile queue is metered by upstream signal.

Queues

Cambria Hotel TIA

2: Pleasant Valley Dr & Oak Park Blvd

Existing - PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	37	662	3	9	540	358	10	156	154	197
v/c Ratio	0.13	0.42	0.00	0.04	0.39	0.30	0.02	0.31	0.30	0.32
Control Delay	26.5	11.9	0.0	28.8	13.9	1.2	0.1	16.4	16.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	11.9	0.0	28.8	13.9	1.2	0.1	16.4	16.3	4.9
Queue Length 50th (ft)	6	38	0	1	30	0	0	21	21	0
Queue Length 95th (ft)	48	206	0	20	173	22	0	113	112	43
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	764	2975	1352	994	3080	1482	1010	1340	1346	1287
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.00	0.01	0.18	0.24	0.01	0.12	0.11	0.15

Intersection Summary

Queues
3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing - PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	167	194	278	556	441
v/c Ratio	0.52	0.20	0.52	0.23	0.43
Control Delay	29.5	1.7	17.3	1.9	11.4
Queue Delay	0.0	0.0	0.1	0.0	0.0
Total Delay	29.5	1.7	17.3	2.0	11.4
Queue Length 50th (ft)	47	0	47	13	30
Queue Length 95th (ft)	131	23	99	23	85
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	537	1461	1221	3449	2059
Starvation Cap Reductn	0	0	216	1175	0
Spillback Cap Reductn	0	40	0	0	5
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.14	0.28	0.24	0.21
Intersection Summary					

Queues
4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Existing - PM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	63	84	35	772	422
v/c Ratio	0.20	0.29	0.09	0.32	0.37
Control Delay	23.8	25.4	22.3	4.4	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	25.4	22.3	4.4	13.0
Queue Length 50th (ft)	17	23	9	41	40
Queue Length 95th (ft)	58	73	38	87	76
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	542	485	542	3510	3176
Starvation Cap Reductn	0	0	0	0	538
Spillback Cap Reductn	40	0	0	104	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.17	0.06	0.23	0.16
Intersection Summary					

Queues

Cambria Hotel TIA

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Existing - PM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	313	580	57	238	79	322	551	51	274	439
v/c Ratio	0.90	0.50	0.48	0.44	0.28	1.06	0.59	0.74	0.53	0.66
Control Delay	70.0	15.1	59.7	40.1	11.0	107.0	34.6	93.8	40.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	15.1	59.7	40.1	11.0	107.0	34.6	93.8	40.0	8.8
Queue Length 50th (ft)	193	72	35	74	0	~224	154	31	81	0
Queue Length 95th (ft)	#399	130	79	111	39	#443	237	#112	138	88
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	348	1157	348	793	375	303	937	80	598	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.50	0.16	0.30	0.21	1.06	0.59	0.64	0.46	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing - PM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	144	455	459	285	75	609	921	234	355
v/c Ratio	0.44	0.76	0.76	0.38	0.55	0.84	0.82	0.86	0.37
Control Delay	32.8	49.8	50.0	5.8	70.9	52.6	19.0	81.3	37.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	49.8	50.0	5.8	70.9	52.6	19.0	81.3	37.3
Queue Length 50th (ft)	64	~428	~434	0	51	272	450	191	120
Queue Length 95th (ft)	126	#652	#658	69	m89	#354	#727	#311	173
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	466	600	602	749	222	722	1127	302	958
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.76	0.76	0.38	0.34	0.84	0.82	0.77	0.37

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA

Existing - PM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	652	384	381	961	155	429	511	671	316	224
v/c Ratio	0.52	0.77	0.73	0.32	0.62	0.68	0.47	0.83	1.09	0.24	0.32
Control Delay	72.3	52.6	61.1	33.9	1.8	69.0	43.4	32.2	93.5	28.6	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	52.6	61.1	33.9	1.8	69.0	43.4	32.2	93.5	28.6	11.5
Queue Length 50th (ft)	55	267	160	127	0	127	162	187	~358	123	64
Queue Length 95th (ft)	101	339	212	176	0	193	219	#393	#497	m190	m150
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	192	842	586	1192	1562	329	915	615	613	1298	710
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.77	0.66	0.32	0.62	0.47	0.47	0.83	1.09	0.24	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

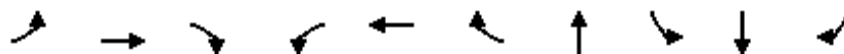
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	49	863	5	40	380	182	2	262	264	301
v/c Ratio	0.21	0.62	0.01	0.18	0.28	0.16	0.00	0.48	0.48	0.42
Control Delay	32.9	18.3	0.0	33.4	15.1	1.0	0.0	21.9	21.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	18.3	0.0	33.4	15.1	1.0	0.0	21.9	21.9	5.0
Queue Length 50th (ft)	15	122	0	13	46	0	0	74	74	0
Queue Length 95th (ft)	63	290	0	55	121	17	0	212	214	57
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	597	2547	1174	776	2689	1412	815	1118	1121	1141
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.34	0.00	0.05	0.14	0.13	0.00	0.23	0.24	0.26

Intersection Summary

Queues

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing Plus Project- AM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	77	122	110	160	1402
v/c Ratio	0.32	0.24	0.42	0.06	0.76
Control Delay	29.3	11.6	25.7	2.9	15.8
Queue Delay	0.0	0.0	0.0	0.2	0.1
Total Delay	29.3	11.6	25.7	3.1	15.9
Queue Length 50th (ft)	27	22	35	10	187
Queue Length 95th (ft)	66	53	71	18	#406
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	458	1189	1041	2776	1835
Starvation Cap Reductn	0	0	98	2037	0
Spillback Cap Reductn	0	168	0	0	22
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.12	0.12	0.22	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	69	112	13	220	995
v/c Ratio	0.27	0.49	0.08	0.08	0.52
Control Delay	28.2	34.1	30.0	2.7	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.1
Total Delay	28.2	34.1	30.0	2.7	6.5
Queue Length 50th (ft)	24	41	5	9	54
Queue Length 95th (ft)	57	85	20	20	95
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	472	422	463	3436	2860
Starvation Cap Reductn	0	0	0	0	685
Spillback Cap Reductn	0	0	0	11	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.27	0.03	0.06	0.46
Intersection Summary					

Queues

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA

Existing Plus Project- AM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	216	1227	51	77	25	157	163	49	646	375
v/c Ratio	0.59	1.08dr	0.44	0.14	0.09	0.87	0.20	0.69	1.01	0.58
Control Delay	45.9	43.0	57.7	34.8	0.7	77.1	27.3	85.5	76.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	43.0	57.7	34.8	0.7	77.1	27.3	85.5	76.5	9.6
Queue Length 50th (ft)	126	~300	30	21	0	84	34	29	~219	13
Queue Length 95th (ft)	#230	#430	73	43	0	#222	71	#116	#414	105
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	412	1263	353	804	374	219	980	71	640	645
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.97	0.14	0.10	0.07	0.72	0.17	0.69	1.01	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing Plus Project- AM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	170	389	390	66	87	192	631	277	796
v/c Ratio	0.55	0.57	0.57	0.09	0.86	0.40	0.60	0.92	0.97
Control Delay	48.6	38.2	38.2	1.2	116.6	59.3	12.4	91.7	76.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	38.2	38.2	1.2	116.6	59.3	12.4	91.7	76.5
Queue Length 50th (ft)	110	314	315	0	81	88	126	249	378
Queue Length 95th (ft)	183	441	442	7	#187	130	279	#408	#514
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	421	688	689	712	101	484	1048	316	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.57	0.57	0.09	0.86	0.40	0.60	0.88	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing Plus Project- AM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	31	701	642	348	711	84	113	291	469	1002	107
v/c Ratio	0.35	0.81	0.93	0.23	0.45	0.76	0.13	0.49	0.82	0.76	0.17
Control Delay	74.6	55.0	76.4	27.2	0.9	103.3	43.1	7.9	59.0	26.5	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	55.0	76.4	27.2	0.9	103.3	43.1	7.9	59.0	26.5	3.6
Queue Length 50th (ft)	28	303	298	110	0	77	43	0	207	351	15
Queue Length 95th (ft)	62	380	#410	153	0	#166	72	79	m241	m372	m26
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	177	870	693	1518	1569	112	847	590	637	1324	641
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.81	0.93	0.23	0.45	0.75	0.13	0.49	0.74	0.76	0.17

Intersection Summary

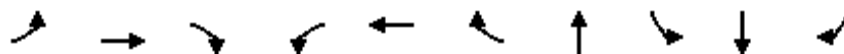
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Existing Plus Project - PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	37	666	4	15	540	358	10	163	161	199
v/c Ratio	0.14	0.43	0.01	0.06	0.39	0.30	0.02	0.32	0.31	0.32
Control Delay	26.6	12.2	0.0	28.3	13.9	1.2	0.1	16.4	16.4	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	12.2	0.0	28.3	13.9	1.2	0.1	16.4	16.4	4.8
Queue Length 50th (ft)	6	39	0	3	30	0	0	22	22	0
Queue Length 95th (ft)	48	210	0	27	173	22	0	117	116	43
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	759	2971	1350	988	3075	1480	1003	1335	1341	1284
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.00	0.02	0.18	0.24	0.01	0.12	0.12	0.15
Intersection Summary										

Queues
3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Existing Plus Project - PM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	167	194	294	558	443
v/c Ratio	0.53	0.20	0.54	0.23	0.44
Control Delay	29.9	1.7	17.5	2.1	11.7
Queue Delay	0.0	0.0	0.1	0.1	0.0
Total Delay	29.9	1.7	17.6	2.2	11.7
Queue Length 50th (ft)	48	0	51	15	31
Queue Length 95th (ft)	132	22	106	27	87
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	531	1451	1207	3448	2037
Starvation Cap Reductn	0	0	221	1205	0
Spillback Cap Reductn	0	38	0	0	5
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.14	0.30	0.25	0.22
Intersection Summary					

Queues
4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Existing Plus Project - PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	80	91	36	772	424
v/c Ratio	0.25	0.32	0.10	0.32	0.37
Control Delay	24.8	26.1	22.8	4.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	26.1	22.8	4.4	12.9
Queue Length 50th (ft)	22	25	9	42	40
Queue Length 95th (ft)	71	80	39	87	76
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	536	480	536	3503	3151
Starvation Cap Reductn	0	0	0	0	567
Spillback Cap Reductn	40	0	0	101	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.16	0.19	0.07	0.23	0.16
Intersection Summary					

Queues

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA

Existing Plus Project - PM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	315	594	57	239	79	326	551	51	274	440
v/c Ratio	0.91	0.51	0.48	0.45	0.28	1.08	0.59	0.74	0.53	0.66
Control Delay	71.0	15.4	59.7	40.1	11.0	110.9	34.6	94.3	40.0	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	15.4	59.7	40.1	11.0	110.9	34.6	94.3	40.0	8.8
Queue Length 50th (ft)	194	75	35	74	0	~230	154	31	81	0
Queue Length 95th (ft)	#403	134	79	111	39	#449	237	#112	138	88
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	348	1159	348	793	375	303	937	80	597	707
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.51	0.16	0.30	0.21	1.08	0.59	0.64	0.46	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Existing Plus Project - PM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	144	455	459	285	75	613	921	239	368
v/c Ratio	0.44	0.76	0.77	0.38	0.55	0.85	0.82	0.87	0.38
Control Delay	32.8	50.0	50.2	5.8	71.0	53.0	19.1	82.6	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	50.0	50.2	5.8	71.0	53.0	19.1	82.6	37.5
Queue Length 50th (ft)	64	~429	~435	0	51	273	452	195	126
Queue Length 95th (ft)	126	#652	#658	69	m89	#356	#729	#324	181
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	466	598	600	747	222	722	1124	302	963
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.76	0.77	0.38	0.34	0.85	0.82	0.79	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Existing Plus Project - PM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	67	652	384	381	963	155	430	511	678	320	227
v/c Ratio	0.53	0.77	0.73	0.32	0.62	0.68	0.47	0.83	1.11	0.25	0.32
Control Delay	72.4	52.6	61.1	33.9	1.8	69.0	43.4	32.2	97.6	28.9	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.4	52.6	61.1	33.9	1.8	69.0	43.4	32.2	97.6	28.9	11.6
Queue Length 50th (ft)	55	267	160	127	0	127	163	187	~365	125	64
Queue Length 95th (ft)	103	339	212	176	0	193	220	#393	#502	m191	m151
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	192	842	586	1190	1562	329	915	615	613	1298	712
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.77	0.66	0.32	0.62	0.47	0.47	0.83	1.11	0.25	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

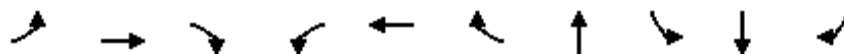
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative - AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	53	1305	11	21	526	189	11	268	269	316
v/c Ratio	0.30	0.66	0.01	0.14	0.29	0.15	0.03	0.60	0.60	0.49
Control Delay	37.1	17.3	0.0	37.1	14.1	0.9	0.2	28.6	28.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	17.3	0.0	37.1	14.1	0.9	0.2	28.6	28.6	5.7
Queue Length 50th (ft)	18	133	0	7	63	0	0	86	86	0
Queue Length 95th (ft)	66	#551	0	36	172	17	0	213	214	57
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	421	1965	933	547	2218	1393	641	827	830	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.66	0.01	0.04	0.24	0.14	0.02	0.32	0.32	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative - AM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	110	154	121	297	2044
v/c Ratio	0.49	0.32	0.57	0.11	0.96
Control Delay	51.0	22.2	47.7	2.7	31.9
Queue Delay	0.0	1.6	0.6	0.5	1.9
Total Delay	51.0	23.8	48.2	3.3	33.8
Queue Length 50th (ft)	69	58	67	21	625
Queue Length 95th (ft)	132	110	112	30	#964
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	269	669	442	2813	2124
Starvation Cap Reductn	0	0	122	2112	0
Spillback Cap Reductn	0	366	0	0	36
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.51	0.38	0.42	0.98

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA
Cumulative - AM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	71	153	24	376	1553
v/c Ratio	0.31	0.74	0.20	0.13	0.68
Control Delay	46.0	66.4	52.0	2.7	5.9
Queue Delay	0.2	0.0	0.0	0.0	4.6
Total Delay	46.1	66.4	52.0	2.7	10.5
Queue Length 50th (ft)	44	100	16	25	105
Queue Length 95th (ft)	87	168	42	35	m133
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	278	248	272	2971	2454
Starvation Cap Reductn	0	0	0	0	816
Spillback Cap Reductn	28	0	0	53	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.62	0.09	0.13	0.95

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues

Cambria Hotel TIA

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cumulative - AM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	255	1428	61	92	31	184	204	64	752	439
v/c Ratio	0.97	1.34dr	1.33	0.16	0.11	0.98	0.22	1.42	0.99	0.66
Control Delay	111.9	120.7	294.2	53.6	0.8	114.9	39.3	319.8	83.8	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.9	120.7	294.2	53.6	0.8	114.9	39.3	319.8	83.8	21.2
Queue Length 50th (ft)	252	~718	~77	41	0	180	75	~92	405	135
Queue Length 95th (ft)	#436	#861	#180	68	0	#346	111	#205	#554	263
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	262	1215	46	565	283	187	922	45	756	663
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	1.18	1.33	0.16	0.11	0.98	0.22	1.42	0.99	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative - AM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	194	396	390	71	92	255	633	429	806
v/c Ratio	0.61	0.72	0.70	0.12	0.77	0.57	0.71	0.95	0.78
Control Delay	53.3	52.0	51.3	2.2	90.6	63.3	26.3	83.3	49.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	52.0	51.3	2.2	90.6	63.3	26.3	83.3	49.8
Queue Length 50th (ft)	135	364	355	0	82	120	284	382	349
Queue Length 95th (ft)	215	#552	#538	12	m#155	167	439	#582	431
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	408	552	555	593	126	449	897	467	1028
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.72	0.70	0.12	0.73	0.57	0.71	0.92	0.78

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative - AM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	41	1011	918	500	1010	122	163	418	673	1439	163
v/c Ratio	0.45	1.19	1.28	0.34	0.64	1.40	0.20	0.66	1.14	1.05	0.25
Control Delay	79.1	142.3	180.1	29.9	2.0	282.0	43.7	13.7	131.4	72.7	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.1	142.3	180.1	29.9	2.0	282.0	43.7	13.7	131.4	72.7	5.8
Queue Length 50th (ft)	37	~572	~544	166	0	~148	63	44	~376	~767	31
Queue Length 95th (ft)	78	#710	#676	218	0	#282	95	162	#502	#909	m48
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	113	847	718	1465	1569	87	826	633	588	1365	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	1.19	1.28	0.34	0.64	1.40	0.20	0.66	1.14	1.05	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA
Cumulative - PM Peak

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	43	1022	11	11	871	398	11	162	161	226
v/c Ratio	0.20	0.52	0.01	0.06	0.52	0.32	0.02	0.38	0.37	0.40
Control Delay	33.1	12.0	0.0	34.6	15.2	1.2	0.1	23.0	22.9	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.1	12.0	0.0	34.6	15.2	1.2	0.1	23.0	22.9	5.9
Queue Length 50th (ft)	13	75	0	3	102	1	0	46	46	0
Queue Length 95th (ft)	58	344	0	24	296	25	0	133	133	51
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	563	2606	1198	732	2735	1462	815	1106	1112	1107
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.39	0.01	0.02	0.32	0.27	0.01	0.15	0.14	0.20
Intersection Summary										

Queues
3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative - PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	240	240	354	896	719
v/c Ratio	0.65	0.24	0.65	0.36	0.61
Control Delay	41.0	2.7	26.2	2.3	17.8
Queue Delay	0.0	0.1	7.1	0.0	0.0
Total Delay	41.0	2.7	33.4	2.3	17.8
Queue Length 50th (ft)	112	3	91	29	111
Queue Length 95th (ft)	#245	40	245	38	163
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	368	1039	605	3594	2778
Starvation Cap Reductn	0	0	202	807	0
Spillback Cap Reductn	0	123	0	0	19
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.26	0.88	0.32	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Cumulative - PM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	94	146	52	1156	666
v/c Ratio	0.25	0.44	0.14	0.46	0.48
Control Delay	31.6	35.0	30.3	6.0	12.4
Queue Delay	0.7	0.0	0.0	0.0	0.0
Total Delay	32.3	35.0	30.3	6.0	12.4
Queue Length 50th (ft)	40	65	22	112	71
Queue Length 95th (ft)	93	137	58	143	99
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	372	333	372	3610	3249
Starvation Cap Reductn	0	0	0	0	673
Spillback Cap Reductn	115	0	0	425	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.44	0.14	0.36	0.26
Intersection Summary					

Queues

Cambria Hotel TIA

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cumulative - PM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	391	761	76	304	98	446	684	57	356	543
v/c Ratio	1.44	0.80	0.81	0.67	0.37	1.45	0.67	1.21	0.55	0.77
Control Delay	260.7	41.6	118.9	66.8	13.8	257.5	47.2	244.5	47.8	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	260.7	41.6	118.9	66.8	13.8	257.5	47.2	244.5	47.8	25.8
Queue Length 50th (ft)	~496	250	72	145	0	~568	291	~71	155	186
Queue Length 95th (ft)	#738	328	#169	197	54	#823	383	#185	223	361
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	271	1057	98	580	309	307	1027	47	647	704
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.44	0.72	0.78	0.52	0.32	1.45	0.67	1.21	0.55	0.77

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative - PM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	154	437	430	276	71	857	867	367	367
v/c Ratio	0.46	0.79	0.77	0.39	0.57	1.14	0.81	1.22	0.35
Control Delay	36.7	53.7	52.8	6.1	74.9	111.9	17.1	168.5	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	53.7	52.8	6.1	74.9	111.9	17.1	168.5	34.5
Queue Length 50th (ft)	77	~398	383	0	54	~450	453	~378	122
Queue Length 95th (ft)	141	#627	#613	70	m65	m#554	m595	#576	171
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	452	553	555	707	152	749	1068	302	1054
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.79	0.77	0.39	0.47	1.14	0.81	1.22	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative - PM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	102	949	561	551	1408	224	633	745	990	469	327
v/c Ratio	0.66	1.13	0.96	0.48	0.90	0.80	0.74	1.28	1.62	0.42	0.47
Control Delay	77.2	117.0	81.5	37.6	9.6	73.3	52.0	166.8	312.5	36.5	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.2	117.0	81.5	37.6	9.6	73.3	52.0	166.8	312.5	36.5	11.9
Queue Length 50th (ft)	84	~483	244	196	0	183	261	~610	~690	200	102
Queue Length 95th (ft)	144	#618	#357	260	0	270	331	#856	#841	260	m176
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	192	841	586	1147	1562	329	852	580	613	1126	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	1.13	0.96	0.48	0.90	0.68	0.74	1.28	1.62	0.42	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

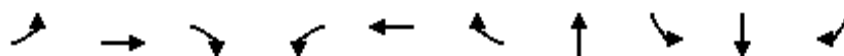
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA

Cumulative Plus Project - AM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	53	1307	14	48	526	192	11	277	278	318
v/c Ratio	0.31	0.71	0.02	0.28	0.28	0.15	0.03	0.62	0.62	0.49
Control Delay	39.6	20.3	0.0	39.5	14.1	0.9	0.2	30.6	30.5	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.6	20.3	0.0	39.5	14.1	0.9	0.2	30.6	30.5	5.8
Queue Length 50th (ft)	22	231	0	20	70	0	0	114	114	0
Queue Length 95th (ft)	68	#580	0	63	172	17	0	229	229	59
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	396	1853	886	516	2091	1385	615	779	782	896
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.71	0.02	0.09	0.25	0.14	0.02	0.36	0.36	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

3: N. Main St/N Main St & Pleasant Valley Dr

Cambria Hotel TIA

Cumulative Plus Project - AM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	110	156	141	299	2053
v/c Ratio	0.47	0.31	0.61	0.11	0.98
Control Delay	50.9	22.1	47.9	3.2	37.3
Queue Delay	0.0	3.7	1.0	0.6	3.9
Total Delay	50.9	25.8	48.9	3.8	41.2
Queue Length 50th (ft)	70	59	79	26	~691
Queue Length 95th (ft)	134	112	160	37	#996
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	264	671	434	2802	2085
Starvation Cap Reductn	0	0	136	2124	0
Spillback Cap Reductn	0	429	0	0	39
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.64	0.47	0.44	1.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

4: N Main St/N. Main St & Oak Park Blvd

Cambria Hotel TIA

Cumulative Plus Project - AM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	94	167	26	376	1564
v/c Ratio	0.39	0.78	0.22	0.13	0.68
Control Delay	48.4	70.4	53.5	2.8	6.1
Queue Delay	1.2	0.0	0.0	0.0	9.7
Total Delay	49.6	70.4	53.5	2.8	15.9
Queue Length 50th (ft)	59	112	17	27	122
Queue Length 95th (ft)	110	#201	45	35	m133
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	272	243	267	2926	2417
Starvation Cap Reductn	0	0	0	0	836
Spillback Cap Reductn	69	0	0	76	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.69	0.10	0.13	0.99
Intersection Summary					
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.					
m Volume for 95th percentile queue is metered by upstream signal.					

Queues

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA

Cumulative Plus Project - AM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	257	1444	61	95	31	205	204	64	752	442
v/c Ratio	0.98	1.36dr	1.33	0.17	0.11	1.10	0.22	1.42	0.99	0.66
Control Delay	113.6	125.6	294.2	53.7	0.8	143.1	39.3	319.8	83.8	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	113.6	125.6	294.2	53.7	0.8	143.1	39.3	319.8	83.8	21.2
Queue Length 50th (ft)	254	~735	~77	42	0	~226	75	~92	405	136
Queue Length 95th (ft)	#438	#876	#180	71	0	#395	111	#205	#554	265
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	262	1216	46	565	283	187	922	45	756	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.19	1.33	0.17	0.11	1.10	0.22	1.42	0.99	0.66

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative Plus Project - AM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	194	396	390	71	92	277	633	436	823
v/c Ratio	0.61	0.72	0.70	0.12	0.77	0.63	0.71	0.96	0.80
Control Delay	53.3	52.0	51.3	2.2	90.4	65.1	26.7	84.2	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	52.0	51.3	2.2	90.4	65.1	26.7	84.2	50.6
Queue Length 50th (ft)	135	364	355	0	81	131	286	390	359
Queue Length 95th (ft)	215	#552	#538	12	m#151	181	442	#595	442
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	408	552	555	593	126	441	893	467	1028
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.72	0.70	0.12	0.73	0.63	0.71	0.93	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative Plus Project - AM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	44	1011	918	500	1022	122	169	418	684	1444	165
v/c Ratio	0.47	1.19	1.28	0.34	0.65	1.40	0.20	0.66	1.16	1.06	0.25
Control Delay	80.5	142.3	180.1	29.9	2.1	282.0	43.8	13.7	137.6	73.9	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	142.3	180.1	29.9	2.1	282.0	43.8	13.7	137.6	73.9	5.9
Queue Length 50th (ft)	40	~572	~544	167	0	~148	65	44	~387	~773	32
Queue Length 95th (ft)	81	#710	#676	218	0	#282	98	162	#514	#914	m48
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	113	847	718	1463	1569	87	826	633	588	1365	658
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	1.19	1.28	0.34	0.65	1.40	0.20	0.66	1.16	1.06	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

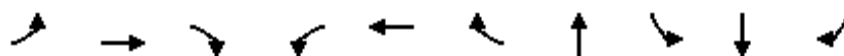
m Volume for 95th percentile queue is metered by upstream signal.

Queues

2: Pleasant Valley Dr & Oak Park Blvd

Cambria Hotel TIA

Cumulative Plus Project - PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	43	1025	12	17	871	398	11	170	167	228
v/c Ratio	0.20	0.53	0.01	0.09	0.52	0.32	0.02	0.39	0.38	0.40
Control Delay	33.5	12.4	0.0	34.8	15.4	1.2	0.1	23.1	23.0	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	12.4	0.0	34.8	15.4	1.2	0.1	23.1	23.0	5.8
Queue Length 50th (ft)	13	76	0	5	104	1	0	49	48	0
Queue Length 95th (ft)	58	350	0	31	296	25	0	141	137	51
Internal Link Dist (ft)		248			891		790		468	
Turn Bay Length (ft)	75		50	90		125		100		
Base Capacity (vph)	554	2575	1186	721	2715	1458	803	1089	1095	1094
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.40	0.01	0.02	0.32	0.27	0.01	0.16	0.15	0.21

Intersection Summary

Queues
3: N Main St & Pleasant Valley Dr

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	240	240	370	898	721
v/c Ratio	0.66	0.24	0.66	0.36	0.61
Control Delay	42.0	2.7	26.5	2.6	18.3
Queue Delay	0.0	0.1	11.0	0.0	0.0
Total Delay	42.0	2.7	37.5	2.6	18.3
Queue Length 50th (ft)	112	3	97	32	112
Queue Length 95th (ft)	#244	40	274	43	164
Internal Link Dist (ft)	468			95	591
Turn Bay Length (ft)		90			
Base Capacity (vph)	362	1025	594	3610	2736
Starvation Cap Reductn	0	0	195	826	0
Spillback Cap Reductn	0	122	0	0	19
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.27	0.93	0.32	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: N Main St & Oak Park Blvd.

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

					
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	111	152	53	1156	668
v/c Ratio	0.30	0.46	0.15	0.46	0.47
Control Delay	32.4	35.8	30.5	5.9	12.1
Queue Delay	1.1	0.0	0.0	0.0	0.0
Total Delay	33.5	35.8	30.5	5.9	12.2
Queue Length 50th (ft)	48	68	22	112	71
Queue Length 95th (ft)	106	143	59	143	99
Internal Link Dist (ft)	98			205	95
Turn Bay Length (ft)		120	100		
Base Capacity (vph)	366	327	366	3600	3225
Starvation Cap Reductn	0	0	0	0	672
Spillback Cap Reductn	115	0	0	437	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.46	0.14	0.37	0.26
Intersection Summary					

Queues

5: Oak Rd/Buskirk Ave & Oak Park Blvd/Coggins Dr

Cambria Hotel TIA

Cumulative Plus Project - PM Peak



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	393	775	76	305	98	450	684	57	356	545
v/c Ratio	1.45	0.81	0.81	0.66	0.37	1.47	0.67	1.21	0.55	0.78
Control Delay	264.1	42.4	119.4	66.6	13.8	263.3	47.3	246.5	47.9	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	264.1	42.4	119.4	66.6	13.8	263.3	47.3	246.5	47.9	26.3
Queue Length 50th (ft)	~500	257	72	145	0	~576	291	~71	155	189
Queue Length 95th (ft)	#744	337	#169	197	54	#833	383	#185	223	366
Internal Link Dist (ft)		891		618			237		714	
Turn Bay Length (ft)	500		165		135	150		125		170
Base Capacity (vph)	271	1056	98	580	308	307	1026	47	647	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.73	0.78	0.53	0.32	1.47	0.67	1.21	0.55	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
7: N Main St & Sunnyvale Ave

Cambria Hotel TIA
Cumulative Plus Project - PM Peak



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	154	437	430	276	71	861	867	372	380
v/c Ratio	0.46	0.79	0.77	0.39	0.57	1.15	0.81	1.23	0.36
Control Delay	36.7	53.7	52.8	6.1	75.0	113.9	17.0	174.4	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	53.7	52.8	6.1	75.0	113.9	17.0	174.4	34.8
Queue Length 50th (ft)	77	~398	383	0	54	~454	452	~387	127
Queue Length 95th (ft)	141	#627	#613	70	m64	m#556	m593	#584	177
Internal Link Dist (ft)	557		396			824			839
Turn Bay Length (ft)				370	130			340	
Base Capacity (vph)	452	553	555	707	152	749	1068	302	1055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.79	0.77	0.39	0.47	1.15	0.81	1.23	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

8: N Main St & Geary Rd/Treat Blvd

Cambria Hotel TIA
Cumulative Plus Project - PM Peak

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	103	949	561	551	1410	224	634	745	996	473	329
v/c Ratio	0.66	1.13	0.96	0.48	0.90	0.80	0.74	1.28	1.62	0.42	0.47
Control Delay	77.6	117.0	81.5	37.7	9.7	73.3	52.1	166.8	316.7	36.7	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.6	117.0	81.5	37.7	9.7	73.3	52.1	166.8	316.7	36.7	12.1
Queue Length 50th (ft)	85	~483	244	196	0	183	262	~610	~697	202	102
Queue Length 95th (ft)	145	#618	#357	260	0	270	332	#856	#847	263	m178
Internal Link Dist (ft)		761		622			833			824	
Turn Bay Length (ft)	200		250			250		100	190		125
Base Capacity (vph)	192	841	586	1146	1562	329	852	580	613	1126	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	1.13	0.96	0.48	0.90	0.68	0.74	1.28	1.62	0.42	0.47

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Appendix C: Signal Warrants

Major Street Oak Park Boulevard
 Minor Street Via Del Sol

Project Cambria Hotel
 Scenario Cumulative Plus Project Conditions
 Peak Hour Weekday AM

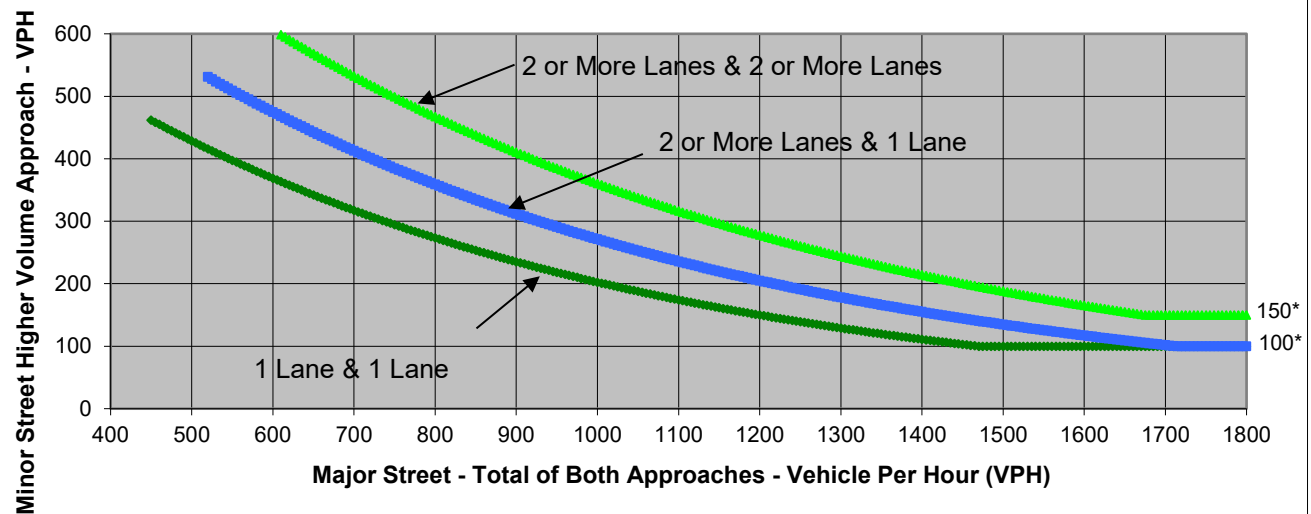
Turn Movement Volumes

	NB	SB	EB	WB
Left	10	0	0	10
Through	0	0	1,143	882
Right	32	0	30	0
Total	42	0	1,173	892

Major Street Direction

	North/South
x	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Boulevard	Via Del Sol	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	2,065	42	

* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.
 Traffic Volume for Minor Street is the Volume of High Volume Approach.

Major Street Oak Park Boulevard
 Minor Street Via Del Sol

Project Cambria Hotel
 Scenario Cumulative Plus Project Conditions
 Peak Hour Weekday PM

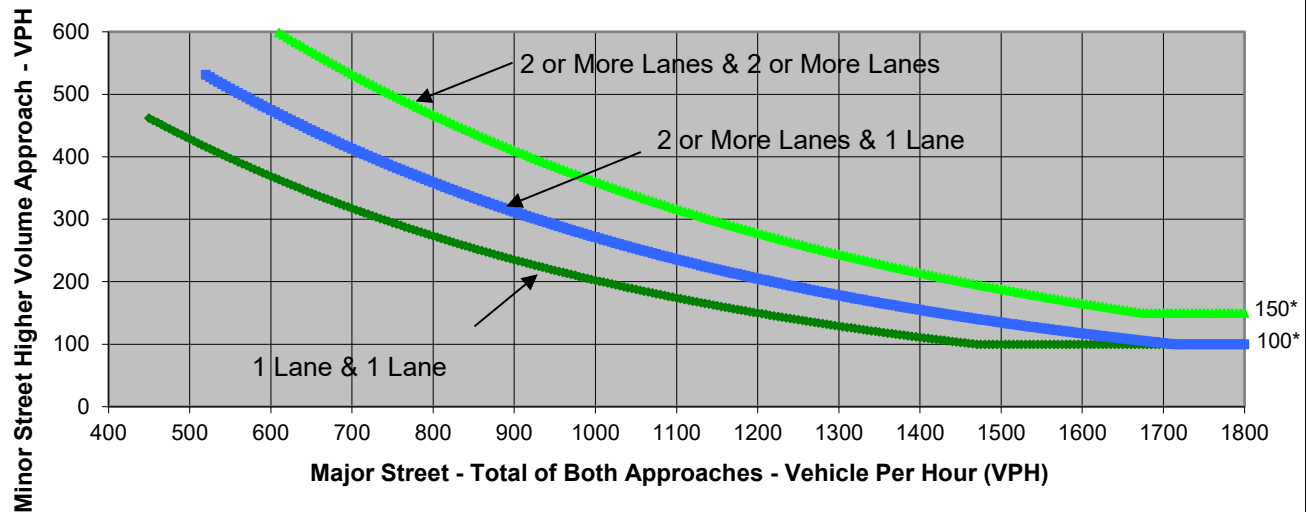
Turn Movement Volumes

	NB	SB	EB	WB
Left	30	0	0	10
Through	0	0	911	1,002
Right	23	0	20	0
Total	53	0	931	1,012

Major Street Direction

	North/South
x	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Oak Park Boulevard	Via Del Sol	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	1,943	53	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Major Street N Main Street
 Minor Street Sun Valley Drive

Project Cambria Hotel
 Scenario Cumulative Plus Project Conditions
 Peak Hour Weekday AM

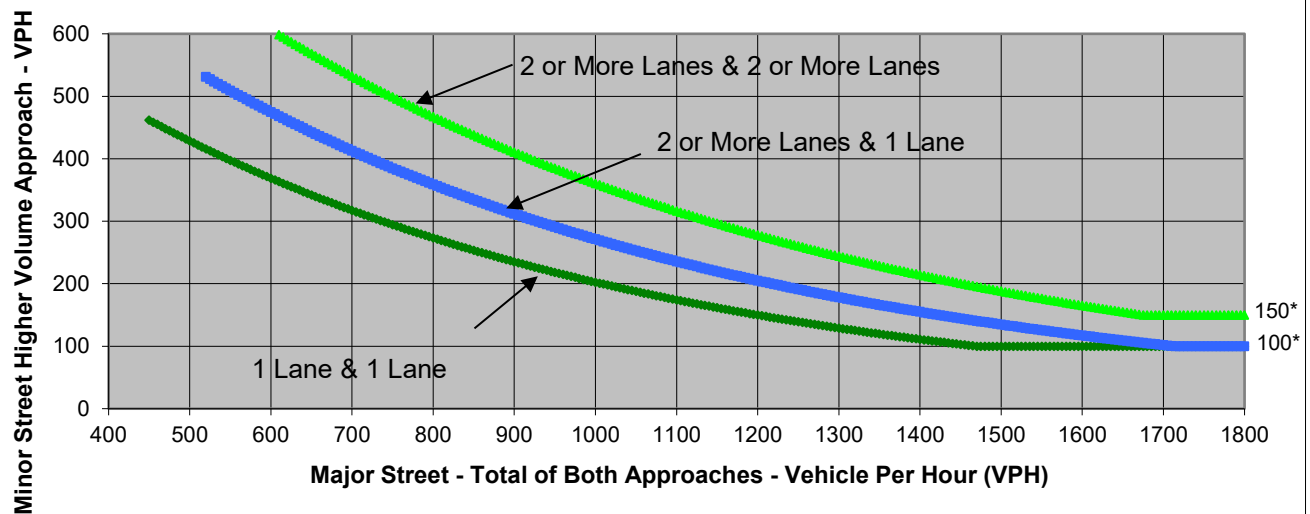
Turn Movement Volumes

	NB	SB	EB	WB
Left	50	0	10	0
Through	351	1,444	0	0
Right	0	22	50	0
Total	401	1,466	60	0

Major Street Direction

x	North/South
	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	N Main Street	Sun Valley Drive	
Number of Approach Lanes	2	1	<u>NO</u>
Traffic Volume (VPH) *	1,867	60	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Major Street N Main Street
Minor Street Sun Valley Drive

Project Cambria Hotel
Scenario Cumulative Plus Project Conditions
Peak Hour Weekday PM

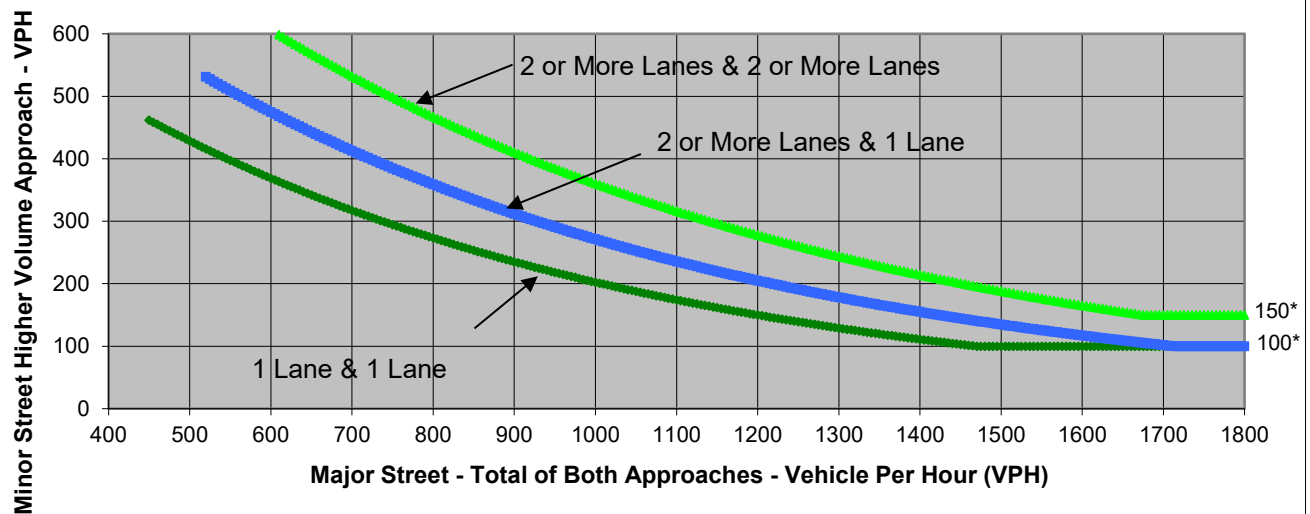
Turn Movement Volumes

	NB	SB	EB	WB
Left	80	0	10	0
Through	1,154	777	0	0
Right	0	13	30	0
Total	1,234	790	40	0

Major Street Direction

x	North/South
	East/West

Warrant 3B, Peak Hour

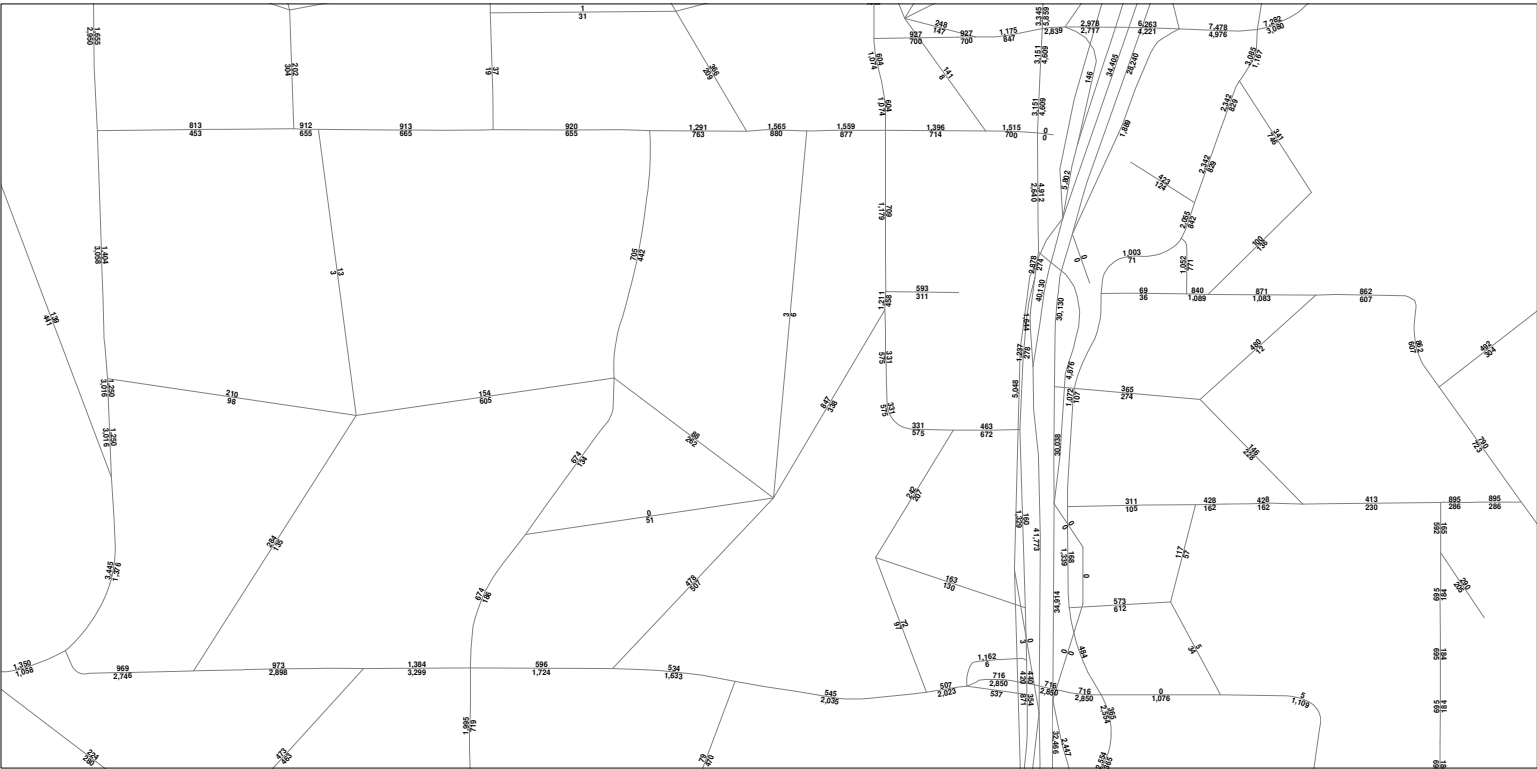


* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

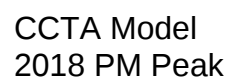
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014

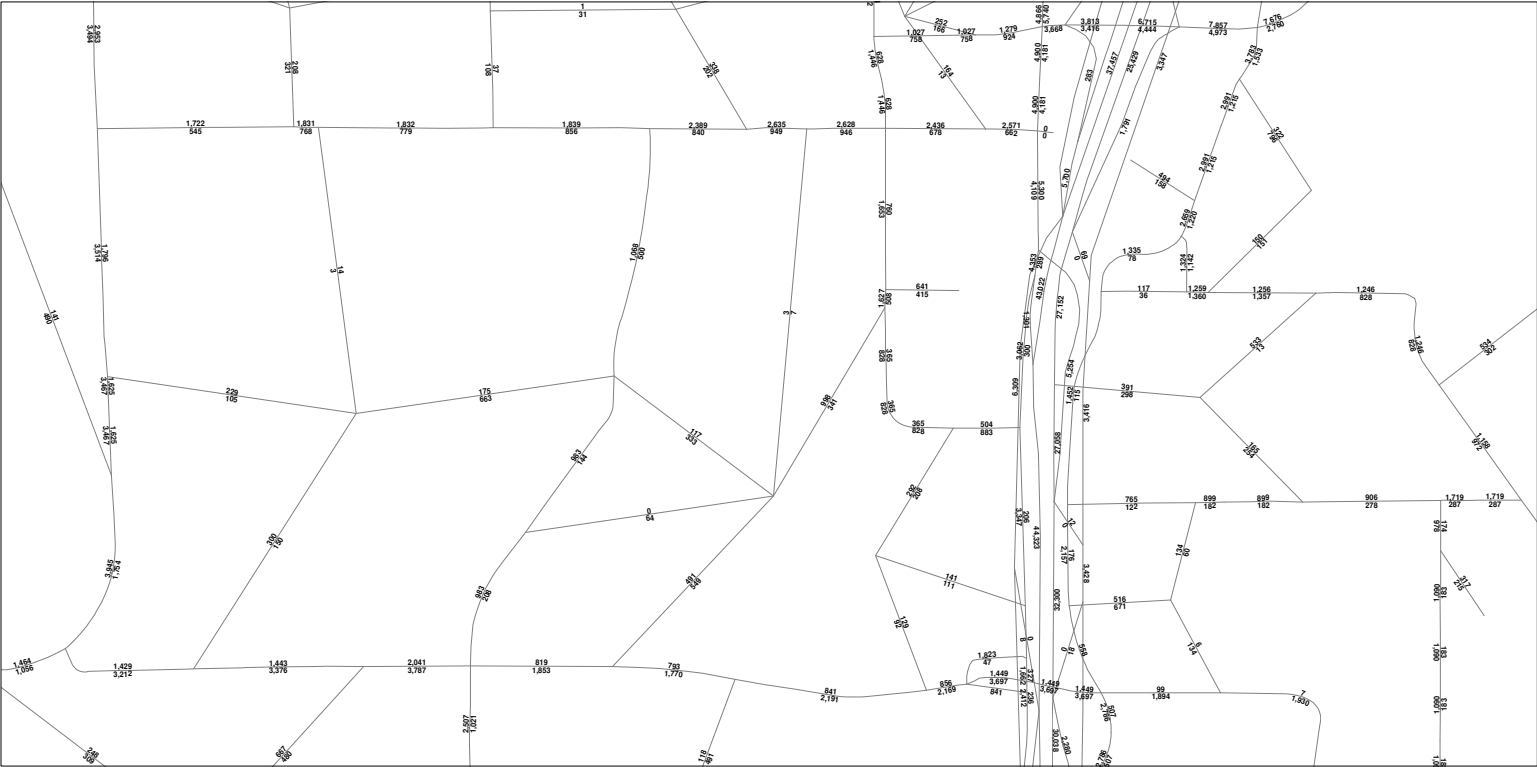
	Major Street	Minor Street	Warrant Met
	N Main Street	Sun Valley Drive	
Number of Approach Lanes	2	1	<u>NO</u>
Traffic Volume (VPH) *	2,024	40	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Appendix D: Model Plots

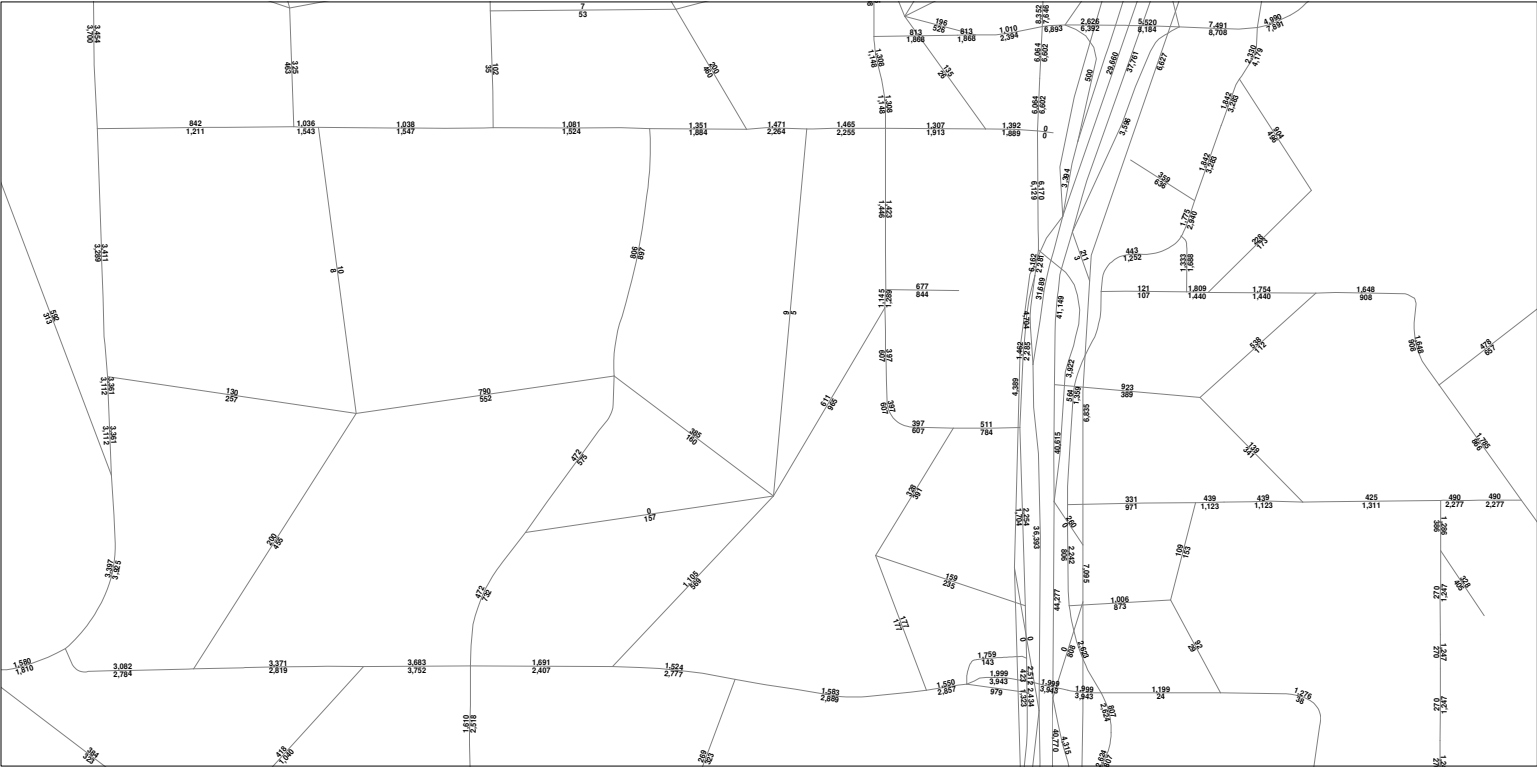


CCTA Model
2018 AM Peak

CCTA Model
2018 PM Peak



CCTA Model
2040 AM Peak



CCTA Model
2040 PM Peak

Appendix E: Approved Project Trip Generation

Appendix E
Cambria Hotel
Approved and Pending Projects Trip Generation

1. Oak Park/Monticello Specific Plan

Land Use	ITE Code	Units	Daily	AM Peak Hour (8 to 9 AM)			PM Peak Hour (5 to 6 PM)		
				In	Out	Total	In	Out	Total
New Library	590	25,000	1,810	24	21	45	98	106	204
Existing Library			-1,500	-24	-21	-45	-93	-77	-170
Sports Park	488	2	190	2	2	4	17	33	50
Accessory Dwelling Units	220	7	60	0	4	4	3	1	4
Single-Family Homes	210	34	390	7	22	29	23	14	37
Total			950	9	28	37	48	77	125

2. Day Care center at the intersection of Boyd Road at Kahrs Avenue

Land Use	ITE Code	Units	Daily	AM Peak Hour (8 to 9 AM)			PM Peak Hour (5 to 6 PM)		
				In	Out	Total	In	Out	Total
Preschool/Day Care	565	72	290	30	26	56	27	30	57

3. Fountainhead Day Care Center

Land Use	ITE Code	Units	Daily	AM Peak Hour (8 to 9 AM)			PM Peak Hour (5 to 6 PM)		
				In	Out	Total	In	Out	Total
Preschool/Day Care	565	72	290	30	26	56	27	30	57

4. Housing Element Opportunity Site on Cleaveland

Land Use	ITE Code	Units	Daily	AM Peak Hour (8 to 9 AM)			PM Peak Hour (5 to 6 PM)		
				In	Out	Total	In	Out	Total
Multi-Family Housing	220	200	1,630	21	71	92	75	65	140

5. 85 Cleaveland

Land Use	ITE Code	Units	Daily	AM Peak Hour (8 to 9 AM)			PM Peak Hour (5 to 6 PM)		
				In	Out	Total	In	Out	Total
Multi-Family Housing	220	221	1,800	23	79	102	83	72	155