

APPENDIX C
TRAFFIC STUDY

Traffic Impact Study

Proposed Guardian – Sunmaid Annexation

Kingsburg, California

Prepared For:

City of Kingsburg
1401 Draper Street
Kingsburg, California 93636

Date:

October 26, 2011

Job No.:

08-003.10



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EXECUTIVE SUMMARY

This report presents the results of a traffic impact study for a proposed annexation of land into the City of Kingsburg, California. The analysis in the report identifies the anticipated effect of vehicle traffic resulting from the annexation. This report replaces previous traffic impact study reports for the annexation dated October 10, 2006 and September 18, 2009.

The Guardian/Sun-Maid Reorganization ("Project") consists of annexation of approximately 430 acres of primarily developed land (collectively "Territory") into the City of Kingsburg, annexation of portions of the Territory into the Selma-Kingsburg-Fowler County Sanitation District ("S-K-F"), and detachment of the Territory from the Fresno County Fire Protection District, Consolidated Irrigation District, and Kings River Conservation District. Portions of the Territory are already within S-K-F boundaries.

The Territory is roughly triangular in shape, is located along the north City limits, and is generally bounded by Mountain View Avenue on the north, Bethel Avenue on the east, and the State Route (SR) 99 freeway along the south and west. The Territory is also bisected by Golden State Boulevard and the Union Pacific Railroad that run parallel to SR 99.

The majority of the Territory, approximately 350 acres, is developed with industrial/commercial uses. Approximately 52 acres are undeveloped and the remainder consists of street rights of way. The Territory is currently within Fresno County's jurisdiction and zoned a mixture of M1 (Light Manufacturing) and M3 (Heavy Manufacturing), and approximately 21 acres are zoned AE-20. The two parcels zone as AE-20 are currently developed as industrial uses. The Territory is designated in the Kingsburg General Plan as Heavy Industrial east of the railroad, excluding a 2.35-acre parcel that is designated as Highway Commercial. The area between the railroad and SR 99 is designated as Highway Commercial and Light Industrial. A Site Vicinity Map is presented in Figure 1 following the text of this report.

The Project does not propose construction of new structures or improvements, but is simply an annexation of land into the City of Kingsburg. The provision of municipal services resulting from annexation, particularly water and sewer services, will allow unimproved or underutilized portions of the Territory to be developed in the manner described in the North Kingsburg Specific Plan, including construction of Academy Parkway. The traffic expected to be generated within the North Kingsburg Specific Plan area has already been planned for, and this traffic study does not propose amendments to any previously adopted land use plans.

EXECUTIVE SUMMARY (Continued)

The year 2035 was selected for this report as the cumulative analysis year in order to analyze the cumulative impacts of development within the Territory in conjunction with implementation of the Selma General Plan Update, which updates the Selma General Plan to the year 2035, and to maintain a minimum 20-year planning horizon. For purposes of the 2035 analyses it is estimated that the following new development may occur within the Territory after annexation:

- approximately 40 acres of commercial land uses southwest of the intersection of Mountain View Avenue and Golden State Boulevard;
- approximately 2.35 acres of commercial land uses southeast of the intersection of Mountain View Avenue and Golden State Boulevard;
- approximately 15 acres of heavy industrial land uses southwest of the intersection of Mountain View Avenue and Bethel Avenue; and
- approximately 91 acres of light industrial land uses between Golden State Boulevard and SR 99, north of Kamm Avenue.

The remainder of the Territory is already developed and it is assumed that the type of development will remain the same through the year 2035.

An Environmental Impact Report was prepared for the City of Kingsburg General Plan Amendment 2004-01, North Kingsburg Specific Plan Pre-Zoning, Sphere of Influence Boundary Changes, and Future Annexations (State Clearinghouse No. 2002001042). The Environmental Impact Report included a study of traffic impacts in the vicinity of the Territory and included analysis of Academy Parkway.

This report includes analysis of the following intersections:

1. Mountain View Avenue / SR 99 southbound off ramp;
2. Mountain View Avenue / SR 99 southbound on ramp;
3. Mountain View Avenue / SR 99 northbound on ramp;
4. Mountain View Avenue / SR 99 northbound off ramp;
5. Mountain View Avenue / Golden State Boulevard;
6. Mountain View Avenue / Academy Avenue;
7. Golden State Boulevard / Amber Avenue;
8. Kamm Avenue / Bethel Avenue;
9. Kamm Avenue / Academy Avenue;
10. Golden State Boulevard / Bethel Avenue;
11. Bethel Avenue / SR 99 northbound on ramp;
12. Bethel Avenue / SR 99 northbound off ramp;
13. Bethel Avenue / Parkway Drive (SR 99 southbound ramps); and
14. Bethel Avenue / Mountain View Avenue.

EXECUTIVE SUMMARY (Continued)

This report also includes analysis of the following road segments:

1. Mountain View Avenue between the SR 99 southbound ramps and SR 99 northbound ramps;
2. Mountain View Avenue between the SR 99 northbound ramps and Golden State Boulevard;
3. Mountain View Avenue between Golden State Boulevard and Bethel Avenue;
4. Mountain View Avenue between Bethel Avenue and Academy Avenue;
5. Golden State Boulevard between Bethel Avenue and Amber Avenue;
6. Golden State Boulevard between Amber Avenue and Mountain View Avenue; and
7. Kamm Avenue between Academy Avenue and Bethel Avenue (Academy Parkway in the future).

The study time periods include the weekday a.m. and p.m. peak hours determined between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. The peak hours were analyzed for the following conditions:

- Existing Conditions;
- Cumulative (Year 2035) Conditions Without Project; and
- Cumulative (Year 2035) Conditions With Project.

The most prominent pending project in the vicinity of the Territory is the proposed Selma Crossings project. The Selma Crossings site is comprised of approximately 307 acres located northeast, northwest, and southwest of the Mountain View Avenue / SR 99 interchange. The Selma Crossings project is expected to include the following uses (collectively “Selma Crossings Land Uses”):

- Retail: 2,092,203 square feet
- Office Park: 540,000 square feet
- Residential: 252,000 square feet (250 dwelling units)
- Auto Mall: 400,000 square feet (ten 3.6-acre parcels)
- Hotels (2): 155,000 square feet (three stories)
- Water Park: 10,000 square feet

The City of Selma has adopted a 2035 General Plan Update. The Selma General Plan land use map identifies the Selma Crossings land uses on the approximate 307 acres that make up the Selma Crossings Project.

The City of Kingsburg shall initiate the preparation of a traffic impact fee study for the purpose of analyzing the impacts of contemplated future development on City-wide traffic facilities along with an analysis of the need for new traffic facilities required by new development in the City, including new development in the Territory. The impact fee study will also identify the relationship between new development and the needed traffic facilities and will identify the estimated cost of the needed traffic facilities. The study shall be completed within one year of City approval of the proposed annexation. The traffic impact fee study shall be completed and presented to the Kingsburg City Council along with a recommended change in the traffic impact fee portion of the City’s Capital Facilities Fees. After review and consideration of the traffic impact fee study and recommended change in

EXECUTIVE SUMMARY (Continued)

the traffic impact fee portion of the City's Capital Facilities Fee by the City Council and affected parties, it is anticipated that the City Council will consider the adoption of an ordinance amending the traffic impact fee portion of the City's Capital Facilities Fees (Chapter 15.48 of the Kingsburg Municipal Code) and adoption of a resolution establishing new traffic impact fees as part of the City's Capital Facilities Fees.

Conclusions of this traffic impact study are described below according to the various analysis scenarios.

Existing Conditions

The results of the existing-conditions analyses indicate that the study intersections and road segments are currently operating at acceptable levels of service, with the exception of the intersection of Mountain View Avenue and the SR 99 southbound off ramp. The intersection of Mountain View Avenue and the SR 99 southbound off ramp is currently operating at LOS D during the p.m. peak hour, but peak-hour traffic signal warrants are not satisfied.

Year 2035 Cumulative-Without-Project Conditions

The year 2035 cumulative-without-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue;
- Golden State Boulevard between Amber Avenue and Mountain View Avenue; and
- Kamm Avenue between Academy Avenue and Bethel Avenue.

Year 2035 Cumulative-With-Project Conditions

The year 2035 cumulative-with-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue; and
- Golden State Boulevard between Amber Avenue and Mountain View Avenue.

Development projects proposed to be constructed in the Territory will be required to analyze their project-specific traffic impacts on a project-by-project basis and will be responsible for mitigating the project-specific traffic impacts. Such mitigation measures may take the form of construction of the required improvements and/or payment into a traffic impact fee program established to fund future construction of the improvements. Any proposed development project to be located in the Territory which generates 100 or more trips per day (combined total entering and exiting the site) shall be required to perform a traffic impact study to determine the current levels of service and the anticipated impacts of the project on the adjacent roadways and intersections.

Generally-accepted traffic engineering principles and methods were employed to analyze the existing conditions in the Territory and to estimate the traffic conditions expected to occur in

EXECUTIVE SUMMARY (Continued)

the Territory in the future as development occurs in the Territory and in the vicinity of the Territory. The annexation of the Territory does not currently generate new traffic in the Territory or in the vicinity of the Territory and no traffic-generating projects are currently proposed to be developed in the Territory. Future development in the Territory will be subject to the North Kingsburg Specific Plan. Future development projects within the Territory will be required to analyze their project-specific traffic impacts. Depending upon the impacts, each development project may be required to construct or contribute to the construction of improvements as described in this report. Also, future development projects may be required to pay traffic impact fees in order to assist in the funding of construction of improvements described in this report.



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October 26, 2011

Subject: Traffic Impact Study
Proposed North Kingsburg Annexation
Kingsburg, California

INTRODUCTION

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underutilized portions of the Territory to be developed in the manner described in the North Kingsburg Specific Plan, including construction of Academy Parkway. The traffic expected to be generated within the North Kingsburg Specific Plan area has already been planned for, and this traffic study does not propose amendments to any previously adopted land use plans.

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PREVIOUS STUDIES

An Environmental Impact Report was prepared for the City of Kingsburg General Plan Amendment 2004-01, North Kingsburg Specific Plan Pre-Zoning, Sphere of Influence Boundary Changes, and Future Annexations (State Clearinghouse No. 2002001042). The report included a study of traffic impacts in the vicinity of the Territory and included analysis of Academy Parkway.

As described above, Peters Engineering Group previously prepared traffic impact studies for the annexation and presented the results in reports dated October 10, 2006 and September 18, 2009. The age of the reports and subsequent development proposals in the vicinity of the Project site render the previous reports no longer applicable.

STUDY AREA AND TIME PERIOD

This report includes analysis of the following intersections:

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2. Mountain View Avenue / SR 99 southbound on ramp;
3. Mountain View Avenue / SR 99 northbound on ramp;
4. Mountain View Avenue / SR 99 northbound off ramp;
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9. Kamm Avenue / Academy Avenue;
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11. Bethel Avenue / SR 99 northbound on ramp;
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This report also includes analysis of the following road segments:

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- Existing Conditions;
- Cumulative (Year 2035) Conditions Without Project; and
- Cumulative (Year 2035) Conditions With Project.

The year 2035 was established as the cumulative analysis year primarily to analyze the cumulative impacts of development within the Territory within a minimum 20-year planning horizon including implementation of the 2035 Selma General Plan Update described later in this report.

LANE CONFIGURATIONS AND TRAFFIC CONTROL

The existing lane configurations and intersection control are presented in Figure 2 of this report. For purposes of this study, it is assumed that the existing lane configurations will be

maintained through the year 2035. This approach is the most conservative and best approach because it does not require speculation as to funding and completion of planned or programmed improvements. However, for purposes of this report it is assumed that Academy Parkway and other roadway alignments within the North Kingsburg Specific Plan area will be constructed by projects that would occur as a result of the proposed annexation by the year 2035.

PENDING PROJECTS

The most prominent pending project in the vicinity of the Territory is the proposed Selma Crossings project. The Selma Crossings site is comprised of approximately 307 acres located northeast, northwest, and southwest of the Mountain View Avenue / SR 99 interchange. The Selma Crossings project is expected to include the following uses (collectively “Selma Crossings Land Uses”):

| | |
|--------------|--|
| Retail: | 2,092,203 square feet |
| Office Park: | 540,000 square feet |
| Residential: | 252,000 square feet (250 dwelling units) |
| Auto Mall: | 400,000 square feet (ten 3.6-acre parcels) |
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| Water Park: | 10,000 square feet |

The City of Selma has adopted a 2035 General Plan Update. The Selma General Plan land use map identifies the Selma Crossings land uses on the approximate 307 acres that make up the Selma Crossings Project.

CONCEPTUAL REGIONAL TRANSPORTATION PROJECTS AND STUDIES

Several transportation projects of regional importance are in various stages of conceptual study but have not yet been planned or funded and are therefore not assumed to be in place in the 2035 scenarios analyzed in this study. The following is provided for informational purposes. The Metro Rural Loop is a conceptual idea to link the various cities located within the Fresno-Madera Metropolitan Area by a multi-modal transportation corridor. The Metro Rural Loop considers various highway alternatives providing connectivity in a generally circular pattern around the Fresno metropolitan area. The proposed alignments are not expected to be located within the Project study area.

The California High Speed Rail project includes alternatives that pass through Selma. However, these alternatives have been determined to be incompatible with the selected full-length alignment alternative (www.cahighspeedrail.ca.gov). Therefore, it is not anticipated that the high-speed rail alignment would be located within the Project study area.

The Council of Fresno County Governments (COG) commissioned an engineering study to determine the current and future deficiencies on freeway segments and selected interchanges in the Fresno County and Madera County area and to identify interchange improvements expected to be required to achieve level of service D in the year 2030. The study included the Mountain View Avenue / SR 99 interchange but did not include the Bethel Avenue / SR 99 interchange. The Fresno-Madera Metropolitan Freeway/Interchange Deficiency Study Phase II dated November 24, 2008 by Fehr & Peers (Freeway Deficiency Study) concluded that the

Mountain View Avenue / SR 99 interchange will be deficient by the year 2030 and will require, at a minimum, realignment of the ramps, installation of traffic signals at both the northbound and southbound ramps with permissive left turns, and construction of separate left-turn and right-turn lanes on the southbound off ramp. These interchange improvements are not yet funded or included in a funding program.

MEASURE C

The following is provided for informational purposes. The 2006 Measure C Extension Plan includes a half-cent sales tax throughout Fresno County for a 20-year extension period to fund freeway extensions, improve roads, and enhance public safety. Information related to Measure C can be found on the Measure C web site (www.measurec.com). Funding for the Regional Transportation Program Extension Projects comes from three sources:

- 50 percent from Measure C;
- 20 percent from the State Transportation Improvement Program (STIP); and
- 30 percent from the Regional Transportation Impact Fee Program (RTMF).

The proposed RTMF Program is summarized in a report entitled Fresno Regional Transportation Mitigation Fee Final Report dated August 2008 by PB Americas, Inc.

The projects included in the Measure C Extension within the Project study area are:

- Rural Project F: Golden State Boulevard, American Avenue to Tulare County Line. A Tier 1 Rural Project to study and design improvements to Golden State Boulevard in the short term. The construction phase is to be programmed in the Mid- or Long-Term Program). Studies are underway but designs have not been established.
- Rural Project I: Mountain View Avenue, Bethel Avenue to Tulare County Line. A Tier 1 Rural Project to widen Mountain View Avenue to a four-lane divided highway. The project is funded and is currently in the design phase. Right of way acquisition will be required. The construction phase is currently scheduled to begin in 2013 and end in 2014.

To maintain a conservative analysis and identify all potentially significant impacts, the Measure C projects within the study area are not assumed to be in place in the 2035 scenarios analyzed in this study.

TRIP GENERATION

Data provided in the Institute of Transportation Engineers (ITE) *Trip Generation, 8th Edition*, were used to estimate the number of trips anticipated to be generated by development within the proposed Territory. General development assumptions are based on the land use map in the North Kingsburg Specific Plan. It is noted that these assumptions do not include actual projects, as there are no currently pending development proposals to be located within the Territory. Table 1 below presents the trip generation information. Pass-by, diverted-linked, and captured-trip reductions were not applied to the calculated trips.

Table 1
Trip Generation

| Land Use | ITE Code | Units | A.M. Peak Hour Traffic Volumes | | | P.M. Peak Hour Traffic Volumes | | | Weekday Traffic Volumes | |
|-----------------------|----------|-----------------|--------------------------------|------------|------------|--------------------------------|------------|--------------|-------------------------|---------------|
| | | | Rate Split | Enter | Exit | Rate Split | Enter | Exit | Rate | Total |
| Commercial | 820 | 435,602 sq. ft. | 1.00 61/39 | 266 | 170 | 3.73 49/51 | 796 | 829 | 42.94 | 18,705 |
| Commercial | 820 | 25,592 sq. ft. | 1.00 61/39 | 16 | 10 | 3.73 49/51 | 47 | 49 | 42.94 | 1,099 |
| Heavy Industrial | 120 | 15 ac | 1.98 83/17 | 25 | 5 | 2.16 22/78 | 7 | 25 | 6.75 | 101 |
| Light Industrial | 110 | 91 ac | 7.51 83/17 | 568 | 116 | 7.26 22/78 | 146 | 515 | 51.80 | 4,714 |
| Existing Developments | - | 250 ac | - | 0 | 0 | - | 0 | 0 | - | 0 |
| Totals | | ±400 ac | - | 875 | 301 | - | 996 | 1,418 | - | 24,619 |

Reference: *Trip Generation, 8th Edition*, Institute of Transportation Engineers 2008

ac = acres sq. ft. = square feet

Rates are reported in trips per acre for industrial uses and trips per square foot of building area for commercial uses. Commercial assumes 25 percent floor area ratio within the total number of acres reported.

Splits are reported as Entering/Exiting as a percentage of the total

ITE does not provide splits for Code 120; therefore, the splits were assumed to be the same as Code 110.

The traffic volumes associated with the existing developments in the Territory are included in the existing traffic counts and are not estimated in Table 1.

EXISTING TRAFFIC VOLUMES

Existing peak-hour traffic volumes were determined by performing manual turning-movement counts at the study intersections between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. The existing peak-hour turning movement volumes are presented in Figure 3 of this report.

CUMULATIVE YEAR 2035 TRAFFIC VOLUMES

COG maintains a travel model that is typically used to estimate cumulative traffic volumes. COG recently performed traffic modeling for Peters Engineering Group that included the proposed year 2035 Selma General Plan (which identifies the Selma Crossings land uses on the approximate 300 acres that make up the Selma Crossings Project) and the land uses within the Territory. Cumulative traffic volumes for the year 2035 were determined using the COG Increment Method, which is described in a document available from the COG entitled "*Model Steering Committee Recommended Procedures for Using Traffic Projections from the Fresno COG Travel Model dated December 2002*". In general, the Increment Method projects future traffic volumes by determining the growth projected by the model between the base year and the horizon year. This growth is then added to the existing traffic volumes.

Cumulative (year 2035) turning movements were projected based on the methods presented in Chapter 8 of the Transportation Research Board National Cooperative Highway Research Program Report 255 entitled "*Highway Traffic Data for Urbanized Area Project Planning*

and Design.” The cumulative year 2035 traffic volumes without the Project are presented in Figure 4 of this report and assume development of the Territory as County projects with no modification of the road network. Cumulative year 2035 traffic volumes with the Project are presented in Figure 5 of this report and assume development of the Territory in accordance with the North Kingsburg Specific Plan. The COG travel model data output is presented in Appendix A attached to this report.

SIGNIFICANCE CRITERIA

The Transportation Research Board *Highway Capacity Manual*, 2000, (HCM) defines level of service (LOS) as a qualitative measure describing operational characteristics within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS characteristics for both unsignalized and signalized intersections are presented in Tables 2 and 3 below. Level-of-service characteristics for road segments are presented in Table 4 below.

Table 2
Level of Service Characteristics for Unsignalized Intersections

| Level of Service | Description | Average Vehicle Delay (seconds) |
|------------------|------------------------|---------------------------------|
| A | Little or no delay. | 0-10 |
| B | Short delays. | >10-15 |
| C | Average delays. | >15-25 |
| D | Long delays. | >25-35 |
| E | Very long delays. | >35-50 |
| F | Extremely long delays. | >50 |

Reference: *Highway Capacity Manual*, Transportation Research Board

Table 3
Level of Service Characteristics for Signalized Intersections

| Level of Service | Description | Average Vehicle Delay (seconds) |
|------------------|---|---------------------------------|
| A | Extremely favorable progression. Most vehicles arrive during green phase. Many vehicles do not stop. | ≤10 |
| B | Good progression. | >10-20 |
| C | Fair progression. Significant number of vehicles stopped. Some queues do not clear. | >20-35 |
| D | Noticeable congestion. Many vehicles stop. Individual cycle failures are noticeable. Queues often do not clear. | >35-55 |
| E | Poor progression. Individual cycle failures are frequent. Queues frequently do not clear. | >55-80 |
| F | Poor progression. Oversaturation. Many individual cycle failures and queues not cleared. | >80 |

Reference: *Highway Capacity Manual*, Transportation Research Board

Table 4
Level of Service Characteristics for Roadways

| Level of Service | Description |
|------------------|---|
| A | Primarily free flow operations |
| B | Reasonably unimpeded operations, ability to maneuver only slightly restricted |
| C | Stable operations, ability to maneuver and select operating speed affected |
| D | Unstable flow, speeds and ability to maneuver restricted |
| E | Significant delays, flow quite unstable |
| F | Extremely slow speeds |

Reference: 1998 *Highway Capacity Manual*, Transportation Research Board

The City of Kingsburg *Traffic Impact Study Report Guidelines* dated April 10, 2007 indicates that intersections and road segments in Kingsburg are required to operate at LOS D or better. The Caltrans *Guide for the Preparation of Traffic Impact Studies* dated December 2002 indicates that Caltrans typically requires that LOS C or better be maintained. A traffic impact is recognized if a proposed project will decrease the LOS below LOS D on City intersections or below LOS C on Caltrans intersections. A traffic impact is also recognized if a project will increase the average delay for a study intersection that is already operating at an unacceptable LOS or increases the volume of traffic on a road segment that is already operating at an unacceptable LOS.

INTERSECTION ANALYSES

The levels of service at the study intersections were determined using the computer program Synchro 7, which is based on the HCM procedures for calculating levels of service. The intersection analysis sheets are presented in Appendix B attached to this report.

Peak-hour factors (PHF) for the existing-conditions analyses were determined based on the existing traffic volumes. The HCM suggests that a PHF of 0.92 in urban areas and 0.88 in rural areas may be used in the absence of field data. For purposes of the cumulative year 2035 analyses performed for this study, in which a significant volume of projected traffic is added and field data is not available, a PHF of 0.92 is used unless the existing PHF is greater than 0.92.

The California Department of Transportation California *Manual on Uniform Traffic Control Devices for Streets and Highways* (CMUTCD) dated January 21, 2010 presents various warrant analyses to assist in evaluating the need for traffic signals at an intersection. Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate consideration at an intersection that is currently not signalized. If one or more of the signal warrants are met, signalization of the intersection may be an appropriate mitigation. However, a signal likely should not be installed if none or few of the warrants are met since the installation of signals may increase delays on the previously uncontrolled major street and may contribute to an increase in accidents.

The potential need for a traffic signal is considered at each unsignalized intersection operating at a substandard LOS. Since the analyses presented herein are based on peak hour traffic volumes, Figure 4C-4, Warrant 3, Peak Hour (70% Factor) as presented in the CMUTCD was utilized to evaluate the possibility that traffic signals may be warranted at

study intersections not currently signalized. The warrant analysis sheets are presented in Appendix C attached to this report.

For cases in which an intersection operates at a substandard LOS but traffic signal warrants are not met, traffic signals are not considered to be a feasible mitigation.

The results of the intersection operational analyses and peak-hour warrant studies are presented in Tables 5, 6, and 7 below. Substandard levels of service are highlighted in bold type for non-Project scenarios in Tables 5 and 6. Project impacts are highlighted in bold type in Table 7. A key to descriptors in the tables is presented below.

Key to Tables 5, 6, and 7

OWS: One-way stop control
TWS: Two-way stop control
n/a: Not applicable

AWS: All-way stop control
n/r: Analysis not required

Table 5
Intersection Analysis Summary - Existing Conditions

| Intersection | Control Type | A.M. Peak Hour | | | P.M. Peak Hour | | |
|-------------------------|--------------|----------------|-----|-------------------|----------------|----------|-------------------|
| | | Delay (sec) | LOS | Peak Hour Warrant | Delay (sec) | LOS | Peak Hour Warrant |
| Mtn View / SR 99 SB off | TWS | 22.3 | C | n/r | 25.3 | D | Not met |
| Mtn View / SR 99 SB on | Yield | 1.4 | A | n/r | 1.6 | A | n/r |
| Mtn View / SR 99 NB on | Yield | 1.2 | A | n/r | 0.9 | A | n/r |
| Mtn View / SR 99 NB off | OWS | 14.7 | B | n/r | 15.5 | C | n/r |
| Mtn View / Golden State | Signals | 12.2 | B | n/r | 14.7 | B | n/r |
| Mtn View / Academy | TWS | 16.7 | C | n/r | 22.5 | C | n/r |
| Golden State / Amber | OWS | 9.8 | A | n/r | 10.2 | B | n/r |
| Kamm / Bethel | OWS | 8.4 | A | n/r | 7.9 | A | n/r |
| Kamm / Academy | TWS | 8.4 | A | n/r | 8.1 | A | n/r |
| Golden State / Bethel | AWS | 9.3 | A | n/r | 8.4 | A | n/r |
| Bethel / SR 99 NB on | OWS | 11.8 | B | n/r | 10.8 | B | n/r |
| Bethel / SR 99 NB off | OWS | 10.8 | B | n/r | 10.3 | B | n/r |
| Bethel / Parkway | OWS | 12.4 | B | n/r | 11.0 | B | n/r |
| Bethel / Mtn View | TWS | 18.6 | C | n/r | 22.2 | C | n/r |

Table 6
Intersection Analysis Summary – Cumulative 2035 Without Project Conditions

| Intersection | Control Type | A.M. Peak Hour | | | P.M. Peak Hour | | |
|-------------------------|--------------|----------------|-----|-------------------|----------------|-----|-------------------|
| | | Delay (sec) | LOS | Peak Hour Warrant | Delay (sec) | LOS | Peak Hour Warrant |
| Mtn View / SR 99 SB off | TWS | * | F | Met | * | F | Met |
| Mtn View / SR 99 SB on | Yield | 19.8 | C | n/r | 504.7 | F | Met |
| Mtn View / SR 99 NB on | Yield | 247.8 | F | Met | 1257.7 | F | Met |
| Mtn View / SR 99 NB off | OWS | * | F | Met | * | F | Met |
| Mtn View / Golden State | Signals | 165.3 | F | n/r | 711.3 | F | n/r |
| Mtn View / Academy | TWS | * | F | Met | * | F | Met |
| Golden State / Amber | OWS | 17.9 | C | n/r | * | F | n/a |
| Kamm / Bethel | OWS | 22.0 | C | n/r | 134.9 | F | Met |
| Kamm / Academy | TWS | 69.1 | F | Met | 416.5 | F | Met |
| Golden State / Bethel | AWS | 48.2 | E | Met | 305.6 | F | Met |
| Bethel / SR 99 NB on | OWS | 17.6 | C | Not met | 33.4 | D | Not met |
| Bethel / SR 99 NB off | OWS | 16.5 | C | n/r | 187.5 | F | Met |
| Bethel / Parkway | OWS | 20.1 | C | n/r | * | F | Met |
| Bethel / Mtn View | TWS | * | F | Met | * | F | Met |

* Excessive delays outside of calculable range.

Table 7
Intersection Analysis Summary – Cumulative 2035 With Project Conditions

| Intersection | Control Type | A.M. Peak Hour | | | P.M. Peak Hour | | |
|-------------------------|--------------|----------------|-----|-------------------|----------------|-----|-------------------|
| | | Delay (sec) | LOS | Peak Hour Warrant | Delay (sec) | LOS | Peak Hour Warrant |
| Mtn View / SR 99 SB off | TWS | * | F | Met | * | F | Met |
| Mtn View / SR 99 SB on | Yield | 19.8 | C | n/r | 504.7 | F | Met |
| Mtn View / SR 99 NB on | Yield | 247.8 | F | Met | 1257.7 | F | Met |
| Mtn View / SR 99 NB off | OWS | * | F | Met | * | F | Met |
| Mtn View / Golden State | Signals | 165.3 | F | n/r | 711.3 | F | n/r |
| Mtn View / Academy | TWS | * | F | Met | * | F | Met |
| Golden State / Amber | OWS | 17.9 | C | n/a | * | F | n/a |
| Kamm / Bethel | OWS | 96.2 | F | Met | 401.6 | F | Met |
| Kamm / Academy | TWS | 119.5 | F | Met | 444.9 | F | Met |
| Golden State / Bethel | AWS | 88.9 | F | Met | 330.5 | F | Met |
| Bethel / SR 99 NB on | OWS | 28.9 | D | Not met | 45.4 | E | Not met |
| Bethel / SR 99 NB off | OWS | 60.1 | F | Met | 540.3 | F | Met |
| Bethel / Parkway | OWS | 228.6 | F | Met | * | F | Met |
| Bethel / Mtn View | TWS | * | F | Met | * | F | Met |

* Excessive delays outside of calculable range.

ROAD SEGMENT ANALYSES

Road segment analyses were based on the Florida Department of Transportation Generalized Q/LOS Tables. The Florida road segment tables were developed based on procedures outlined in the HCM and are commonly utilized in the San Joaquin Valley for road segment analyses. The City of Kingsburg *Traffic Impact Study Report Guidelines* dated April 10,

2007 describes the Florida tables as an acceptable tool for road segment analysis. The Florida tables present LOS criteria based on the type of roadway being analyzed and the regional setting (i.e., urban areas or transitioning areas). The appropriate Florida table is dependent upon the setting. Table 4, Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas (with adjustments for Non-State Roadways, Major City/County Roadways) was utilized in the analysis. The table is attached in Appendix D. Tables 8 and 9 present the specific volume thresholds used in the analyses. Tables 10 through 12 present the results of the road segment analyses. Substandard levels of service are highlighted in bold type for non-Project scenarios and Project impacts are highlighted in bold type for the with-Project scenario.

Table 8
Volume Thresholds for Road Segment Levels of Service
Less Than 2 Signalized Intersections Per Mile

| Lanes | Median | A | B | C | D | E | F |
|-------|----------------------------|---|--------|---------------|---------------|--------|---|
| 2 | Undivided - No LT lanes | - | ≤669 | 670 – 1,080 | 1,081 – 1,152 | >1,152 | * |
| 2 | Undivided with LT lanes | - | ≤837 | 838 – 1,350 | 1,351 – 1,440 | >1,440 | * |
| 2 | Divided with LT lanes | - | ≤878 | 879 – 1,417 | 1,418 – 1,512 | >1,512 | * |
| 4 | Undivided - No LT lanes | - | ≤1,917 | 1,918 – 2,322 | 2,323 – 2,403 | >2,403 | * |
| 4 | Undivided with LT lanes | - | ≤2,428 | 2,429 – 2,941 | 2,941 – 3,043 | >3,043 | * |
| 4 | Divided with LT lanes | - | ≤2,556 | 2,557 – 3,096 | 3,097 – 3,204 | >3,204 | * |
| 6 | Divided with LT lanes | - | ≤3,933 | 3,934 – 4,680 | 4,680 – 4,824 | >4,824 | * |

Reference: Florida Department of Transportation Table 4, Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

Table 9
Volume Thresholds for Road Segment Levels of Service
2.00 to 4.50 Signalized Intersections Per Mile

| Lanes | Median | A | B | C | D | E | F |
|-------|----------------------------|---|---|--------|---------------|---------------|--------|
| 2 | Undivided - No LT lanes | - | - | ≤734 | 735 – 1,065 | 1,066 – 1,130 | >1,130 |
| 2 | Undivided with LT lanes | - | - | ≤918 | 919 – 1,332 | 1,333 – 1,413 | >1,413 |
| 2 | Divided with LT lanes | - | - | ≤963 | 964 – 1,398 | 1,399 – 1,483 | >1,483 |
| 4 | Undivided - No LT lanes | - | - | ≤1,633 | 1,634 – 2,173 | 2,174 – 2,295 | >2,295 |
| 4 | Undivided with LT lanes | - | - | ≤2,069 | 2,070 – 2,753 | 2,754 – 2,907 | >2,907 |
| 4 | Divided with LT lanes | - | - | ≤2,178 | 2,179 – 2,898 | 3,899 – 3,060 | >3,060 |
| 6 | Divided with LT lanes | - | - | ≤3,411 | 3,412 – 4,392 | 4,393 – 4,635 | >4,635 |

Reference: Florida Department of Transportation Table 4, Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas

Key to Tables 10 through 12

| | | | |
|------|------------------|------|----------------|
| L: | Number of Lanes | Vol: | Volume |
| LOS: | Level of Service | U: | Undivided Road |
| Dv: | Divided Road | NB: | Northbound |
| SB: | Southbound | EB: | Eastbound |
| WB: | Westbound | | |

Table 10
Road Segment LOS Summary – Existing Conditions

| Road Segment | Lanes and Median | A.M. Peak Hour | | P.M. Peak Hour | |
|-------------------------------|------------------|----------------|-----|----------------|-----|
| | | Volume | LOS | Volume | LOS |
| Mountain View Avenue | | | | | |
| SR 99 to Golden State | 2U (<2) | 758 | C | 813 | C |
| Golden State to Bethel | 4D-LT (<2) | 665 | B | 769 | B |
| Bethel to Academy | 2U (<2) | 659 | B | 793 | C |
| Kamm Avenue | | | | | |
| Academy to Bethel | 2U (<2) | 175 | B | 169 | B |
| Golden State Boulevard | | | | | |
| Mountain View to Amber | 4D-LT (<2) | 222 | B | 342 | B |
| Amber to Bethel | 4D-LT (<2) | 263 | B | 335 | B |

Table 11
Road Segment LOS Summary – Cumulative 2035 Without Project Conditions

| Road Segment | Lanes and Median | A.M. Peak Hour | | P.M. Peak Hour | |
|-------------------------------|------------------|----------------|-----|----------------|-----|
| | | Volume | LOS | Volume | LOS |
| Mountain View Avenue | | | | | |
| SR 99 to Golden State | 2U (<2) | 3,129 | E | 5,729 | E |
| Golden State to Bethel | 4D-LT (<2) | 2,345 | B | 3,908 | E |
| Bethel to Academy | 2U (<2) | 1,913 | E | 3,080 | E |
| Kamm Avenue | | | | | |
| Academy to Bethel | 2U (<2) | 848 | C | 1,411 | D |
| Golden State Boulevard | | | | | |
| Mountain View to Amber | 4D-LT (<2) | 1,041 | B | 2,299 | B |
| Amber to Bethel | 4D-LT (<2) | 1,026 | B | 2,169 | B |

Table 12
Road Segment LOS Summary – Cumulative 2035 With Project Conditions

| Road Segment | Lanes and Median | A.M. Peak Hour | | P.M. Peak Hour | |
|-------------------------------|------------------|----------------|-----|----------------|-----|
| | | Volume | LOS | Volume | LOS |
| Mountain View Avenue | | | | | |
| SR 99 to Golden State | 2U (<2) | 3,129 | E | 5,729 | E |
| Golden State to Bethel | 4D-LT (<2) | 2,345 | B | 3,908 | E |
| Bethel to Academy | 2U (<2) | 1,913 | E | 3,080 | E |
| Kamm Avenue | | | | | |
| Academy to Bethel | 2U (<2) | 1,150 | C | 1,622 | F |
| Golden State Boulevard | | | | | |
| Mountain View to Amber | 4D-LT (<2) | 1,041 | B | 2,299 | B |
| Amber to Bethel | 4D-LT (<2) | 1,157 | B | 2,513 | B |

DISCUSSION

Existing Conditions

The results of the existing-conditions analyses indicate that the study intersections and road segments are operating at acceptable levels of service, with the exception of the intersection of Mountain View Avenue and the SR 99 southbound off ramp. The intersection of Mountain View Avenue and the SR 99 southbound off ramp is currently operating at LOS D during the p.m. peak hour, but peak-hour traffic signal warrants are not satisfied.

Year 2035 Cumulative-Without-Project Conditions

The year 2035 cumulative-without-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue;
- Golden State Boulevard between Amber Avenue and Mountain View Avenue; and
- Kamm Avenue between Academy Avenue and Bethel Avenue.

Year 2035 Cumulative-With-Project Conditions

The year 2035 cumulative-with-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue; and
- Golden State Boulevard between Amber Avenue and Mountain View Avenue.

Table 13 presents a summary of mitigated intersection operations and Table 14 presents the mitigated road segment levels of service with the number of lanes expected to be required to achieve the required level of service standard. The intersection analysis sheets for the mitigated conditions are presented in Appendix E attached to this report.

Table 13
Intersection Analysis Summary – Mitigated Cumulative 2035 With Project Conditions

| Intersection | Control Type | A.M. Peak Hour | | P.M. Peak Hour | |
|-------------------------|-------------------------|----------------|-----|----------------|-----|
| | | Delay (sec) | LOS | Delay (sec) | LOS |
| Mtn View / SR 99 SB | Signals | 11.6 | B | 34.6 | C |
| Mtn View / SR 99 NB | Signals | 7.9 | A | 8.0 | A |
| Mtn View / Golden State | Signals | 25.3 | C | 77.6 | E* |
| Mtn View / Academy | Signals | 20.1 | C | 34.9 | C |
| Golden State / Amber | OWS, Right-Turn Only | 10.0 | B | 23.9 | C |
| Kamm / Bethel | Signals | 25.4 | C | 26.0 | C |
| Kamm / Academy | Signals | 19.5 | B | 26.9 | C |
| Golden State / Bethel | Signals | 23.6 | C | 28.7 | C |
| Bethel / SR 99 NB on | OWS | 50.3 | F* | 54.3 | F |
| Bethel / SR 99 NB off | Signals | 8.6 | A | 15.8 | B |
| Bethel / Parkway | Signals | 13.3 | B | 19.0 | B |
| Bethel / Mtn View | Signals | 17.5 | B | 29.4 | C |

* Substandard mitigated LOS explained in text below.

Table 14
Road Segment Level of Service Summary – Mitigated Weekday Peak Hour

| Road Segment | Lanes and Median | A.M. Peak Hour | | P.M. Peak Hour | |
|-------------------------------|------------------|----------------|-----|----------------|-----|
| | | Volume | LOS | Volume | LOS |
| Mountain View Avenue | | | | | |
| SR 99 to Golden State | 6D-LT (>2) | 3,129 | B | 5,729 | F* |
| Golden State to Bethel | 6D-LT (<2) | 2,345 | B | 3,908 | B |
| Bethel to Academy | 6D-LT (<2) | 1,913 | B | 3,080 | B |
| Kamm Avenue | | | | | |
| Academy to Bethel | 4D-LT (>2) | 1,150 | C | 1,622 | C |
| Golden State Boulevard | | | | | |
| Mountain View to Amber | 4D-LT (<2) | 1,041 | B | 2,299 | B |
| Amber to Bethel | 4D-LT (<2) | 1,157 | B | 2,513 | B |

* Through volumes include left-turn and right-turn movements approaching intersections. Intersection analyses shall govern on corridors with closely-spaced intersections.

The sections below provide a description of the anticipated improvements that will be required for each study location to operate at acceptable levels of service in the year 2035.

Mountain View Avenue / SR 99 Interchange

The proposed annexation does not exacerbate the substandard condition that is expected to occur if the Territory were to develop without the annexation. The Mountain View Avenue interchange on SR 99 should be reconstructed as a Type L-9 interchange as described in Chapter 500 of the Caltrans *Highway Design Manual* dated September 1, 2006. The Type L-9 interchange eliminates left turns from Mountain View Avenue to the freeway on ramps and replaces them with loop on ramps that are entered from the right lane of Mountain View Avenue. (For reference purposes, the existing interchange on SR 180 at Marks Avenue in Fresno, California is a relatively new and nearby example of a Type L-9 interchange.)

The configuration of the intersection of Mountain View Avenue and the SR 99 southbound on and off ramps would be as follows:

- Eastbound: three through lanes and one right-turn lane or slip ramp to SR 99 southbound direct on ramp
- Westbound: three through lanes and one right-turn lane or slip ramp to SR 99 southbound loop on ramp
- Northbound: none
- Southbound: two left-turn lanes and three right-turn lanes

With implementation of these improvements, the intersection is expected to operate at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour.

The configuration of the intersection of Mountain View Avenue and the SR 99 northbound on and off ramps would be as follows:

- Eastbound: three through lanes and one right-turn lane or slip ramp to SR 99 northbound loop on ramp
- Westbound: three through lanes and one right-turn lane or slip ramp to SR 99 northbound direct on ramp
- Northbound: two left-turn lanes and one right-turn lane
- Southbound: none

With implementation of these improvements, the intersection is expected to operate at LOS A during the worst-case peak hour.

Mountain View Avenue / Golden State Boulevard

The proposed annexation does not exacerbate the substandard condition that is expected to occur if the Territory were to develop without the annexation. The intersection is currently signalized and is adjacent to railroad tracks. The intersection shall be widened to provide the following configuration:

- Eastbound: two left-turn lanes (minimum 825 feet), three through lanes, and two right-turn lanes
- Westbound: two left-turn lanes, three through lanes, and two right-turn lanes
- Northbound: two left-turn lanes (minimum 350 feet), three through lanes, and two right-turn lanes
- Southbound: two left-turn lanes (minimum 450 feet), three through lanes, and two right-turn lanes

Modification of the traffic signal system at the intersection shall include installation of pre-signals at the existing at-grade railroad crossing.

With implementation of these improvements, the intersection is expected to operate at LOS C during the a.m. peak hour and LOS E during the p.m. peak hour. The proposed intersection configuration is considered to be the maximum feasible intersection configuration. Further improvements could be achieved by implementing the ultimate mitigation as described in the following section.

Ultimate Mitigation

To alleviate the severe congestion and long queues associated with the mitigation described above at the intersection of Mountain View Avenue and Golden State Boulevard, especially when trains pass by, an ultimate solution involving a grade separation should be considered. Such a project would require a substantial amount of engineering study to investigate feasible alternatives. A similar process is underway in Fresno, California for the proposed SR 99 interchange at Veterans Boulevard, which is also adjacent to Golden State Boulevard and the UPRR railroad. Potential alternatives for the Veterans Boulevard interchange project are similar to those that may be considered at the Mountain View Avenue / Golden State Boulevard intersection and can be reviewed on the following web site:

www.fresno.gov/Government/DepartmentDirectory/PublicWorks/TrafficEngineering/

Mountain View Avenue / Bethel Avenue

The proposed annexation does not exacerbate the substandard condition that is expected to occur if the Territory were to develop without the annexation. The intersection of Mountain View and Bethel Avenues will eventually require signalization with protected left turns and the following lane configurations:

- Eastbound: one left-turn lane and two through lanes with a shared right turn
- Westbound: one left-turn lane and two through lanes with a shared right turn
- Northbound: one left-turn lane and two through lanes with a shared right turn
- Southbound: one left-turn lane and two through lanes with a shared right turn

With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Mountain View Avenue / Academy Avenue

The proposed annexation does not exacerbate the substandard condition that is expected to occur if the Territory were to develop without the annexation. The intersection of Mountain View and Academy Avenues will eventually require signalization with protected left turns and the following lane configurations:

- Eastbound: two left-turn lanes, two through lanes, and one right-turn lane
- Westbound: one left-turn lane, two through lanes, and one right-turn lane
- Northbound: one left-turn lane, one through lane, and one right-turn lane
- Southbound: one left-turn lane, one through lane, and one right-turn lane

With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Golden State Boulevard / Amber Avenue

The proposed annexation does not exacerbate the substandard condition that is expected to occur if the Territory were to develop without the annexation. The intersection shall be modified to allow right-in/right-out access only. Left turn movements will not be permitted at the intersection. With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Kamm Avenue / Bethel Avenue

The intersection of Kamm and Bethel Avenues will be relocated as described in the North Kingsburg Specific Plan. Bethel Avenue will be realigned to intersect Academy Parkway at a 90-degree angle opposite a similar realignment to Kamm Avenue. The resulting four-legged intersection will be spaced at least 1,000 feet from the at-grade railroad crossing.

The required configuration of the realigned intersection of Kamm/Bethel Avenues with Academy Parkway will include signalization with protected left turns and the following minimum lane configurations (assuming that the Kamm/Bethel Avenue connector is the north-south street and Academy Parkway is the east-west street):

- Eastbound: one left-turn lane, two through lanes, and one right-turn lane;
- Westbound: one left-turn lane, two through lanes, and one right-turn lane;
- Northbound: two left-turn lanes, two through lanes, and one right-turn lane;
- Southbound: one left-turn lane, two through lanes, and one right-turn lane.

With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Kamm Avenue / Academy Avenue

The intersection of Kamm and Academy Avenues will eventually require signalization with protected left turns and the following lane configurations:

- Eastbound: one left-turn lane, two through lanes, and one right-turn lane
- Westbound: one left-turn lane, two through lanes, and one right-turn lane
- Northbound: one left-turn lane, two through lanes, and one right-turn lane
- Southbound: one left-turn lane, two through lanes, and one right-turn lane

With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Golden State Boulevard / Bethel Avenue

Traffic signal warrants are expected to be met at the intersection. The intersection shall be signalized with protected left-turn phasing and widened to provide the following configuration (assuming Golden State Boulevard is the north-south street):

- Eastbound: two left-turn lanes, two through lanes, and one right-turn lane
- Westbound: one left-turn lane, two through lanes, and one right-turn lane
- Northbound: one left-turn lane, two through lanes, and one right-turn lane
- Southbound: two left-turn lanes, two through lanes, and one right-turn lane

The traffic signal system at the intersection shall include installation of pre-signals at the existing at-grade railroad crossing or should be coordinated with traffic signals at the intersection of Bethel and Kamm Avenues.

With implementation of these improvements, the intersection is expected to operate at LOS C during the worst-case peak hour.

Bethel Avenue / SR 99 Northbound Off Ramp

Traffic signal warrants are expected to be met at the intersection. The intersection shall be signalized with protected left-turn phasing and widened to provide a dedicated right-turn lane on the westbound approach. The configuration of the intersection of Bethel Avenue and the SR 99 northbound off ramp would be as follows:

Eastbound: none
Westbound: one left-turn lane and one right-turn lane
Northbound: one through lane
Southbound: one through lane

With implementation of these improvements, the intersection is expected to operate at LOS B during the worst-case peak hour.

Bethel Avenue / SR 99 Northbound On Ramp

Although the intersection operational analyses indicate that the intersection will experience LOS F, traffic signal warrants are not expected to be met at the intersection. The eastbound approach, which typically serves less than five vehicles per hour, is the only approach expected to experience substandard levels of service. Therefore, the intersection control should be maintained in its existing condition.

Bethel Avenue / Parkway Drive (SR 99 Southbound Ramps)

Traffic signal warrants are expected to be met at the intersection. The intersection shall be signalized with protected left-turn phasing and widened to provide the following configuration:

Eastbound: one left-turn lane, one through lane, and one right-turn lane
Westbound: none
Northbound: one left-turn lane and one through lane with a shared right turn
Southbound: two left-turn lanes and one through lane with a shared right turn

This configuration requires widening of the on ramp to receive traffic from the two southbound left-turn lanes.

With implementation of these improvements, the intersection is expected to operate at LOS B during the worst-case peak hour.

Mountain View Avenue: SR 99 to Golden State Boulevard

Mountain View Avenue between the SR 99 northbound ramps and Golden State Boulevard shall be widened to six lanes with a median. With implementation of these improvements and other required intersection mitigations, the road segment is expected to operate at LOS C during the a.m. peak hour and LOS F during the p.m. peak hour.

The calculated LOS F during the p.m. peak hour is considered to be the best-case mitigation scenario because, with the construction of long eastbound left-turn lanes as required at the intersection of Mountain View Avenue and Golden State Boulevard and a free right turn to the northbound SR 99 on ramp, the road segment will actually have more than six lanes and is likely to function as an eight-lane arterial (which is not represented in the Florida tables).

Since the road segment is relatively short, intersection operations are expected to govern the LOS that is experienced by drivers. Furthermore, additional through lanes would provide only marginal improvements because additional lanes are not typically evenly utilized near site access locations, reduce ease of access for pedestrians by increasing the widths of intersections, and create substantial additional ongoing maintenance costs to the City.

Mountain View Avenue: Golden State Boulevard to Bethel Avenue

Mountain View Avenue between Golden State Boulevard and Bethel Avenue shall be widened to six lanes with a median. With implementation of these improvements, the road segment is expected to operate at LOS B during the a.m. and p.m. peak hours.

Mountain View Avenue: Bethel Avenue to Academy Avenue

Mountain View Avenue between Bethel and Academy Avenues shall be widened to six lanes with a median. With implementation of these improvements, the road segment is expected to operate at LOS B during the worst-case peak hour.

Measure C Rural Project I is currently in the design phase and is funded to widen Mountain View Avenue to four lanes. Therefore, development projects would be responsible for a fair share of only the two outside lanes that are not to be constructed by the Measure C project.

Kamm Avenue: Bethel Avenue to Academy Avenue

Kamm Avenue between Bethel and Academy Avenues shall be widened to four lanes with a median. With implementation of these improvements, the road segment is expected to operate at LOS C during the worst-case peak hour.

Golden State Boulevard: Mountain View Avenue to Bethel Avenue

Golden State Boulevard between Mountain View and Bethel Avenues is expected to operate at acceptable levels of service based on the existing four-lane configuration. Therefore, no additional improvements are recommended.

Funding for Mitigations

The extent of the required mitigations is expected to be beyond the capacity of new development projects to accomplish individually. It is recommended that the City of Kingsburg develop a traffic impact fee program to provide funding for required improvements. A transportation impact fee study shall be prepared to support the traffic impact fee program. The traffic impact fee will allow new development projects to mitigate their fair share of impacts as the City collects the funds necessary to implement the required mitigations.

CONCLUSIONS

The City of Kingsburg shall initiate the preparation of a traffic impact fee study for the purpose of analyzing the impacts of contemplated future development on City-wide traffic facilities along with an analysis of the need for new traffic facilities required by new development in the City, including new development in the Territory. The impact fee study will also identify the relationship between new development and the needed traffic facilities and will identify the estimated cost of the needed traffic facilities. The study shall be

completed within one year of City approval of the proposed annexation. The traffic impact fee study shall be completed and presented to the Kingsburg City Council along with a recommended change in the traffic impact fee portion of the City's Capital Facilities Fees. After review and consideration of the traffic impact fee study and recommended change in the traffic impact fee portion of the City's Capital Facilities Fee by the City Council and affected parties, it is anticipated that the City Council will consider the adoption of an ordinance amending the traffic impact fee portion of the City's Capital Facilities Fees (Chapter 15.48 of the Kingsburg Municipal Code) and adoption of a resolution establishing new traffic impact fees as part of the City's Capital Facilities Fees.

Conclusions of this traffic impact study are described below according to the various analysis scenarios.

Existing Conditions

The results of the existing-conditions analyses indicate that the study intersections and road segments are currently operating at acceptable levels of service, with the exception of the intersection of Mountain View Avenue and the SR 99 southbound off ramp. The intersection of Mountain View Avenue and the SR 99 southbound off ramp is currently operating at LOS D during the p.m. peak hour, but peak-hour traffic signal warrants are not satisfied.

Year 2035 Cumulative-Without-Project Conditions

The year 2035 cumulative-without-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue;
- Golden State Boulevard between Amber Avenue and Mountain View Avenue; and
- Kamm Avenue between Academy Avenue and Bethel Avenue.

Year 2035 Cumulative-With-Project Conditions

The year 2035 cumulative-with-Project conditions analyses indicate that all of the study intersections and road segments are expected to operate at substandard levels of service, with the exception of the following road segments that are expected to operate at acceptable levels of service:

- Golden State Boulevard between Bethel Avenue and Amber Avenue; and
- Golden State Boulevard between Amber Avenue and Mountain View Avenue.

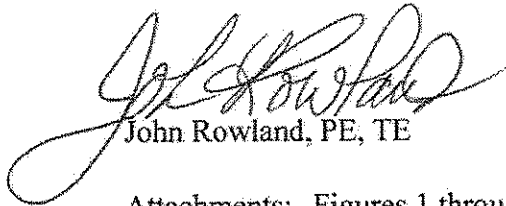
Development projects proposed to be constructed in the Territory will be required to analyze their project-specific traffic impacts on a project-by-project basis and will be responsible for mitigating the project-specific traffic impacts. Such mitigation measures may take the form of construction of the required improvements and/or payment into a traffic impact fee program established to fund future construction of the improvements. Any proposed development project to be located in the Territory that generates 100 or more trips per day (combined total entering and exiting the site) shall be required to perform a traffic impact

study to determine the current levels of service and the anticipated impacts of the project on the adjacent roadways and intersections.

Generally-accepted traffic engineering principles and methods were employed to analyze the existing conditions in the Territory and to estimate the traffic conditions expected to occur in the Territory in the future as development occurs in the Territory and in the vicinity of the Territory. The annexation of the Territory does not currently generate new traffic in the Territory or in the vicinity of the Territory and no traffic-generating projects are currently proposed to be developed in the Territory. Future development in the Territory will be subject to the North Kingsburg Specific Plan. Future development projects within the Territory will be required to analyze their project-specific traffic impacts. Depending upon the impacts, each development project may be required to construct or contribute to the construction of improvements as described in this report. Also, future development projects may be required to pay traffic impact fees in order to assist in the funding of construction of improvements described in this report.

Thank you for the opportunity to perform this traffic impact study. Please feel free to call our office if you have any questions.

PETERS ENGINEERING GROUP



John Rowland, PE, TE

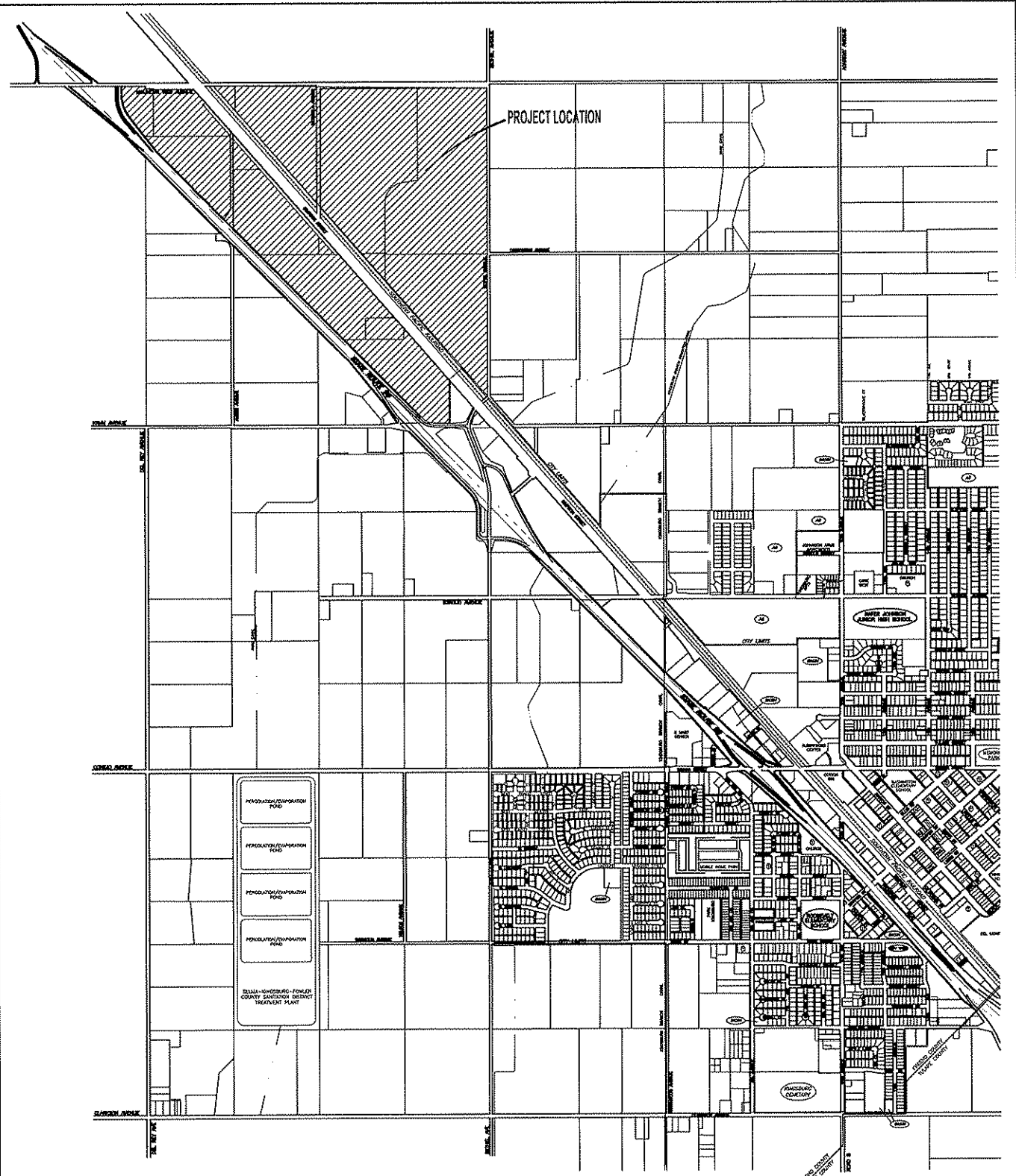


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Attachments: Figures 1 through 5

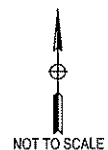
- Appendix A - Fresno County Travel Model Data Output
- Appendix B - Intersection Analysis Sheets
- Appendix C - Peak Hour Traffic Signals Warrants
- Appendix D - Florida Tables for Road Segment Analyses
- Appendix E - Mitigated Intersection Analysis Sheets

FIGURES



Proposed Annexation
Kingsburg, California

VICINITY MAP



PETERS ENGINEERING GROUP

Figure 1

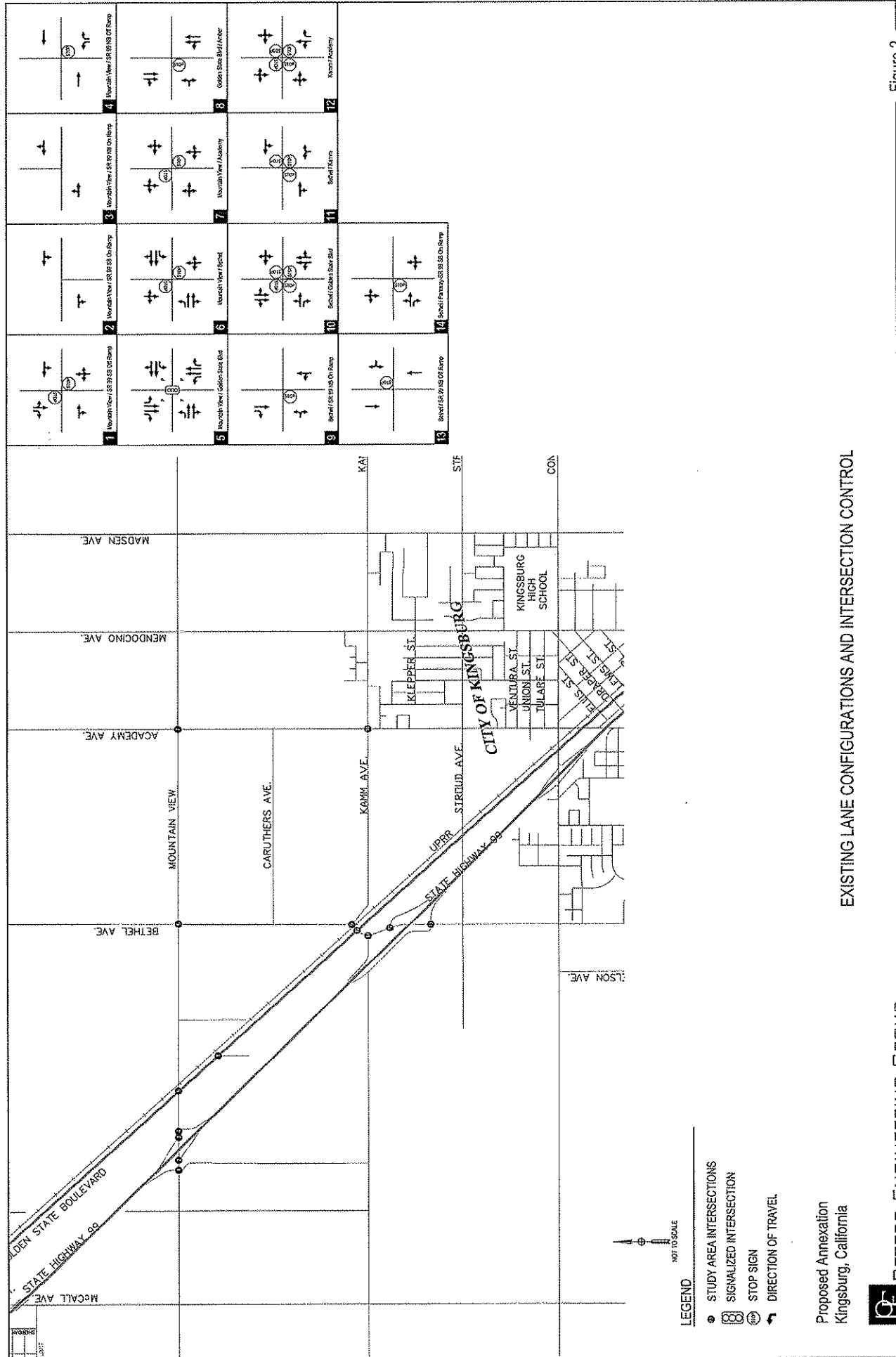
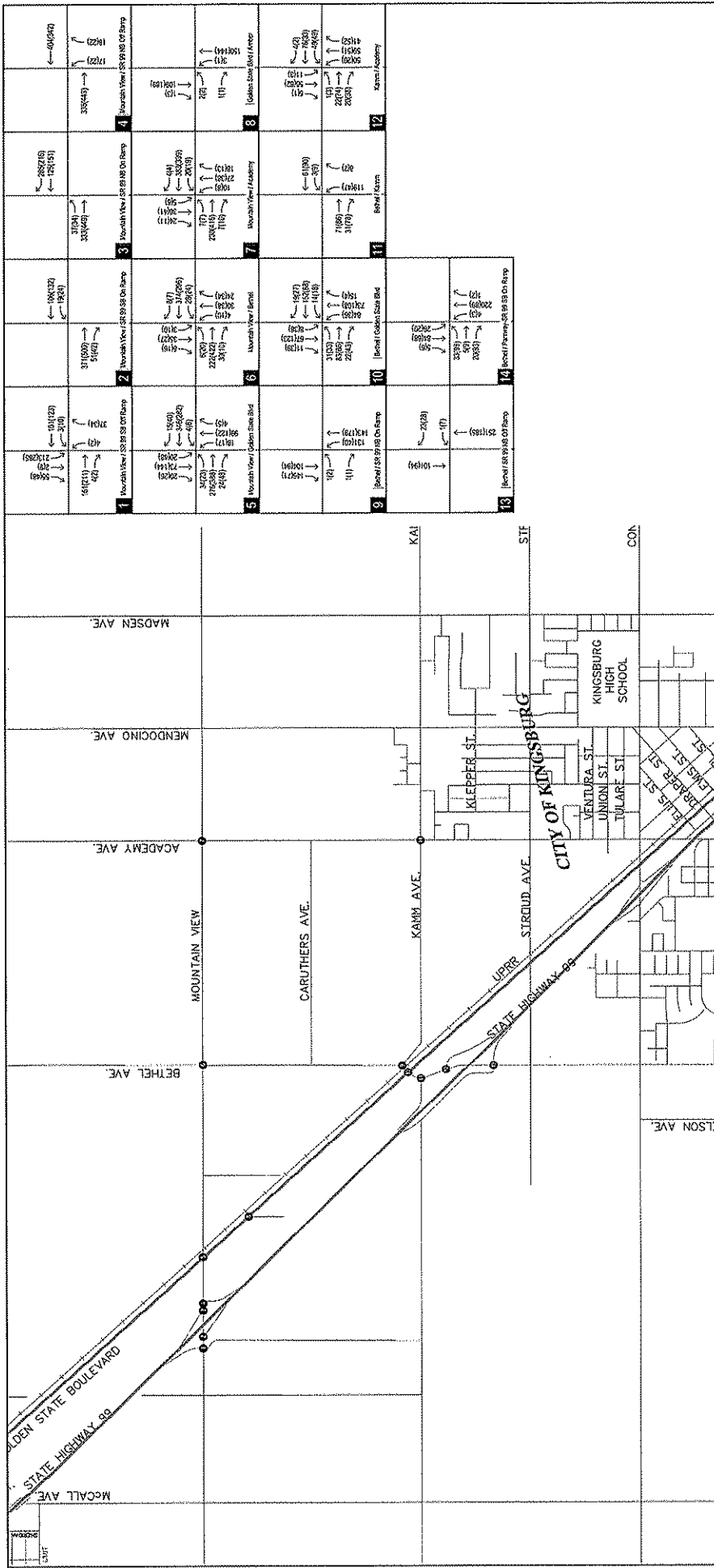


Figure 2



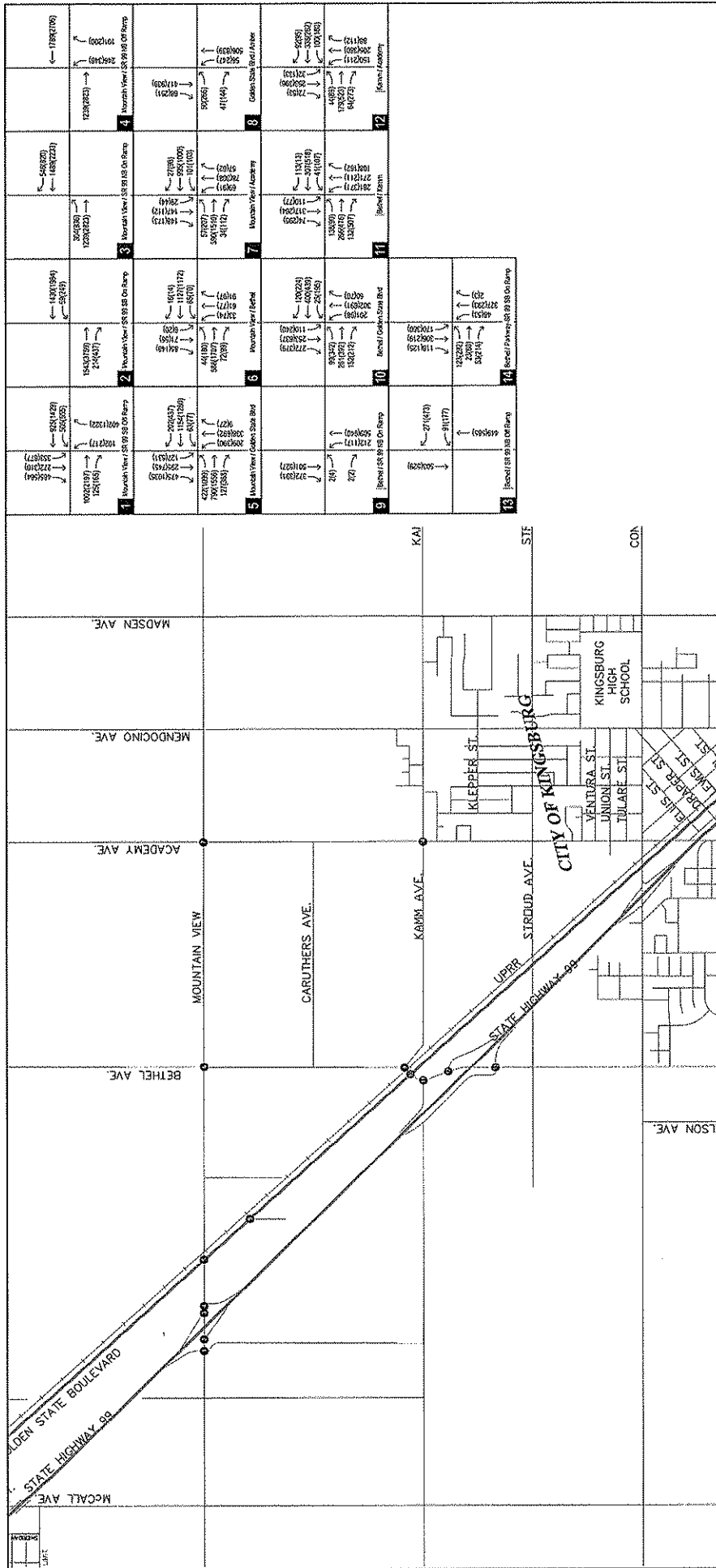
EXISTING PEAK HOUR TRAFFIC VOLUMES

Proposed Annexation
Kingsburg, California



PETERS ENGINEERING GROUP

Figure 3



LEGEND

- STUDY AREA INTERSECTIONS
- xx (yy) AM (PM) VOLUMES

Proposed Annexation
Kingsburg, California

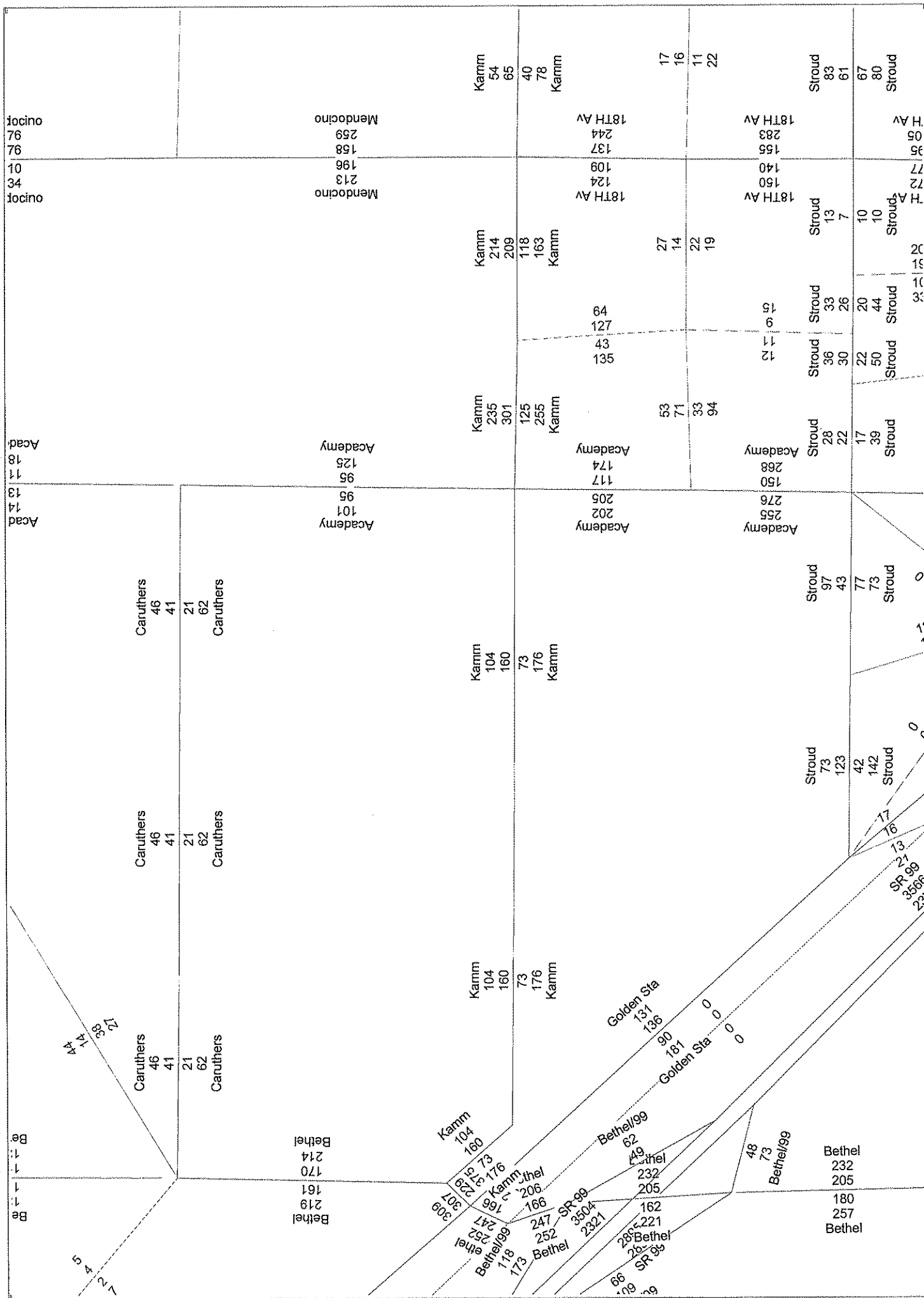


PETERS ENGINEERING GROUP

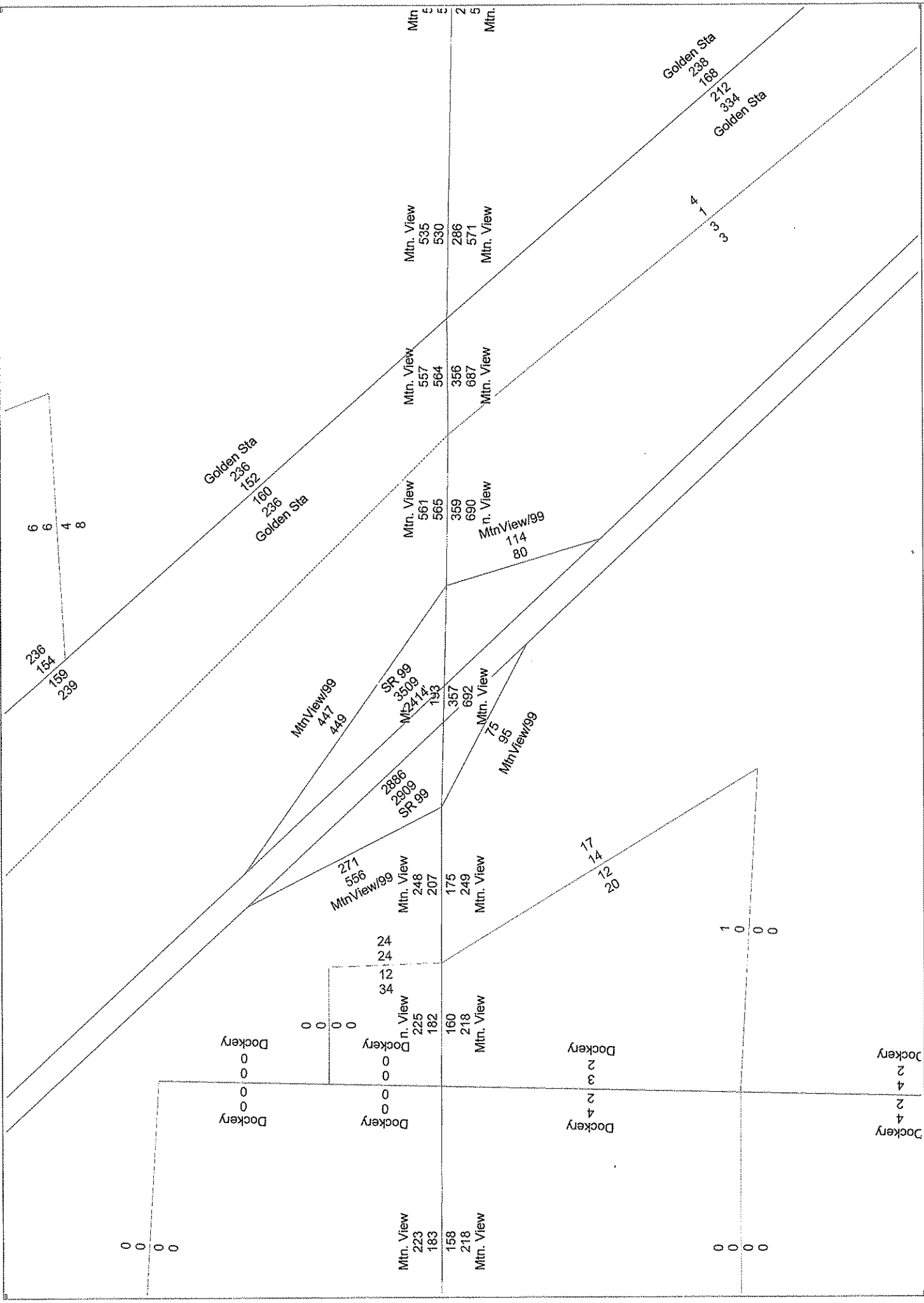
YEAR 2035 PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES

APPENDIX A

FRESNO COUNTY TRAVEL MODEL DATA OUTPUT

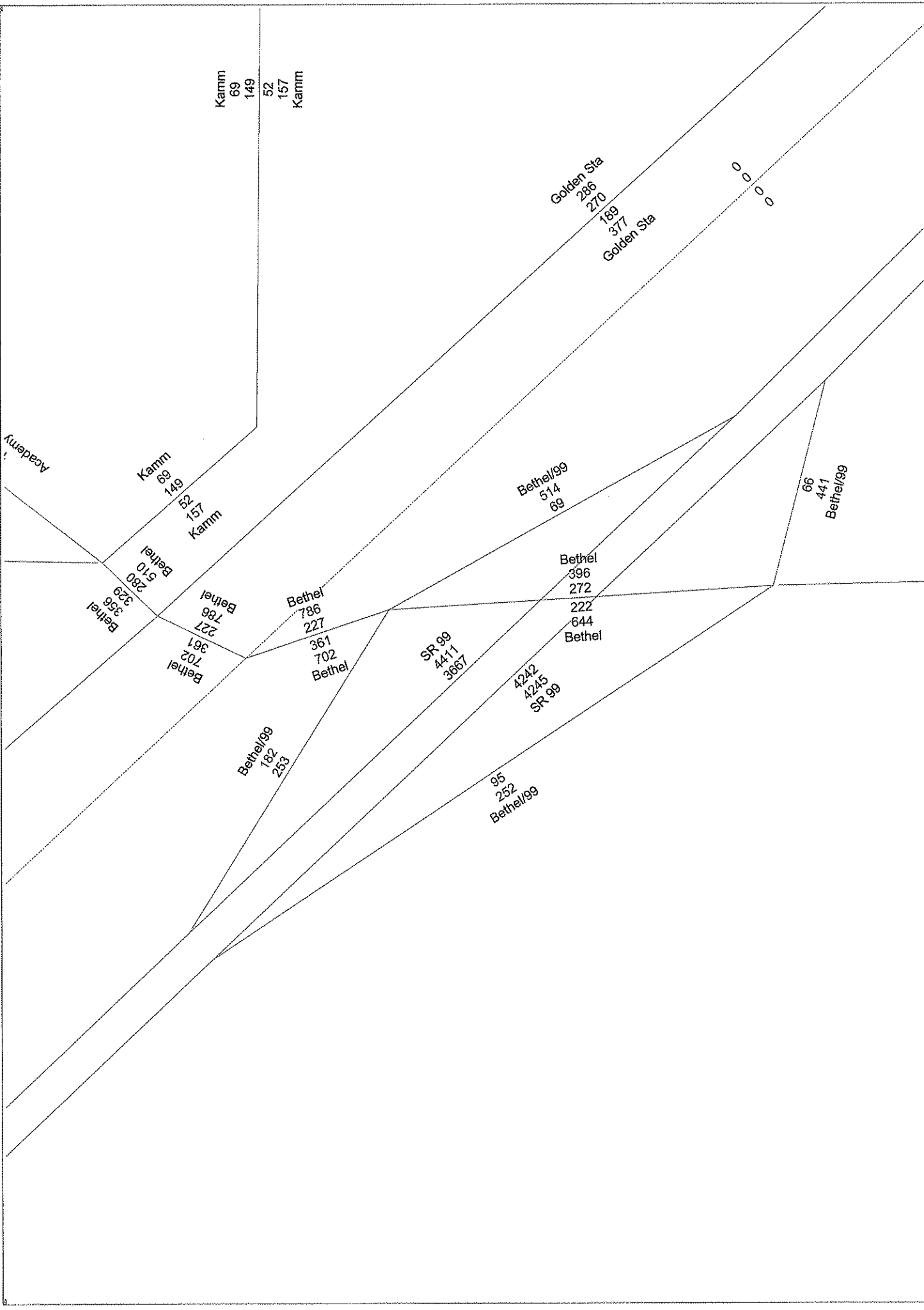


2009 Council of Fresno County Governments Travel Demand Model AM and PM Peak Hour Volumes

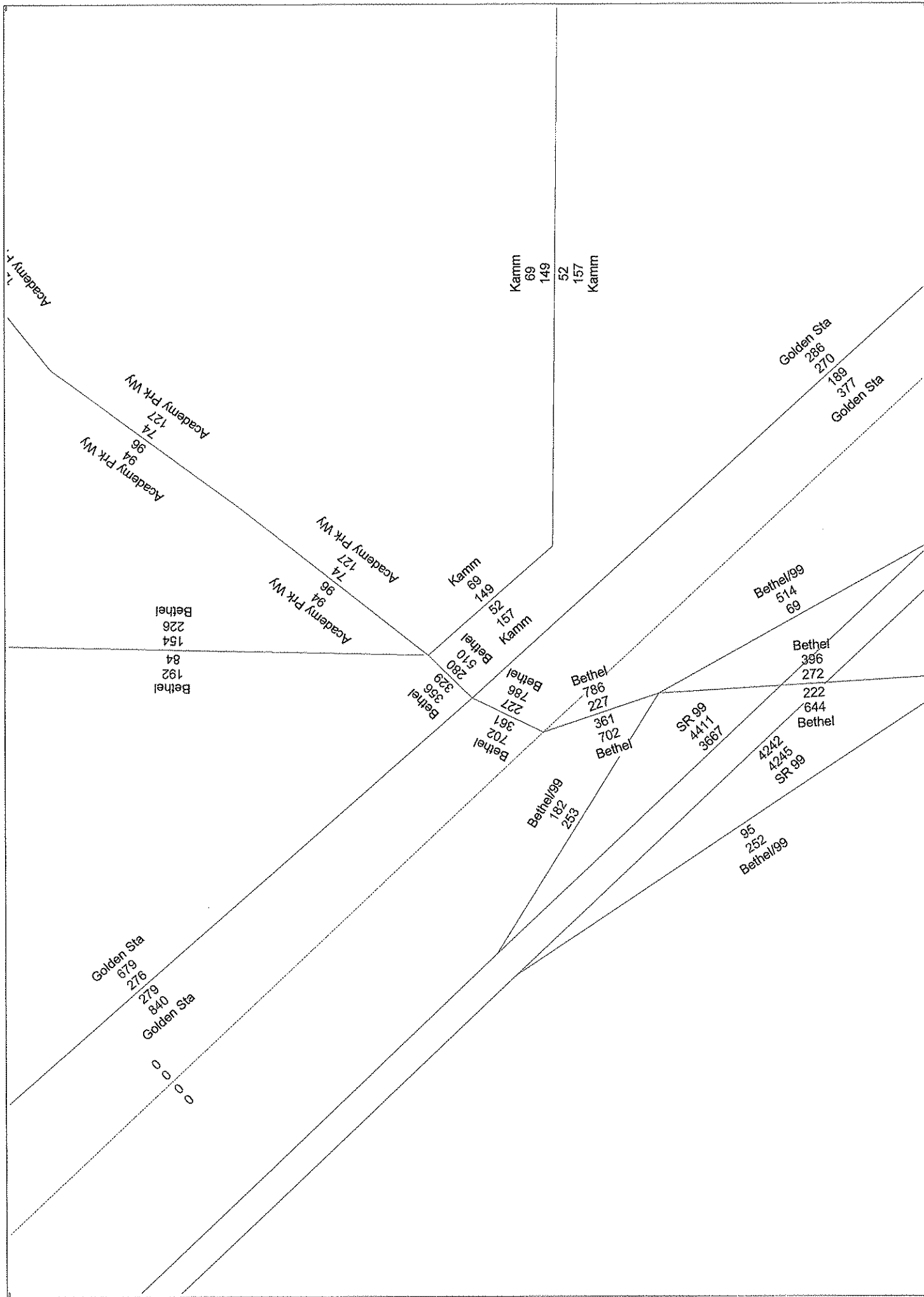


2009 Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Volumes

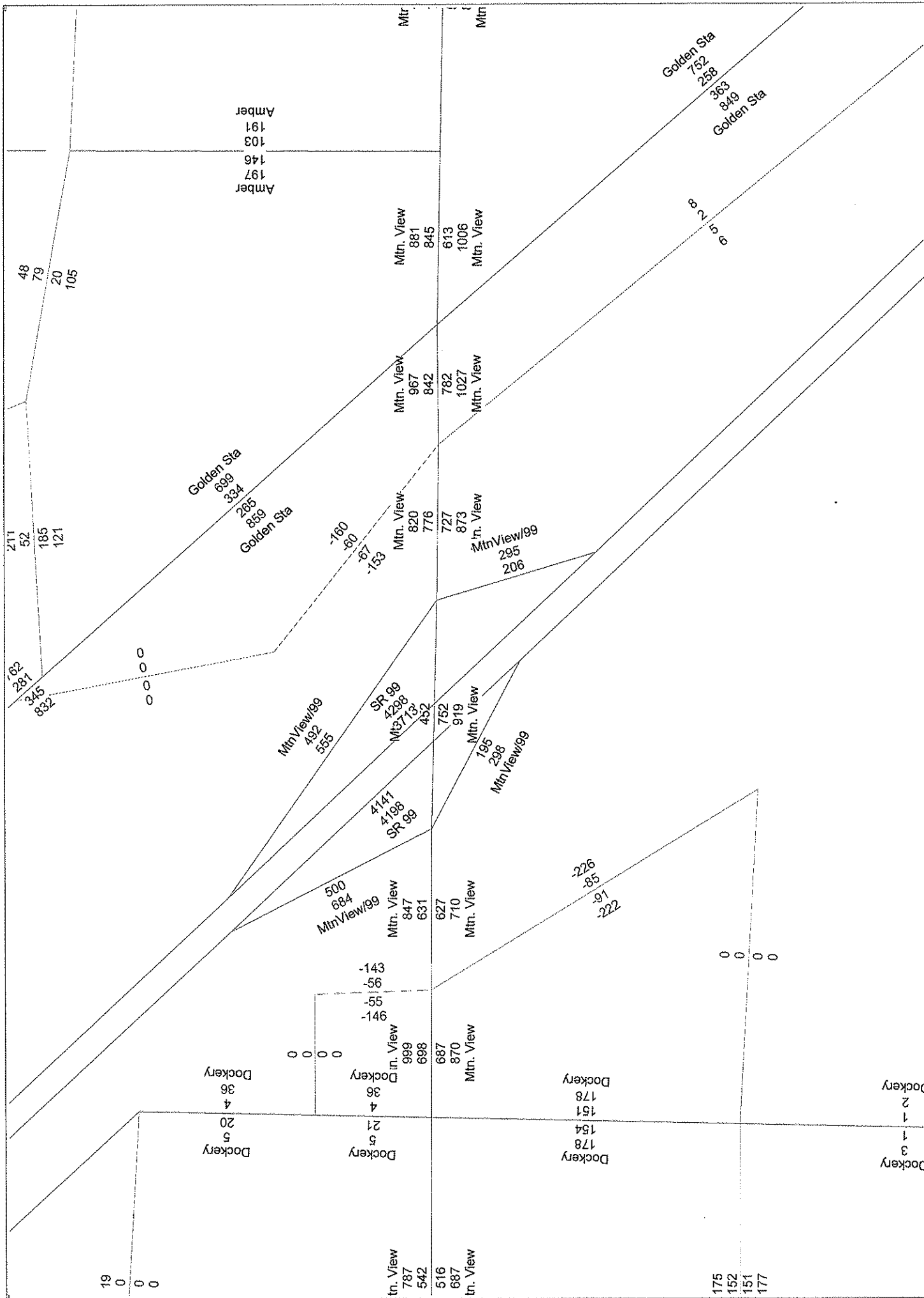
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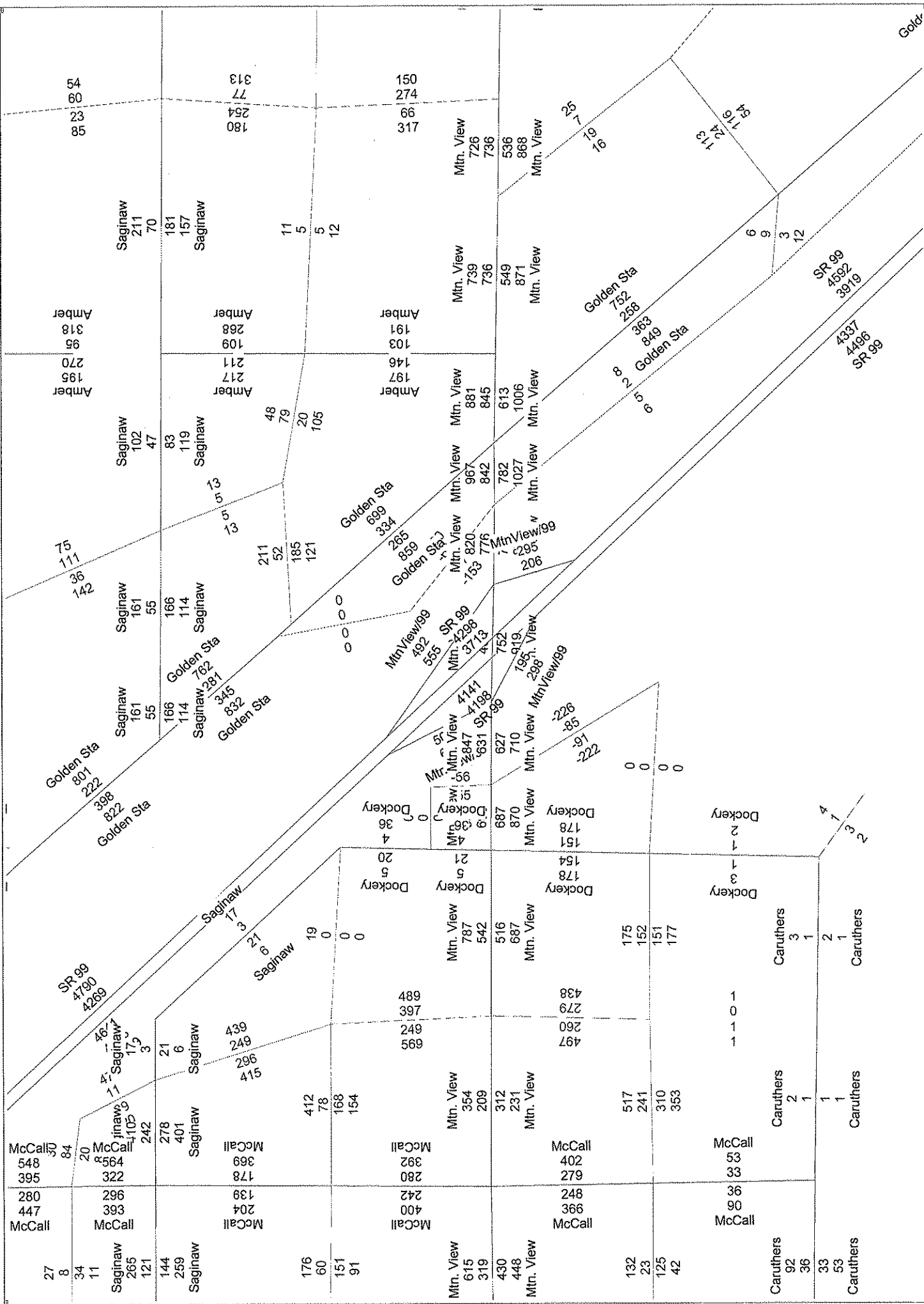


2035 Concil of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes



2035 Concil of Fresno County Governments Travel Demand Model AM and PM Peak Hour Traffic Volumes

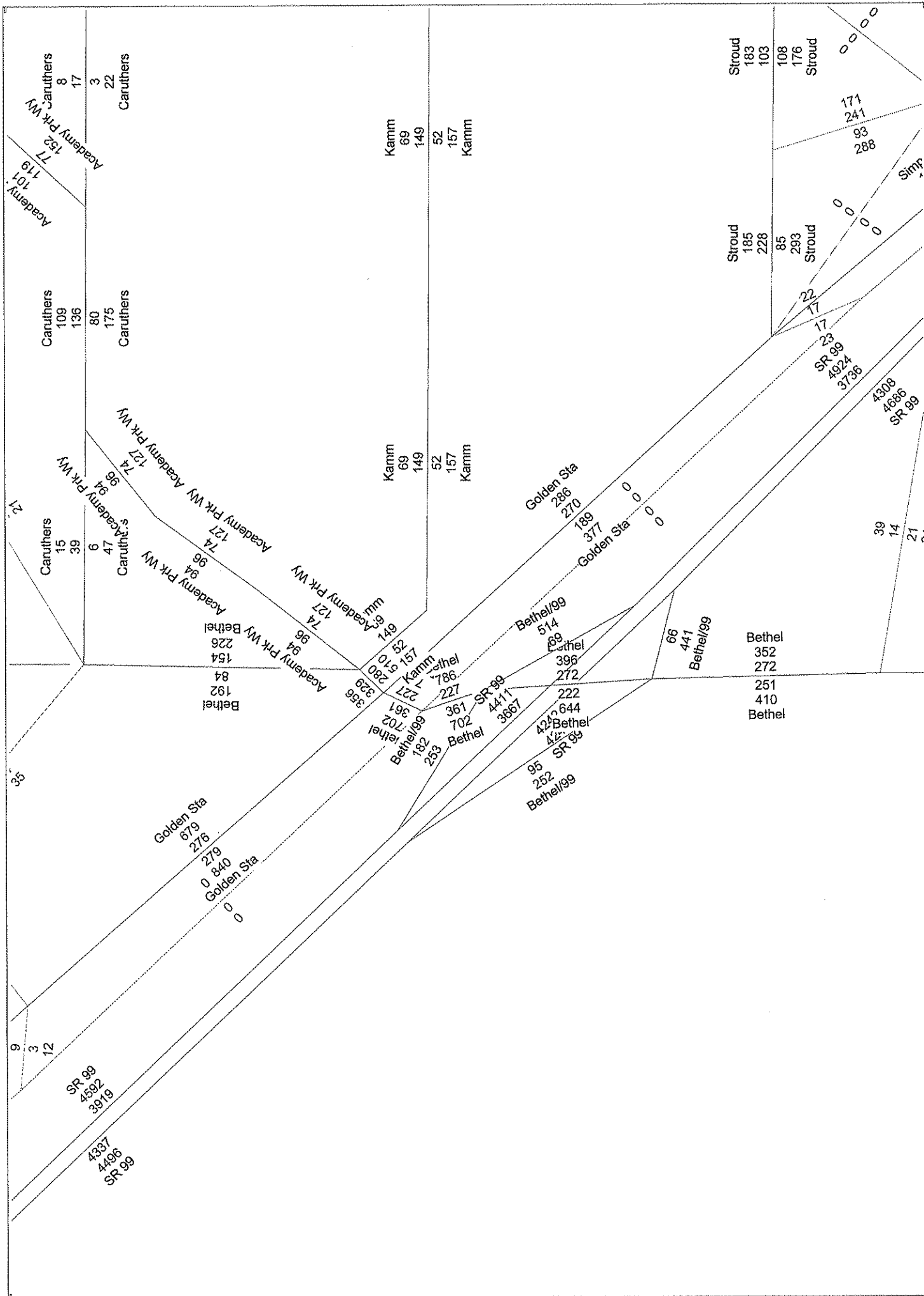




2035 Concil of Fresno County Governments Travel Demand Model AM and PM Peak Hour Traffic Volumes

11111

[illegible]



**2035 Concil of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes**

APPENDIX B


















INTERSECTION ANALYSIS SHEETS

Existing Conditions

HCM Unsignalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB Off / Van Horn

Existing-AM

10/26/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 161 | 4 | 3 | 101 | 0 | 4 | 0 | 37 | 213 | 2 | 55 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.62 | 0.62 | 0.62 | 0.63 | 0.63 | 0.63 | 0.68 | 0.68 | 0.68 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 260 | 6 | 5 | 160 | 0 | 6 | 0 | 54 | 242 | 2 | 62 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 170 | | | 276 | | | 485 | 453 | 283 | 507 | 456 | 180 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 170 | | | 276 | | | 485 | 453 | 283 | 507 | 456 | 180 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.4 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.4 |
| p0 queue free % | 100 | | | 100 | | | 99 | 100 | 93 | 41 | 100 | 92 |
| cM capacity (veh/h) | 1395 | | | 1276 | | | 438 | 493 | 743 | 413 | 490 | 814 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 266 | 165 | 60 | 307 | | | | | | | | |
| Volume Left | 0 | 5 | 6 | 242 | | | | | | | | |
| Volume Right | 6 | 0 | 54 | 62 | | | | | | | | |
| cSH | 1700 | 1276 | 696 | 520 | | | | | | | | |
| Volume to Capacity | 0.16 | 0.00 | 0.09 | 0.59 | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 7 | 95 | | | | | | | | |
| Control Delay (s) | 0.0 | 0.3 | 10.7 | 22.3 | | | | | | | | |
| Lane LOS | | A | B | C | | | | | | | | |
| Approach Delay (s) | 0.0 | 0.3 | 10.7 | 22.3 | | | | | | | | |
| Approach LOS | | | B | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 9.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 35.3% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

17: Mountain View Ave & SR 99 SB On

Existing-AM

10/26/2011

| | | | | | | |
|-----------------------------------|------|-------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | | ↖ | | |
| Volume (veh/h) | 371 | 51 | 19 | 106 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.82 | 0.82 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 422 | 58 | 23 | 129 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 490 | | 646 | 471 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 490 | | 646 | 471 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 98 | | 100 | 100 |
| cM capacity (veh/h) | | | 1074 | | 423 | 588 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 480 | 152 | | | | |
| Volume Left | 0 | 23 | | | | |
| Volume Right | 58 | 0 | | | | |
| cSH | 1700 | 1074 | | | | |
| Volume to Capacity | 0.28 | 0.02 | | | | |
| Queue Length 95th (ft) | 0 | 2 | | | | |
| Control Delay (s) | 0.0 | 1.4 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 1.4 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.3 | | | | |
| Intersection Capacity Utilization | | 35.6% | ICU Level of Service | | A | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

18: Mountain View Ave & SR 99 NB On

Existing-AM
10/26/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | | |
| Volume (veh/h) | 37 | 333 | 125 | 285 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.84 | 0.84 | 0.90 | 0.90 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 44 | 396 | 139 | 317 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 466 | | | | 802 | 317 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 466 | | | | 802 | 317 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 100 | 100 |
| cM capacity (veh/h) | 1096 | | | | 336 | 717 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 440 | 456 | | | | |
| Volume Left | 44 | 0 | | | | |
| Volume Right | 0 | 317 | | | | |
| cSH | 1096 | 1700 | | | | |
| Volume to Capacity | 0.04 | 0.27 | | | | |
| Queue Length 95th (ft) | 3 | 0 | | | | |
| Control Delay (s) | 1.2 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 1.2 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.6 | | | | |
| Intersection Capacity Utilization | | 60.5% | | ICU Level of Service | | B |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis












19: Mountain View Ave & SR 99 NB Off

Existing-AM
10/26/2011

| | | | | | | |
|-----------------------------------|------|------|-------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↙ | ↗ |
| Volume (veh/h) | 336 | 0 | 0 | 404 | 17 | 18 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.82 | 0.82 | 0.87 | 0.87 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 410 | 0 | 0 | 464 | 19 | 20 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.92 | |
| vC, conflicting volume | | | 420 | | 894 | 430 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 420 | | 839 | 430 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.6 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.6 |
| p0 queue free % | | | 100 | | 94 | 96 |
| cM capacity (veh/h) | | | 1130 | | 303 | 546 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 410 | 464 | 40 | | | |
| Volume Left | 0 | 0 | 19 | | | |
| Volume Right | 0 | 0 | 20 | | | |
| cSH | 1700 | 1700 | 623 | | | |
| Volume to Capacity | 0.24 | 0.27 | 0.06 | | | |
| Queue Length 95th (ft) | 0 | 0 | 5 | | | |
| Control Delay (s) | 0.0 | 0.0 | 14.7 | | | |
| Lane LOS | | | B | | | |
| Approach Delay (s) | 0.0 | 0.0 | 14.7 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.6 | | | |
| Intersection Capacity Utilization | | | 34.1% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis 20: Mountain View Ave & Golden State Blvd

Existing-AM
10/26/2011

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|------|---|---|------|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 34 | 276 | 24 | 4 | 346 | 15 | 18 | 99 | 4 | 20 | 73 | 20 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3400 | | 1763 | 3356 | | 1760 | 3539 | 1554 | 1760 | 3539 | 1554 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3400 | | 1763 | 3356 | | 1760 | 3539 | 1554 | 1760 | 3539 | 1554 |
| Peak-hour factor, PHF | 0.83 | 0.83 | 0.83 | 0.96 | 0.96 | 0.96 | 0.86 | 0.86 | 0.86 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 41 | 333 | 29 | 4 | 360 | 16 | 21 | 115 | 5 | 22 | 80 | 22 |
| RTOR Reduction (vph) | 0 | 8 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 19 |
| Lane Group Flow (vph) | 41 | 354 | 0 | 4 | 372 | 0 | 21 | 115 | 1 | 22 | 80 | 3 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 5% | 2% | 2% | 7% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 1.9 | 11.1 | | 0.6 | 9.8 | | 0.7 | 4.3 | 4.3 | 0.7 | 4.3 | 4.3 |
| Effective Green, g (s) | 1.9 | 11.1 | | 0.6 | 9.8 | | 0.7 | 4.3 | 4.3 | 0.7 | 4.3 | 4.3 |
| Actuated g/C Ratio | 0.06 | 0.32 | | 0.02 | 0.28 | | 0.02 | 0.12 | 0.12 | 0.02 | 0.12 | 0.12 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 97 | 1094 | | 31 | 953 | | 36 | 441 | 194 | 36 | 441 | 194 |
| v/s Ratio Prot | c0.02 | 0.10 | | 0.00 | c0.11 | | 0.01 | c0.03 | | c0.01 | 0.02 | |
| v/s Ratio Perm | | | | | | | | | 0.00 | | | 0.00 |
| v/c Ratio | 0.42 | 0.32 | | 0.13 | 0.39 | | 0.58 | 0.26 | 0.00 | 0.61 | 0.18 | 0.01 |
| Uniform Delay, d1 | 15.8 | 8.9 | | 16.7 | 9.9 | | 16.8 | 13.7 | 13.2 | 16.8 | 13.5 | 13.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.0 | 0.2 | | 1.9 | 0.3 | | 21.8 | 0.3 | 0.0 | 27.0 | 0.2 | 0.0 |
| Delay (s) | 18.7 | 9.0 | | 18.6 | 10.2 | | 38.6 | 14.0 | 13.2 | 43.7 | 13.7 | 13.3 |
| Level of Service | B | A | | B | B | | D | B | B | D | B | B |
| Approach Delay (s) | | 10.0 | | | 10.3 | | | 17.6 | | | 19.0 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 12.2 | | | | | HCM Level of Service | | B | | | |
| HCM Volume to Capacity ratio | | 0.37 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 34.5 | | | | | Sum of lost time (s) | | 17.8 | | | |
| Intersection Capacity Utilization | | 35.2% | | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

20: Mountain View Ave & Golden State Blvd

Existing-AM

10/26/2011






















| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 41 | 362 | 4 | 376 | 21 | 115 | 5 | 22 | 80 | 22 |
| v/c Ratio | 0.07 | 0.19 | 0.01 | 0.22 | 0.04 | 0.09 | 0.01 | 0.04 | 0.07 | 0.04 |
| Control Delay | 18.5 | 8.8 | 21.2 | 11.4 | 19.6 | 13.7 | 11.8 | 19.6 | 13.9 | 8.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 18.5 | 8.8 | 21.2 | 11.4 | 19.6 | 13.7 | 11.8 | 19.6 | 13.9 | 8.9 |
| Queue Length 50th (ft) | 4 | 14 | 1 | 15 | 2 | 5 | 0 | 2 | 3 | 0 |
| Queue Length 95th (ft) | 38 | 85 | 9 | 103 | 25 | 35 | 7 | 27 | 28 | 15 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 357 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 739 | 2389 | 739 | 2250 | 739 | 2481 | 1084 | 739 | 2481 | 1089 |
| 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 | 0.06 | 0.15 | 0.01 | 0.17 | 0.03 | 0.05 | 0.00 | 0.03 | 0.03 | 0.02 |

Intersection Summary

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.

















Existing-AM
10/26/2011

| | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|--|--|--|--|
| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | | | |
| Lane Configurations |  |  | |  |  | | |  | | |  |  | | | | | | | | |
| Volume (veh/h) | 6 | 222 | 30 | 28 | 374 | 8 | 4 | 30 | 24 | 3 | 35 | 6 | | | | | | | | |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | | | | | | | | | |
| Grade | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | | | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.92 | 0.92 | 0.92 | 0.85 | 0.85 | 0.85 | 0.73 | 0.73 | 0.73 | | | | | | | | |
| Hourly flow rate (vph) | 7 | 264 | 36 | 30 | 407 | 9 | 5 | 35 | 28 | 4 | 48 | 8 | | | | | | | | |
| Pedestrians | 10 | | | 10 | | | 10 | | | 10 | | | | | | | | | | |
| Lane Width (ft) | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | | | | | | | | | | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | | | | | | | | | |
| Percent Blockage | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 425 | | | 310 | | | 613 | 793 | 170 | 684 | 806 | 228 | | | | | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 425 | | | 310 | | | 613 | 793 | 170 | 684 | 806 | 228 | | | | | | | | |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | | | | | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | | | | | |
| p0 queue free % | 99 | | | 98 | | | 98 | 88 | 97 | 99 | 84 | 99 | | | | | | | | |
| cM capacity (veh/h) | 1121 | | | 1237 | | | 310 | 305 | 830 | 280 | 299 | 762 | | | | | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | | | | | | | | | |
| Volume Total | 7 | 176 | 124 | 30 | 271 | 144 | 68 | 60 | | | | | | | | | | | | |
| Volume Left | 7 | 0 | 0 | 30 | 0 | 0 | 5 | 4 | | | | | | | | | | | | |
| Volume Right | 0 | 0 | 36 | 0 | 0 | 9 | 28 | 8 | | | | | | | | | | | | |
| cSH | 1121 | 1700 | 1700 | 1237 | 1700 | 1700 | 414 | 325 | | | | | | | | | | | | |
| Volume to Capacity | 0.01 | 0.10 | 0.07 | 0.02 | 0.16 | 0.08 | 0.16 | 0.19 | | | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 2 | 0 | 0 | 15 | 17 | | | | | | | | | | | | |
| Control Delay (s) | 8.2 | 0.0 | 0.0 | 8.0 | 0.0 | 0.0 | 15.4 | 18.6 | | | | | | | | | | | | |
| Lane LOS | A | | | A | | | C | C | | | | | | | | | | | | |
| Approach Delay (s) | 0.2 | | | 0.5 | | | 15.4 | 18.6 | | | | | | | | | | | | |
| Approach LOS | | | | | | | C | C | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | | | |
| Average Delay | 2.8 | | | | | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 31.8% | | | | | | | | | | | | | | | | | | | |
| ICU Level of Service | A | | | | | | | | | | | | | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave

Existing-AM

10/26/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (veh/h) | 7 | 230 | 7 | 20 | 363 | 4 | 10 | 27 | 18 | 5 | 36 | 24 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.86 | 0.86 | 0.86 | 0.81 | 0.81 | 0.81 |
| Hourly flow rate (vph) | 8 | 256 | 8 | 22 | 403 | 4 | 12 | 31 | 21 | 6 | 44 | 30 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 418 | | | 273 | | | 797 | 747 | 279 | 782 | 749 | 426 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 418 | | | 273 | | | 797 | 747 | 279 | 782 | 749 | 426 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 99 | | | 98 | | | 95 | 90 | 97 | 98 | 86 | 95 |
| cM capacity (veh/h) | 1132 | | | 1279 | | | 248 | 328 | 747 | 268 | 327 | 618 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 271 | 430 | 64 | 80 | | | | | | | | |
| Volume Left | 8 | 22 | 12 | 6 | | | | | | | | |
| Volume Right | 8 | 4 | 21 | 30 | | | | | | | | |
| cSH | 1132 | 1279 | 374 | 388 | | | | | | | | |
| Volume to Capacity | 0.01 | 0.02 | 0.17 | 0.21 | | | | | | | | |
| Queue Length 95th (ft) | 1 | 1 | 15 | 19 | | | | | | | | |
| Control Delay (s) | 0.3 | 0.6 | 16.6 | 16.7 | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | |
| Approach Delay (s) | 0.3 | 0.6 | 16.6 | 16.7 | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 43.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 25: Amber Ave & Golden State Blvd











Existing-AM
10/26/2011

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | Y | | | ↑↑ | ↑↑ | |
| Volume (veh/h) | 2 | 1 | 3 | 150 | 109 | 1 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.85 | 0.85 | 0.74 | 0.74 |
| Hourly flow rate (vph) | 2 | 1 | 4 | 176 | 147 | 1 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 263 | 94 | 159 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 263 | 94 | 159 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 690 | 928 | 1407 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 3 | 62 | 118 | 98 | 50 | |
| Volume Left | 2 | 4 | 0 | 0 | 0 | |
| Volume Right | 1 | 0 | 0 | 0 | 1 | |
| cSH | 755 | 1407 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.00 | 0.00 | 0.07 | 0.06 | 0.03 | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | |
| Control Delay (s) | 9.8 | 0.4 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 9.8 | 0.2 | | 0.0 | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.2 | | | |
| Intersection Capacity Utilization | | | 19.1% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

31: Kamm Ave (SR 99 NB On) & Bethel Ave





















Existing-AM
10/26/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 1 | 1 | 131 | 143 | 104 | 146 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.79 | 0.79 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 1 | 1 | 166 | 181 | 121 | 170 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 654 | 141 | 131 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 654 | 141 | 131 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 89 | | | |
| cM capacity (veh/h) | 376 | 892 | 1442 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 2 | 347 | 121 | 170 | | |
| Volume Left | 1 | 166 | 0 | 0 | | |
| Volume Right | 1 | 0 | 0 | 170 | | |
| cSH | 529 | 1442 | 1700 | 1700 | | |
| Volume to Capacity | 0.00 | 0.11 | 0.07 | 0.10 | | |
| Queue Length 95th (ft) | 0 | 10 | 0 | 0 | | |
| Control Delay (s) | 11.8 | 4.3 | 0.0 | 0.0 | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 11.8 | 4.3 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.4 | | | | |
| Intersection Capacity Utilization | | 34.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Existing-AM










10/26/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 31 | 83 | 22 | 14 | 152 | 19 | 84 | 73 | 15 | 8 | 67 | 11 |
| Peak Hour Factor | 0.65 | 0.65 | 0.65 | 0.83 | 0.83 | 0.83 | 0.84 | 0.84 | 0.84 | 0.80 | 0.80 | 0.80 |
| Hourly flow rate (vph) | 48 | 128 | 34 | 17 | 183 | 23 | 100 | 87 | 18 | 10 | 84 | 14 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 175 | 34 | 223 | 143 | 61 | 38 | 56 | 14 | | | | |
| Volume Left (vph) | 48 | 0 | 17 | 100 | 0 | 10 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 34 | 23 | 0 | 18 | 0 | 0 | 14 | | | | |
| Hadj (s) | 0.10 | -0.57 | 0.00 | 0.38 | -0.17 | 0.17 | 0.03 | -0.67 | | | | |
| Departure Headway (s) | 5.1 | 3.2 | 5.0 | 6.1 | 5.5 | 6.0 | 5.9 | 3.2 | | | | |
| Degree Utilization, x | 0.25 | 0.03 | 0.31 | 0.24 | 0.09 | 0.06 | 0.09 | 0.01 | | | | |
| Capacity (veh/h) | 659 | 1121 | 686 | 560 | 611 | 548 | 562 | 1121 | | | | |
| Control Delay (s) | 9.9 | 6.3 | 10.2 | 9.8 | 7.9 | 8.2 | 8.3 | 5.0 | | | | |
| Approach Delay (s) | 9.3 | | 10.2 | 9.2 | | 7.9 | | | | | | |
| Approach LOS | A | | B | A | | A | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 9.3 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 35.3% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 33: Bethel Ave & Kamm Ave


















Existing-AM

10/26/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | | |  |  | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 71 | 31 | 3 | 61 | 119 | 8 |
| Peak Hour Factor | 0.80 | 0.80 | 0.73 | 0.73 | 0.76 | 0.76 |
| Hourly flow rate (vph) | 89 | 39 | 4 | 84 | 157 | 11 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total (vph) | 128 | 88 | 167 | | | |
| Volume Left (vph) | 0 | 4 | 157 | | | |
| Volume Right (vph) | 39 | 0 | 11 | | | |
| Hadj (s) | 0.11 | 0.09 | 0.18 | | | |
| Departure Headway (s) | 4.3 | 4.5 | 4.6 | | | |
| Degree Utilization, x | 0.15 | 0.11 | 0.21 | | | |
| Capacity (veh/h) | 801 | 749 | 752 | | | |
| Control Delay (s) | 8.1 | 8.1 | 8.8 | | | |
| Approach Delay (s) | 8.1 | 8.1 | 8.8 | | | |
| Approach LOS | A | A | A | | | |
| Intersection Summary | | | | | | |
| Delay | | | 8.4 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 23.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 34: Kamm Ave & Academy Ave

Existing-AM
10/26/2011










| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  |  | |  | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 1 | 22 | 20 | 49 | 76 | 4 | 50 | 59 | 41 | 11 | 55 | 6 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.77 | 0.77 | 0.77 | 0.85 | 0.85 | 0.85 | 0.75 | 0.75 | 0.75 |
| Hourly flow rate (vph) | 1 | 25 | 23 | 64 | 99 | 5 | 59 | 69 | 48 | 15 | 73 | 8 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 49 | 168 | 128 | 48 | 96 | | | | | | | |
| Volume Left (vph) | 1 | 64 | 59 | 0 | 15 | | | | | | | |
| Volume Right (vph) | 23 | 5 | 0 | 48 | 8 | | | | | | | |
| Hadj (s) | -0.24 | 0.09 | 0.26 | -0.67 | 0.01 | | | | | | | |
| Departure Headway (s) | 4.6 | 4.7 | 5.4 | 4.5 | 4.8 | | | | | | | |
| Degree Utilization, x | 0.06 | 0.22 | 0.19 | 0.06 | 0.13 | | | | | | | |
| Capacity (veh/h) | 727 | 718 | 639 | 765 | 708 | | | | | | | |
| Control Delay (s) | 7.9 | 9.0 | 8.5 | 6.5 | 8.5 | | | | | | | |
| Approach Delay (s) | 7.9 | 9.0 | 7.9 | 8.5 | | | | | | | | |
| Approach LOS | A | A | A | A | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 8.4 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 33.1% | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

35: SR 99 NB Off & Bethel Ave

Existing-AM

















10/26/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 1 | 23 | 251 | 0 | 0 | 101 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.67 | 0.67 | 0.71 | 0.71 | 0.59 | 0.59 |
| Hourly flow rate (vph) | 1 | 34 | 354 | 0 | 0 | 171 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage veh | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 545 | 374 | | | 364 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 545 | 374 | | | 364 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 95 | | | 100 | |
| cM capacity (veh/h) | 491 | 661 | | | 1185 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 36 | 354 | 171 | | | |
| Volume Left | 1 | 0 | 0 | | | |
| Volume Right | 34 | 0 | 0 | | | |
| cSH | 652 | 1700 | 1700 | | | |
| Volume to Capacity | 0.05 | 0.21 | 0.10 | | | |
| Queue Length 95th (ft) | 4 | 0 | 0 | | | |
| Control Delay (s) | 10.8 | 0.0 | 0.0 | | | |
| Lane LOS | B | | | | | |
| Approach Delay (s) | 10.8 | 0.0 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.7 | | | | |
| Intersection Capacity Utilization | | 26.1% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

36: Parkway Drive & Bethel Ave

















Existing-AM
10/26/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | | | | |  | | |  | |
| Volume (veh/h) | 33 | 5 | 20 | 0 | 0 | 0 | 4 | 220 | 1 | 26 | 84 | 5 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.88 | 0.88 | 0.88 | 0.79 | 0.79 | 0.79 | 0.67 | 0.67 | 0.67 |
| Hourly flow rate (vph) | 45 | 7 | 27 | 0 | 0 | 0 | 5 | 278 | 1 | 39 | 125 | 7 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | 3 | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 516 | 517 | 149 | 533 | 520 | 299 | 143 | | | 290 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 516 | 517 | 149 | 533 | 520 | 299 | 143 | | | 290 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 90 | 98 | 97 | 100 | 100 | 100 | 100 | | | 97 | | |
| cM capacity (veh/h) | 447 | 443 | 883 | 420 | 441 | 734 | 1428 | | | 1272 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 79 | 285 | 172 | | | | | | | | | |
| Volume Left | 45 | 5 | 39 | | | | | | | | | |
| Volume Right | 27 | 1 | 7 | | | | | | | | | |
| cSH | 681 | 1428 | 1272 | | | | | | | | | |
| Volume to Capacity | 0.12 | 0.00 | 0.03 | | | | | | | | | |
| Queue Length 95th (ft) | 10 | 0 | 2 | | | | | | | | | |
| Control Delay (s) | 12.4 | 0.2 | 2.0 | | | | | | | | | |
| Lane LOS | B | A | A | | | | | | | | | |
| Approach Delay (s) | 12.4 | 0.2 | 2.0 | | | | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 37.3% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB Off / Van Horn









Existing-PM

10/14/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 211 | 2 | 10 | 123 | 0 | 2 | 0 | 34 | 285 | 9 | 48 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.88 | 0.88 | 0.88 | 0.82 | 0.82 | 0.82 | 0.96 | 0.96 | 0.96 |
| Hourly flow rate (vph) | 0 | 251 | 2 | 11 | 140 | 0 | 2 | 0 | 41 | 297 | 9 | 50 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 150 | | | 264 | | | 465 | 435 | 272 | 476 | 436 | 160 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 150 | | | 264 | | | 465 | 435 | 272 | 476 | 436 | 160 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 99 | | | 99 | 100 | 94 | 34 | 98 | 94 |
| cM capacity (veh/h) | 1420 | | | 1290 | | | 455 | 501 | 754 | 452 | 501 | 871 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 254 | 151 | 44 | 356 | | | | | | | | |
| Volume Left | 0 | 11 | 2 | 297 | | | | | | | | |
| Volume Right | 2 | 0 | 41 | 50 | | | | | | | | |
| cSH | 1700 | 1290 | 727 | 527 | | | | | | | | |
| Volume to Capacity | 0.15 | 0.01 | 0.06 | 0.68 | | | | | | | | |
| Queue Length 95th (ft) | 0 | 1 | 5 | 126 | | | | | | | | |
| Control Delay (s) | 0.0 | 0.7 | 10.3 | 25.3 | | | | | | | | |
| Lane LOS | | A | B | D | | | | | | | | |
| Approach Delay (s) | 0.0 | 0.7 | 10.3 | 25.3 | | | | | | | | |
| Approach LOS | | | B | D | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 11.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 44.3% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
17: Mountain View Ave & SR 99 SB On

Existing-PM
10/14/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations |  | | |  | | |
| Volume (veh/h) | 500 | 42 | 24 | 132 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.97 | 0.97 | 0.80 | 0.80 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 515 | 43 | 30 | 165 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 569 | | 782 | 557 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 569 | | 782 | 557 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 97 | | 100 | 100 |
| cM capacity (veh/h) | | | 1004 | | 349 | 525 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 559 | 195 | | | | |
| Volume Left | 0 | 30 | | | | |
| Volume Right | 43 | 0 | | | | |
| cSH | 1700 | 1004 | | | | |
| Volume to Capacity | 0.33 | 0.03 | | | | |
| Queue Length 95th (ft) | 0 | 2 | | | | |
| Control Delay (s) | 0.0 | 1.6 | | | | |
| Lane LOS | | A | | | | |
| Approach Delay (s) | 0.0 | 1.6 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.4 | | | | |
| Intersection Capacity Utilization | | 41.8% | ICU Level of Service | A | | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

18: Mountain View Ave & SR 99 NB On

Existing-PM
10/14/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | | |
| Volume (veh/h) | 34 | 449 | 151 | 216 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.94 | 0.94 | 0.90 | 0.90 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 36 | 478 | 168 | 240 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 418 | | | | 858 | 308 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 418 | | | | 858 | 308 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 97 | | | | 100 | 100 |
| cM capacity (veh/h) | 1141 | | | | 314 | 726 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 514 | 408 | | | | |
| Volume Left | 36 | 0 | | | | |
| Volume Right | 0 | 240 | | | | |
| cSH | 1141 | 1700 | | | | |
| Volume to Capacity | 0.03 | 0.24 | | | | |
| Queue Length 95th (ft) | 2 | 0 | | | | |
| Control Delay (s) | 0.9 | 0.0 | | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.9 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.5 | | | | |
| Intersection Capacity Utilization | | 63.5% | | ICU Level of Service | B | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 19: Mountain View Ave & SR 99 NB Off

Existing-PM
10/14/2011






















| | | | | | | |
|-----------------------------------|------|-------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↘ | ↗ |
| Volume (veh/h) | 449 | 0 | 0 | 342 | 22 | 22 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.89 | 0.65 | 0.65 |
| Hourly flow rate (vph) | 510 | 0 | 0 | 384 | 34 | 34 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.92 | |
| vC, conflicting volume | | | 520 | | 914 | 530 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 520 | | 865 | 530 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 88 | 94 |
| cM capacity (veh/h) | | | 1037 | | 294 | 540 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 510 | 384 | 68 | | | |
| Volume Left | 0 | 0 | 34 | | | |
| Volume Right | 0 | 0 | 34 | | | |
| cSH | 1700 | 1700 | 588 | | | |
| Volume to Capacity | 0.30 | 0.23 | 0.12 | | | |
| Queue Length 95th (ft) | 0 | 0 | 10 | | | |
| Control Delay (s) | 0.0 | 0.0 | 15.5 | | | |
| Lane LOS | | | C | | | |
| Approach Delay (s) | 0.0 | 0.0 | 15.5 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1.1 | | | | |
| Intersection Capacity Utilization | | 36.5% | ICU Level of Service | A | | |
| Analysis Period (min) | | 15 | | | | |

HCM Signalized Intersection Capacity Analysis

20: Mountain View Ave & Golden State Blvd

Existing-PM

10/14/2011

| |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 23 | 388 | 48 | 6 | 282 | 40 | 17 | 122 | 5 | 48 | 144 | 26 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1762 | 3443 | | 1763 | 3435 | | 1760 | 3539 | 1553 | 1770 | 3539 | 1553 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1762 | 3443 | | 1763 | 3435 | | 1760 | 3539 | 1553 | 1770 | 3539 | 1553 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.80 | 0.80 | 0.80 | 0.95 | 0.95 | 0.95 | 0.78 | 0.78 | 0.78 |
| Adj. Flow (vph) | 26 | 441 | 55 | 8 | 352 | 50 | 18 | 128 | 5 | 62 | 185 | 33 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 0 | 4 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 26 | 484 | 0 | 8 | 388 | 0 | 18 | 128 | 1 | 62 | 185 | 7 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 0.8 | 12.8 | | 0.7 | 12.7 | | 0.8 | 7.2 | 7.2 | 2.1 | 8.5 | 8.5 |
| Effective Green, g (s) | 0.8 | 12.8 | | 0.7 | 12.7 | | 0.8 | 7.2 | 7.2 | 2.1 | 8.5 | 8.5 |
| Actuated g/C Ratio | 0.02 | 0.32 | | 0.02 | 0.31 | | 0.02 | 0.18 | 0.18 | 0.05 | 0.21 | 0.21 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 35 | 1085 | | 30 | 1074 | | 35 | 628 | 275 | 92 | 741 | 325 |
| v/s Ratio Prot | c0.01 | c0.14 | | 0.00 | 0.11 | | 0.01 | 0.04 | | c0.04 | c0.05 | |
| v/s Ratio Perm | | | | | | | | | 0.00 | | | 0.00 |
| v/c Ratio | 0.74 | 0.45 | | 0.27 | 0.36 | | 0.51 | 0.20 | 0.00 | 0.67 | 0.25 | 0.02 |
| Uniform Delay, d1 | 19.8 | 11.1 | | 19.7 | 10.8 | | 19.7 | 14.3 | 13.7 | 18.9 | 13.4 | 12.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 58.7 | 0.3 | | 4.7 | 0.2 | | 12.2 | 0.2 | 0.0 | 17.7 | 0.2 | 0.0 |
| Delay (s) | 78.5 | 11.4 | | 24.4 | 11.0 | | 31.9 | 14.4 | 13.8 | 36.7 | 13.6 | 12.8 |
| Level of Service | E | B | | C | B | | C | B | B | D | B | B |
| Approach Delay (s) | | 14.7 | | | 11.3 | | | 16.5 | | | 18.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 14.7 | | | | | HCM Level of Service | | B | | | |
| HCM Volume to Capacity ratio | | 0.30 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 40.6 | | | | | Sum of lost time (s) | | 8.0 | | | |
| Intersection Capacity Utilization | | 40.6% | | | | | ICU Level of Service | | A | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Existing-PM

20: Mountain View Ave & Golden State Blvd

10/14/2011






















| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 26 | 496 | 8 | 402 | 18 | 128 | 5 | 62 | 185 | 33 |
| v/c Ratio | 0.06 | 0.32 | 0.02 | 0.26 | 0.04 | 0.13 | 0.01 | 0.14 | 0.15 | 0.06 |
| Control Delay | 19.7 | 12.1 | 21.0 | 12.0 | 20.2 | 14.6 | 11.8 | 18.9 | 11.8 | 6.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 19.7 | 12.1 | 21.0 | 12.0 | 20.2 | 14.6 | 11.8 | 18.9 | 11.8 | 6.7 |
| Queue Length 50th (ft) | 3 | 21 | 1 | 16 | 2 | 6 | 0 | 6 | 10 | 0 |
| Queue Length 95th (ft) | 29 | 126 | 13 | 93 | 24 | 41 | 7 | 48 | 46 | 15 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 357 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 685 | 2073 | 685 | 2068 | 685 | 2289 | 1001 | 685 | 2304 | 1017 |
| 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 | 0.04 | 0.24 | 0.01 | 0.19 | 0.03 | 0.06 | 0.00 | 0.09 | 0.08 | 0.03 |

Intersection Summary

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.

Existing-PM
10/14/2011
















| | | | | | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|-----|-----|--|--|--|--|
| |  |  |  |  |  |  |  |  |  |  |  |  | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | | | |
| Lane Configurations |  |  | |  |  | | |  | | |  |  | | | | | | |
| Volume (veh/h) | 20 | 422 | 10 | 24 | 296 | 7 | 10 | 38 | 34 | 10 | 27 | 16 | | | | | | |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | | | | | | | |
| Grade | 0% | | | 0% | | | 0% | | | 0% | | | | | | | | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.90 | 0.90 | 0.90 | 0.68 | 0.68 | 0.68 | 0.83 | 0.83 | 0.83 | | | | | | |
| Hourly flow rate (vph) | 23 | 491 | 12 | 27 | 329 | 8 | 15 | 56 | 50 | 12 | 33 | 19 | | | | | | |
| Pedestrians | 10 | | | 10 | | | 10 | | | 10 | | | | | | | | |
| Lane Width (ft) | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | | | | | | | | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | | | | | | | |
| Percent Blockage | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | | | | | |
| Median type | None | | | | | | None | | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | | | | | |
| vC, conflicting volume | 347 | | | | 512 | | | | 816 | 953 | 271 | 776 | 955 | 188 | | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | | | | | |
| vCu, unblocked vol | 347 | | | | 512 | | | | 816 | 953 | 271 | 776 | 955 | 188 | | | | |
| tC, single (s) | 4.1 | | | | 4.1 | | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | | 2.2 | | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | | | | |
| p0 queue free % | 98 | | | | 97 | | | | 93 | 77 | 93 | 94 | 87 | 98 | | | | |
| cM capacity (veh/h) | 1199 | | | | 1040 | | | | 221 | 242 | 715 | 206 | 241 | 808 | | | | |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | | | | | | | |
| Volume Total | 23 | 327 | 175 | 27 | 219 | 117 | 121 | 64 | | | | | | | | | | |
| Volume Left | 23 | 0 | 0 | 27 | 0 | 0 | 15 | 12 | | | | | | | | | | |
| Volume Right | 0 | 0 | 12 | 0 | 0 | 8 | 50 | 19 | | | | | | | | | | |
| cSH | 1199 | 1700 | 1700 | 1040 | 1700 | 1700 | 328 | 294 | | | | | | | | | | |
| Volume to Capacity | 0.02 | 0.19 | 0.10 | 0.03 | 0.13 | 0.07 | 0.37 | 0.22 | | | | | | | | | | |
| Queue Length 95th (ft) | 1 | 0 | 0 | 2 | 0 | 0 | 41 | 20 | | | | | | | | | | |
| Control Delay (s) | 8.1 | 0.0 | 0.0 | 8.6 | 0.0 | 0.0 | 22.2 | 20.6 | | | | | | | | | | |
| Lane LOS | A | | | | A | | | | C | C | | | | | | | | |
| Approach Delay (s) | 0.4 | | | | 0.6 | | | | 22.2 | 20.6 | | | | | | | | |
| Approach LOS | | | | | | | C | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | | | |
| Average Delay | 4.1 | | | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 33.8% | | | ICU Level of Service | | | A | | | | | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

22: Mountain View Ave & Academy Ave

Existing-PM




10/14/2011

| | | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|-----|-----|
| |  |  |  |  |  |  |  |  |  |  |  | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
| Lane Configurations | |  | | |  | | |  | | |  | | | |
| Volume (veh/h) | 7 | 416 | 10 | 19 | 339 | 4 | 8 | 38 | 13 | 6 | 41 | 11 | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.90 | 0.90 | 0.90 | 0.74 | 0.74 | 0.74 | 0.85 | 0.85 | 0.85 | | |
| Hourly flow rate (vph) | 7 | 443 | 11 | 21 | 377 | 4 | 11 | 51 | 18 | 7 | 48 | 13 | | |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | | | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | | | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | | |
| vC, conflicting volume | 391 | | | | 463 | | | | 941 | 906 | 468 | 947 | 909 | 399 |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | |
| vCu, unblocked vol | 391 | | | | 463 | | | | 941 | 906 | 468 | 947 | 909 | 399 |
| tC, single (s) | 4.1 | | | | 4.1 | | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | | | |
| tF (s) | 2.2 | | | | 2.2 | | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 99 | | | | 98 | | | | 94 | 81 | 97 | 96 | 82 | 98 |
| cM capacity (veh/h) | 1158 | | | | 1089 | | | | 195 | 264 | 585 | 190 | 263 | 640 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | | | |
| Volume Total | 461 | 402 | 80 | 68 | | | | | | | | | | |
| Volume Left | 7 | 21 | 11 | 7 | | | | | | | | | | |
| Volume Right | 11 | 4 | 18 | 13 | | | | | | | | | | |
| cSH | 1158 | 1089 | 285 | 284 | | | | | | | | | | |
| Volume to Capacity | 0.01 | 0.02 | 0.28 | 0.24 | | | | | | | | | | |
| Queue Length 95th (ft) | 0 | 1 | 28 | 23 | | | | | | | | | | |
| Control Delay (s) | 0.2 | 0.6 | 22.5 | 21.7 | | | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | | | |
| Approach Delay (s) | 0.2 | 0.6 | 22.5 | 21.7 | | | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| Average Delay | 3.6 | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 42.7% | | | ICU Level of Service | | | A | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 25: Amber Ave & Golden State Blvd











Existing-PM
10/14/2011



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|-------|------|---|---|------|
| Lane Configurations |  | | |  |  | |
| Volume (veh/h) | 2 | 1 | 1 | 144 | 189 | 3 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.84 | 0.84 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 2 | 1 | 1 | 171 | 212 | 3 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 322 | 128 | 226 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 322 | 128 | 226 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 635 | 883 | 1329 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 3 | 58 | 114 | 142 | 74 | |
| Volume Left | 2 | 1 | 0 | 0 | 0 | |
| Volume Right | 1 | 0 | 0 | 0 | 3 | |
| cSH | 701 | 1329 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.00 | 0.00 | 0.07 | 0.08 | 0.04 | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | 0 | |
| Control Delay (s) | 10.2 | 0.2 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 10.2 | 0.1 | | 0.0 | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.1 | | | | |
| Intersection Capacity Utilization | | 20.4% | | ICU Level of Service | A | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 31: Kamm Ave (SR 99 NB On) & Bethel Ave



















Existing-PM
10/14/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 2 | 1 | 40 | 179 | 94 | 71 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.83 | 0.83 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 2 | 1 | 48 | 216 | 109 | 83 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 441 | 129 | 119 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 441 | 129 | 119 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 97 | | | |
| cM capacity (veh/h) | 545 | 905 | 1456 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 3 | 264 | 109 | 83 | | |
| Volume Left | 2 | 48 | 0 | 0 | | |
| Volume Right | 1 | 0 | 0 | 83 | | |
| cSH | 629 | 1456 | 1700 | 1700 | | |
| Volume to Capacity | 0.01 | 0.03 | 0.06 | 0.05 | | |
| Queue Length 95th (ft) | 0 | 3 | 0 | 0 | | |
| Control Delay (s) | 10.8 | 1.6 | 0.0 | 0.0 | | |
| Lane LOS | B | A | | | | |
| Approach Delay (s) | 10.8 | 1.6 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1.0 | | | | |
| Intersection Capacity Utilization | | 31.1% | | ICU Level of Service | A | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Existing-PM

10/14/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 33 | 86 | 43 | 18 | 88 | 27 | 36 | 108 | 4 | 36 | 123 | 39 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.83 | 0.83 | 0.83 | 0.82 | 0.82 | 0.82 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 38 | 98 | 49 | 22 | 106 | 33 | 44 | 132 | 5 | 39 | 132 | 42 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 135 | 49 | 160 | 110 | 71 | 83 | 88 | 42 | | | | |
| Volume Left (vph) | 38 | 0 | 22 | 44 | 0 | 39 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 49 | 33 | 0 | 5 | 0 | 0 | 42 | | | | |
| Hadj (s) | 0.09 | 0.57 | 0.06 | 0.23 | 0.01 | 0.27 | 0.03 | 0.67 | | | | |
| Departure Headway (s) | 5.1 | 3.2 | 4.9 | 5.7 | 5.5 | 5.8 | 5.5 | 3.2 | | | | |
| Degree Utilization, x | 0.19 | 0.04 | 0.22 | 0.17 | 0.11 | 0.13 | 0.14 | 0.04 | | | | |
| Capacity (veh/h) | 657 | 1121 | 683 | 594 | 619 | 586 | 612 | 1121 | | | | |
| Control Delay (s) | 9.3 | 6.3 | 9.3 | 8.7 | 7.9 | 8.5 | 8.2 | 5.1 | | | | |
| Approach Delay (s) | 8.5 | | 9.3 | 8.4 | | 7.7 | | | | | | |
| Approach LOS | A | | A | A | | A | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 8.4 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 37.9% | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |


















HCM Unsignalized Intersection Capacity Analysis 33: Bethel Ave & Kamm Ave

Existing-PM
10/14/2011

| | | | | | | |
|-----------------------------------|-------|------|-------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | | ↖ | ↗ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 66 | 78 | 9 | 90 | 47 | 2 |
| Peak Hour Factor | 0.84 | 0.84 | 0.83 | 0.83 | 0.77 | 0.77 |
| Hourly flow rate (vph) | 79 | 93 | 11 | 108 | 61 | 3 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total (vph) | 171 | 119 | 64 | | | |
| Volume Left (vph) | 0 | 11 | 61 | | | |
| Volume Right (vph) | 93 | 0 | 3 | | | |
| Hadj (s) | -0.29 | 0.05 | 0.20 | | | |
| Departure Headway (s) | 3.9 | 4.3 | 4.7 | | | |
| Degree Utilization, x | 0.19 | 0.14 | 0.08 | | | |
| Capacity (veh/h) | 903 | 822 | 716 | | | |
| Control Delay (s) | 7.8 | 8.0 | 8.1 | | | |
| Approach Delay (s) | 7.8 | 8.0 | 8.1 | | | |
| Approach LOS | A | A | A | | | |
| Intersection Summary | | | | | | |
| Delay | | | 7.9 | | | |
| HCM Level of Service | | | A | | | |
| Intersection Capacity Utilization | | | 25.1% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 34: Kamm Ave & Academy Ave










Existing-PM
10/14/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  |  | |  | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 3 | 74 | 38 | 49 | 33 | 2 | 20 | 51 | 52 | 3 | 62 | 1 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.78 | 0.78 | 0.78 | 0.77 | 0.77 | 0.77 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 3 | 85 | 44 | 63 | 42 | 3 | 26 | 66 | 68 | 3 | 72 | 1 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 132 | 108 | 92 | 68 | 77 | | | | | | | |
| Volume Left (vph) | 3 | 63 | 26 | 0 | 3 | | | | | | | |
| Volume Right (vph) | 44 | 3 | 0 | 68 | 1 | | | | | | | |
| Hadj (s) | -0.16 | 0.14 | 0.17 | -0.67 | 0.03 | | | | | | | |
| Departure Headway (s) | 4.5 | 4.8 | 5.3 | 4.5 | 4.8 | | | | | | | |
| Degree Utilization, x | 0.16 | 0.14 | 0.14 | 0.08 | 0.10 | | | | | | | |
| Capacity (veh/h) | 767 | 709 | 643 | 757 | 698 | | | | | | | |
| Control Delay (s) | 8.3 | 8.6 | 8.0 | 6.7 | 8.4 | | | | | | | |
| Approach Delay (s) | 8.3 | 8.6 | 7.4 | | 8.4 | | | | | | | |
| Approach LOS | A | A | A | | A | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 8.1 | | | | | | | | | |
| HCM Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 31.7% | | | ICU Level of Service | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

35: SR 99 NB Off & Bethel Ave


















Existing-PM
10/14/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 7 | 28 | 185 | 0 | 0 | 94 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.73 | 0.73 | 0.76 | 0.76 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 10 | 38 | 243 | 0 | 0 | 104 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 368 | 263 | | | 253 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 368 | 263 | | | 253 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 98 | 95 | | | 100 | |
| cM capacity (veh/h) | 622 | 762 | | | 1301 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 48 | 243 | 104 | | | |
| Volume Left | 10 | 0 | 0 | | | |
| Volume Right | 38 | 0 | 0 | | | |
| cSH | 729 | 1700 | 1700 | | | |
| Volume to Capacity | 0.07 | 0.14 | 0.06 | | | |
| Queue Length 95th (ft) | 5 | 0 | 0 | | | |
| Control Delay (s) | 10.3 | 0.0 | 0.0 | | | |
| Lane LOS | B | | | | | |
| Approach Delay (s) | 10.3 | 0.0 | 0.0 | | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1.2 | | | | |
| Intersection Capacity Utilization | | 23.6% | | ICU Level of Service | A | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave

Existing-PM

10/14/2011


















| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | | | | |  | | |  |  |
| Volume (veh/h) | 99 | 9 | 93 | 0 | 0 | 0 | 3 | 89 | 2 | 20 | 68 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.72 | 0.72 | 0.72 | 0.88 | 0.88 | 0.88 | 0.84 | 0.84 | 0.84 | 0.76 | 0.76 | 0.76 |
| Hourly flow rate (vph) | 138 | 12 | 129 | 0 | 0 | 0 | 4 | 106 | 2 | 26 | 89 | 8 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | 3 | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 280 | 282 | 113 | 351 | 284 | 127 | 107 | | | 118 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 280 | 282 | 113 | 351 | 284 | 127 | 107 | | | 118 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 79 | 98 | 86 | 100 | 100 | 100 | 100 | | | 98 | | |
| cM capacity (veh/h) | 646 | 609 | 924 | 496 | 607 | 915 | 1471 | | | 1470 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 279 | 112 | 124 | | | | | | | | | |
| Volume Left | 138 | 4 | 26 | | | | | | | | | |
| Volume Right | 129 | 2 | 8 | | | | | | | | | |
| cSH | 1197 | 1471 | 1470 | | | | | | | | | |
| Volume to Capacity | 0.23 | 0.00 | 0.02 | | | | | | | | | |
| Queue Length 95th (ft) | 23 | 0 | 1 | | | | | | | | | |
| Control Delay (s) | 11.0 | 0.3 | 1.7 | | | | | | | | | |
| Lane LOS | B | A | A | | | | | | | | | |
| Approach Delay (s) | 11.0 | 0.3 | 1.7 | | | | | | | | | |
| Approach LOS | B | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | 6.4 | | | | | | | | | | |
| Intersection Capacity Utilization | | 31.7% | | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

2035 No-Project Conditions

HCM Unsignalized Intersection Capacity Analysis
16: Mountain View Ave & SR 99 SB Off / Van Horn

Year 2035 No Project-AM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 1002 | 125 | 505 | 925 | 0 | 102 | 0 | 402 | 353 | 272 | 465 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 0 | 1089 | 136 | 549 | 1005 | 0 | 111 | 0 | 437 | 384 | 296 | 505 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1015 | | | 1235 | | | 3681 | 3280 | 1177 | 3717 | 3348 | 1025 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1015 | | | 1235 | | | 3681 | 3280 | 1177 | 3717 | 3348 | 1025 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.4 |
| p0 queue free % | 100 | | | 2 | | | 0 | 100 | 0 | 0 | 0 | 0 |
| cM capacity (veh/h) | 677 | | | 559 | | | 0 | 0 | 229 | 0 | 0 | 273 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 1225 | 1554 | 548 | 1185 | | | | | | | | |
| Volume Left | 0 | 549 | 111 | 384 | | | | | | | | |
| Volume Right | 136 | 0 | 437 | 505 | | | | | | | | |
| cSH | 1700 | 559 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.72 | 0.98 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 0 | 343 | Err | Err | | | | | | | | |
| Control Delay (s) | 0.0 | 60.7 | Err | Err | | | | | | | | |
| Lane LOS | | F | F | F | | | | | | | | |
| Approach Delay (s) | 0.0 | 60.7 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 215.5% | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 17: Mountain View Ave & SR 99 SB On

Year 2035 No Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|------|------|--------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | | ↖ | | |
| Volume (veh/h) | 1543 | 214 | 59 | 1430 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1677 | 233 | 64 | 1554 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 1920 | | 3496 | 1813 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1920 | | 3496 | 1813 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tP (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 79 | | 100 | 100 |
| cM capacity (veh/h) | | | 308 | | 6 | 97 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 1910 | 1618 | | | | |
| Volume Left | 0 | 64 | | | | |
| Volume Right | 233 | 0 | | | | |
| cSH | 1700 | 308 | | | | |
| Volume to Capacity | 1.12 | 0.21 | | | | |
| Queue Length 95th (ft) | 0 | 19 | | | | |
| Control Delay (s) | 0.0 | 19.8 | | | | |
| Lane LOS | | C | | | | |
| Approach Delay (s) | 0.0 | 19.8 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 9.1 | | | |
| Intersection Capacity Utilization | | | 135.9% | ICU Level of Service | H | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 18: Mountain View Ave & SR 99 NB On

Year 2035 No Project-AM
9/19/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------|--------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | | |
| Volume (veh/h) | 304 | 1239 | 1489 | 546 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 330 | 1347 | 1618 | 593 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2222 | | | | 3943 | 1935 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2222 | | | | 3943 | 1935 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 0 | | | | 0 | 100 |
| cM capacity (veh/h) | 234 | | | | 0 | 81 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 1677 | 2212 | | | | |
| Volume Left | 330 | 0 | | | | |
| Volume Right | 0 | 593 | | | | |
| cSH | 234 | 1700 | | | | |
| Volume to Capacity | 1.41 | 1.30 | | | | |
| Queue Length 95th (ft) | 466 | 0 | | | | |
| Control Delay (s) | 247.8 | 0.0 | | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 247.8 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 106.8 | | | | |
| Intersection Capacity Utilization | | 210.1% | | ICU Level of Service | H | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 19: Mountain View Ave & SR 99 NB Off












Year 2035 No Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↘ | ↗ |
| Volume (veh/h) | 1239 | 0 | 0 | 1789 | 246 | 101 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1347 | 0 | 0 | 1945 | 267 | 110 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.63 | |
| vC, conflicting volume | | | 1357 | | 3311 | 1367 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1357 | | 4373 | 1367 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.5 |
| p0 queue free % | | | 100 | | 0 | 32 |
| cM capacity (veh/h) | | | 503 | | 1 | 162 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 1347 | 1945 | 377 | | | |
| Volume Left | 0 | 0 | 267 | | | |
| Volume Right | 0 | 0 | 110 | | | |
| cSH | 1700 | 1700 | 2 | | | |
| Volume to Capacity | 0.79 | 1.14 | 237.59 | | | |
| Queue Length 95th (ft) | 0 | 0 | Err | | | |
| Control Delay (s) | 0.0 | 0.0 | Err | | | |
| Lane LOS | | | F | | | |
| Approach Delay (s) | 0.0 | 0.0 | Err | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1028.0 | | | | |
| Intersection Capacity Utilization | | 114.5% | ICU Level of Service | H | | |
| Analysis Period (min) | | 15 | | | | |

HCM Signalized Intersection Capacity Analysis 20: Mountain View Ave & Golden State Blvd

Year 2035 No Project-AM

9/19/2011

| |  | | | | | | | | | | | |
|-----------------------------------|--|---|------|---|---|----------------------|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 422 | 790 | 127 | 63 | 1154 | 202 | 209 | 338 | 9 | 127 | 295 | 475 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3368 | | 1770 | 3309 | | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3368 | | 1770 | 3309 | | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 459 | 859 | 138 | 68 | 1254 | 220 | 227 | 367 | 10 | 138 | 321 | 516 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 20 | 0 | 0 | 0 | 5 | 0 | 0 | 203 |
| Lane Group Flow (vph) | 459 | 981 | 0 | 68 | 1454 | 0 | 227 | 367 | 5 | 138 | 321 | 313 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 5% | 2% | 2% | 7% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 8.0 | 24.3 | | 4.7 | 21.0 | | 8.0 | 15.9 | 15.9 | 7.8 | 15.7 | 15.7 |
| Effective Green, g (s) | 8.0 | 24.3 | | 4.7 | 21.0 | | 8.0 | 15.9 | 15.9 | 7.8 | 15.7 | 15.7 |
| Actuated g/C Ratio | 0.11 | 0.34 | | 0.07 | 0.30 | | 0.11 | 0.23 | 0.23 | 0.11 | 0.22 | 0.22 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 201 | 1161 | | 118 | 986 | | 201 | 798 | 348 | 196 | 788 | 344 |
| v/s Ratio Prot | c0.26 | c0.29 | | 0.04 | c0.44 | | c0.13 | 0.10 | | 0.08 | 0.09 | |
| v/s Ratio Perm | | | | | | | | | 0.00 | | | c0.20 |
| v/c Ratio | 2.28 | 0.84 | | 0.58 | 1.47 | | 1.13 | 0.46 | 0.01 | 0.70 | 0.41 | 0.91 |
| Uniform Delay, d1 | 31.2 | 21.4 | | 31.9 | 24.8 | | 31.2 | 23.6 | 21.2 | 30.2 | 23.4 | 26.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 593.1 | 5.8 | | 6.7 | 219.3 | | 102.6 | 0.4 | 0.0 | 10.9 | 0.3 | 27.2 |
| Delay (s) | 624.4 | 27.1 | | 38.6 | 244.0 | | 133.8 | 24.0 | 21.2 | 41.1 | 23.8 | 53.9 |
| Level of Service | F | C | | D | F | | F | C | C | D | C | D |
| Approach Delay (s) | | 215.4 | | | 235.0 | | | 65.2 | | | 42.2 | |
| Approach LOS | | F | | | F | | | E | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 165.3 | | | | HCM Level of Service | | F | | | | |
| HCM Volume to Capacity ratio | | 1.45 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 70.5 | | | | Sum of lost time (s) | | 22.7 | | | | |
| Intersection Capacity Utilization | | 97.9% | | | | ICU Level of Service | | F | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 No Project-AM

20: Mountain View Ave & Golden State Blvd

9/19/2011



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|-------|------|------|------|------|------|
| Lane Group Flow (vph) | 459 | 997 | 68 | 1474 | 227 | 367 | 10 | 138 | 321 | 516 |
| v/c Ratio | 2.24 | 0.83 | 0.37 | 1.55 | 1.11 | 0.45 | 0.03 | 0.69 | 0.40 | 0.93 |
| Control Delay | 591.9 | 31.2 | 34.7 | 274.8 | 127.7 | 24.7 | 14.6 | 50.0 | 24.2 | 40.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 591.9 | 31.2 | 34.7 | 274.8 | 127.7 | 24.7 | 14.6 | 50.0 | 24.2 | 40.1 |
| Queue Length 50th (ft) | -328 | -247 | 28 | -487 | -115 | 70 | 1 | 58 | 61 | 109 |
| Queue Length 95th (ft) | #495 | #364 | 63 | #617 | #242 | 108 | 12 | #136 | 95 | #294 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 1682 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 205 | 1206 | 205 | 953 | 205 | 863 | 382 | 205 | 863 | 574 |
| 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 | 2.24 | 0.83 | 0.33 | 1.55 | 1.11 | 0.43 | 0.03 | 0.67 | 0.37 | 0.90 |



















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.

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.

Year 2035 No Project-AM
















9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (veh/h) | 44 | 588 | 72 | 85 | 1127 | 16 | 33 | 61 | 91 | 6 | 71 | 85 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 48 | 639 | 78 | 92 | 1225 | 17 | 36 | 66 | 99 | 7 | 77 | 92 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1252 | | | 727 | | | 1722 | 2221 | 379 | 1986 | 2252 | 641 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1252 | | | 727 | | | 1722 | 2221 | 379 | 1986 | 2252 | 641 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 91 | | | 89 | | | 0 | 0 | 84 | 0 | 0 | 77 |
| cM capacity (veh/h) | 547 | | | 865 | | | 0 | 34 | 609 | 0 | 33 | 410 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | |
| Volume Total | 48 | 426 | 291 | 92 | 817 | 426 | 201 | 176 | | | | |
| Volume Left | 48 | 0 | 0 | 92 | 0 | 0 | 36 | 7 | | | | |
| Volume Right | 0 | 0 | 78 | 0 | 0 | 17 | 99 | 92 | | | | |
| cSH | 547 | 1700 | 1700 | 865 | 1700 | 1700 | 0 | 0 | | | | |
| Volume to Capacity | 0.09 | 0.25 | 0.17 | 0.11 | 0.48 | 0.25 | Err | Err | | | | |
| Queue Length 95th (ft) | 7 | 0 | 0 | 9 | 0 | 0 | Err | Err | | | | |
| Control Delay (s) | 12.2 | 0.0 | 0.0 | 9.7 | 0.0 | 0.0 | Err | Err | | | | |
| Lane LOS | B | | | A | | | F | F | | | | |
| Approach Delay (s) | 0.8 | | | 0.7 | | | Err | Err | | | | |
| Approach LOS | | | | | | | F | F | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | | Err | | | | | | | | |
| Intersection Capacity Utilization | | | 69.9% | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave

Year 2035 No Project-AM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (veh/h) | 57 | 590 | 34 | 101 | 995 | 27 | 69 | 78 | 57 | 29 | 147 | 148 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 62 | 641 | 37 | 110 | 1082 | 29 | 75 | 85 | 62 | 32 | 160 | 161 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1121 | | | 688 | | | 2360 | 2134 | 680 | 2224 | 2138 | 1116 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1121 | | | 688 | | | 2360 | 2134 | 680 | 2224 | 2138 | 1116 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 90 | | | 88 | | | 0 | 0 | 86 | 0 | 0 | 35 |
| cM capacity (veh/h) | 618 | | | 898 | | | 0 | 38 | 444 | 0 | 38 | 248 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 740 | 1221 | 222 | 352 | | | | | | | | |
| Volume Left | 62 | 110 | 75 | 32 | | | | | | | | |
| Volume Right | 37 | 29 | 62 | 161 | | | | | | | | |
| cSH | 618 | 898 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.10 | 0.12 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 8 | 10 | Err | Err | | | | | | | | |
| Control Delay (s) | 2.7 | 3.9 | Err | Err | | | | | | | | |
| Lane LOS | A | A | F | F | | | | | | | | |
| Approach Delay (s) | 2.7 | 3.9 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 115.3% | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 25: Amber Ave & Golden State Blvd











Year 2035 No Project-AM
9/19/2011

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | Y | | | ↑↑ | ↑↑ | |
| Volume (veh/h) | 50 | 47 | 56 | 506 | 417 | 68 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 57 | 53 | 64 | 575 | 474 | 77 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.96 | 0.96 | 0.96 | | | |
| vC, conflicting volume | 947 | 296 | 561 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 856 | 175 | 453 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 78 | 93 | 94 | | | |
| cM capacity (veh/h) | 263 | 789 | 1049 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 110 | 255 | 383 | 316 | 235 | |
| Volume Left | 57 | 64 | 0 | 0 | 0 | |
| Volume Right | 53 | 0 | 0 | 0 | 77 | |
| cSH | 388 | 1049 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.28 | 0.06 | 0.23 | 0.19 | 0.14 | |
| Queue Length 95th (ft) | 29 | 5 | 0 | 0 | 0 | |
| Control Delay (s) | 17.9 | 2.6 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | C | A | | | | |
| Approach Delay (s) | 17.9 | 1.0 | | 0.0 | | |
| Approach LOS | C | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.0 | | | | |
| Intersection Capacity Utilization | | 47.6% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis
31: Kamm Ave (SR 99 NB On) & Bethel Ave





















Year 2035 No Project-AM

9/19/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 2 | 2 | 211 | 357 | 248 | 372 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 2 | 2 | 229 | 388 | 270 | 404 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1136 | 290 | 280 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1136 | 290 | 280 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 99 | 100 | 82 | | | |
| cM capacity (veh/h) | 180 | 737 | 1272 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 4 | 617 | 270 | 404 | | |
| Volume Left | 2 | 229 | 0 | 0 | | |
| Volume Right | 2 | 0 | 0 | 404 | | |
| cSH | 289 | 1272 | 1700 | 1700 | | |
| Volume to Capacity | 0.02 | 0.18 | 0.16 | 0.24 | | |
| Queue Length 95th (ft) | 1 | 16 | 0 | 0 | | |
| Control Delay (s) | 17.6 | 4.4 | 0.0 | 0.0 | | |
| Lane LOS | C | A | | | | |
| Approach Delay (s) | 17.6 | 4.4 | 0.0 | | | |
| Approach LOS | C | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 2.1 | | | |
| Intersection Capacity Utilization | | | 61.2% | ICU Level of Service | B | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
32: Bethel Ave & Golden State Blvd

Year 2035 No Project-AM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 107 | 205 | 48 | 28 | 321 | 127 | 183 | 217 | 42 | 111 | 189 | 116 |
| 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 |
| Hourly flow rate (vph) | 116 | 223 | 52 | 30 | 349 | 138 | 199 | 236 | 46 | 121 | 205 | 126 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 339 | 52 | 517 | 317 | 164 | 189 | 137 | 126 | | | | |
| Volume Left (vph) | 116 | 0 | 30 | 199 | 0 | 121 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 52 | 138 | 0 | 46 | 0 | 0 | 126 | | | | |
| Hadj (s) | 0.11 | -0.57 | -0.10 | 0.35 | -0.16 | 0.35 | 0.03 | -0.67 | | | | |
| Departure Headway (s) | 8.3 | 3.2 | 7.8 | 8.9 | 8.4 | 9.3 | 9.0 | 3.2 | | | | |
| Degree Utilization, x | 0.78 | 0.05 | 1.13 | 0.78 | 0.38 | 0.49 | 0.34 | 0.11 | | | | |
| Capacity (veh/h) | 423 | 1121 | 462 | 397 | 421 | 367 | 387 | 1121 | | | | |
| Control Delay (s) | 35.4 | 6.4 | 108.4 | 36.0 | 15.2 | 19.6 | 15.3 | 5.4 | | | | |
| Approach Delay (s) | 31.5 | | 108.4 | 28.9 | | 14.3 | | | | | | |
| Approach LOS | D | | F | D | | B | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 48.2 | | | | | | | | | |
| HCM Level of Service | | | E | | | | | | | | | |
| Intersection Capacity Utilization | | | 79.2% | ICU Level of Service | | D | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
















HCM Unsignalized Intersection Capacity Analysis
33: Bethel Ave & Kamm Ave

Year 2035 No Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|-------|------|-------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↰ | | | ↰ | ↰ | |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 184 | 174 | 59 | 134 | 343 | 139 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 200 | 189 | 64 | 146 | 373 | 151 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total (vph) | 389 | 210 | 524 | | | |
| Volume Left (vph) | 0 | 64 | 373 | | | |
| Volume Right (vph) | 189 | 0 | 151 | | | |
| Hadj (s) | -0.23 | 0.13 | 0.00 | | | |
| Departure Headway (s) | 5.7 | 6.4 | 5.6 | | | |
| Degree Utilization, x | 0.62 | 0.37 | 0.82 | | | |
| Capacity (veh/h) | 593 | 522 | 622 | | | |
| Control Delay (s) | 17.4 | 13.0 | 29.1 | | | |
| Approach Delay (s) | 17.4 | 13.0 | 29.1 | | | |
| Approach LOS | C | B | D | | | |
| Intersection Summary | | | | | | |
| Delay | | | 22.0 | | | |
| HCM Level of Service | | | C | | | |
| Intersection Capacity Utilization | | | 68.9% | ICU Level of Service | C | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis
34: Kamm Ave & Academy Ave










Year 2035 No Project-AM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | | |  | | |  | | |  | | |
| Sign Control | Stop | | | Stop | | | Stop | | | Stop | | |
| Volume (vph) | 44 | 179 | 64 | 100 | 338 | 92 | 150 | 169 | 88 | 32 | 119 | 72 |
| 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 |
| Hourly flow rate (vph) | 48 | 195 | 70 | 109 | 367 | 100 | 163 | 184 | 96 | 35 | 129 | 78 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 312 | 576 | 347 | 96 | 242 | | | | | | | |
| Volume Left (vph) | 48 | 109 | 163 | 0 | 35 | | | | | | | |
| Volume Right (vph) | 70 | 100 | 0 | 96 | 78 | | | | | | | |
| Hadj (s) | -0.07 | -0.03 | 0.27 | -0.67 | -0.13 | | | | | | | |
| Departure Headway (s) | 8.0 | 7.6 | 8.5 | 7.6 | 8.4 | | | | | | | |
| Degree Utilization, x | 0.69 | 1.22 | 0.82 | 0.20 | 0.56 | | | | | | | |
| Capacity (veh/h) | 425 | 466 | 415 | 464 | 402 | | | | | | | |
| Control Delay (s) | 27.1 | 139.6 | 38.8 | 11.3 | 21.7 | | | | | | | |
| Approach Delay (s) | 27.1 | 139.6 | 32.8 | 21.7 | | | | | | | | |
| Approach LOS | D | F | D | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | 69.1 | | | | | | | | | | | |
| HCM Level of Service | F | | | | | | | | | | | |
| Intersection Capacity Utilization | 81.9% | | | ICU Level of Service | | | D | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
35: SR 99 NB Off & Bethel Ave

















Year 2035 No Project-AM

9/19/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 41 | 175 | 391 | 0 | 0 | 250 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 45 | 190 | 425 | 0 | 0 | 272 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 717 | 445 | | | 435 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 717 | 445 | | | 435 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 89 | 68 | | | 100 | |
| cM capacity (veh/h) | 390 | 603 | | | 1115 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 235 | 425 | 272 | | | |
| Volume Left | 45 | 0 | 0 | | | |
| Volume Right | 190 | 0 | 0 | | | |
| cSH | 546 | 1700 | 1700 | | | |
| Volume to Capacity | 0.43 | 0.25 | 0.16 | | | |
| Queue Length 95th (ft) | 54 | 0 | 0 | | | |
| Control Delay (s) | 16.5 | 0.0 | 0.0 | | | |
| Lane LOS | C | | | | | |
| Approach Delay (s) | 16.5 | 0.0 | 0.0 | | | |
| Approach LOS | C | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 4.1 | | | | |
| Intersection Capacity Utilization | | 41.1% | | ICU Level of Service | A | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave


















Year 2035 No Project-AM
9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | | | | |  | | |  |  |
| Volume (veh/h) | 61 | 23 | 53 | 0 | 0 | 0 | 46 | 327 | 2 | 82 | 140 | 69 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 66 | 25 | 58 | 0 | 0 | 0 | 50 | 355 | 2 | 89 | 152 | 75 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | 3 | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 844 | 846 | 210 | 886 | 882 | 377 | 237 | | | 368 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 844 | 846 | 210 | 886 | 882 | 377 | 237 | | | 368 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 74 | 91 | 93 | 100 | 100 | 100 | 96 | | | 93 | | |
| cM capacity (veh/h) | 253 | 264 | 817 | 207 | 252 | 664 | 1319 | | | 1191 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 149 | 408 | 316 | | | | | | | | | |
| Volume Left | 66 | 50 | 89 | | | | | | | | | |
| Volume Right | 58 | 2 | 75 | | | | | | | | | |
| cSH | 418 | 1319 | 1191 | | | | | | | | | |
| Volume to Capacity | 0.36 | 0.04 | 0.07 | | | | | | | | | |
| Queue Length 95th (ft) | 40 | 3 | 6 | | | | | | | | | |
| Control Delay (s) | 20.1 | 1.3 | 2.8 | | | | | | | | | |
| Lane LOS | C | A | A | | | | | | | | | |
| Approach Delay (s) | 20.1 | 1.3 | 2.8 | | | | | | | | | |
| Approach LOS | C | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | 5.1 | | | | | | | | | | |
| Intersection Capacity Utilization | | 49.6% | ICU Level of Service | A | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB Off / Van Horn

Year 2035 No Project-PM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 2197 | 165 | 555 | 1429 | 0 | 217 | 0 | 1322 | 677 | 310 | 564 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 0 | 2388 | 179 | 603 | 1553 | 0 | 236 | 0 | 1437 | 736 | 337 | 613 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1563 | | | 2577 | | | 5732 | 5258 | 2498 | 6694 | 5347 | 1573 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1563 | | | 2577 | | | 5732 | 5258 | 2498 | 6694 | 5347 | 1573 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| cM capacity (veh/h) | 419 | | | 168 | | | 0 | 0 | 36 | 0 | 0 | 133 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 2567 | 2157 | 1673 | 1686 | | | | | | | | |
| Volume Left | 0 | 603 | 236 | 736 | | | | | | | | |
| Volume Right | 179 | 0 | 1437 | 613 | | | | | | | | |
| cSH | 1700 | 168 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 1.51 | 3.59 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 0 | Err | Err | Err | | | | | | | | |
| Control Delay (s) | 0.0 | 1219.5 | Err | Err | | | | | | | | |
| Lane LOS | | F | F | F | | | | | | | | |
| Approach Delay (s) | 0.0 | 1219.5 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 393.3% | ICU Level of Service | | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
17: Mountain View Ave & SR 99 SB On

Year 2035 No Project-PM
9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | | ↖ | | |
| Volume (veh/h) | 3759 | 437 | 249 | 1984 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4086 | 475 | 271 | 2157 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 4571 | | 7041 | 4343 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 4571 | | 7041 | 4343 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 0 | | 0 | 100 |
| cM capacity (veh/h) | | | 26 | | 0 | 2 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 4561 | 2427 | | | | |
| Volume Left | 0 | 271 | | | | |
| Volume Right | 475 | 0 | | | | |
| cSH | 1700 | 26 | | | | |
| Volume to Capacity | 2.68 | 10.41 | | | | |
| Queue Length 95th (ft) | 0 | Err | | | | |
| Control Delay (s) | 0.0 | 504.7 | | | | |
| Lane LOS | | F | | | | |
| Approach Delay (s) | 0.0 | 504.7 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 175.3 | | | | |
| Intersection Capacity Utilization | | 326.1% | ICU Level of Service | | H | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 18: Mountain View Ave & SR 99 NB On

Year 2035 No Project-PM
9/19/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|--------|--------|------|----------------------|------|------|
| Lane Configurations | | ↰ | ↰ | | | |
| Volume (veh/h) | 936 | 2823 | 2233 | 820 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1017 | 3068 | 2427 | 891 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 3328 | | | | 7996 | 2893 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 3328 | | | | 7996 | 2893 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 0 | | | | 0 | 100 |
| cM capacity (veh/h) | 85 | | | | 0 | 21 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 4086 | 3318 | | | | |
| Volume Left | 1017 | 0 | | | | |
| Volume Right | 0 | 891 | | | | |
| cSH | 85 | 1700 | | | | |
| Volume to Capacity | 12.02 | 1.95 | | | | |
| Queue Length 95th (ft) | Err | 0 | | | | |
| Control Delay (s) | 1257.7 | 0.0 | | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 1257.7 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 694.0 | | | | |
| Intersection Capacity Utilization | | 384.2% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

19: Mountain View Ave & SR 99 NB Off

Year 2035 No Project-PM

9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↘ | ↗ |
| Volume (veh/h) | 2823 | 0 | 0 | 2706 | 348 | 200 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 3068 | 0 | 0 | 2941 | 378 | 217 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.64 | |
| vC, conflicting volume | | | 3078 | | 6030 | 3088 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 3078 | | 8588 | 3088 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 0 | 0 |
| cM capacity (veh/h) | | | 106 | | 0 | 16 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 3068 | 2941 | 596 | | | |
| Volume Left | 0 | 0 | 378 | | | |
| Volume Right | 0 | 0 | 217 | | | |
| cSH | 1700 | 1700 | 0 | | | |
| Volume to Capacity | 1.80 | 1.73 | Err | | | |
| Queue Length 95th (ft) | 0 | 0 | Err | | | |
| Control Delay (s) | 0.0 | 0.0 | Err | | | |
| Lane LOS | | | F | | | |
| Approach Delay (s) | 0.0 | 0.0 | Err | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 901.7 | | | | |
| Intersection Capacity Utilization | | 174.5% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |

Queues

Year 2035 No Project-PM

20: Mountain View Ave & Golden State Blvd

9/19/2011



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|--------|-------|------|-------|-------|------|------|-------|------|-------|
| Lane Group Flow (vph) | 1195 | 2091 | 84 | 1866 | 424 | 752 | 29 | 577 | 810 | 1125 |
| v/c Ratio | 6.75 | 1.89 | 0.51 | 1.85 | 1.59 | 0.85 | 0.07 | 2.37 | 0.96 | 2.12 |
| Control Delay | 2608.4 | 424.7 | 45.5 | 407.2 | 311.9 | 39.1 | 18.4 | 651.8 | 54.1 | 530.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 2608.4 | 424.7 | 45.5 | 407.2 | 311.9 | 39.1 | 18.4 | 651.8 | 54.1 | 530.5 |
| Queue Length 50th (ft) | ~1169 | ~891 | 40 | ~756 | ~308 | 188 | 8 | ~481 | 211 | ~835 |
| Queue Length 95th (ft) | #1404 | #1031 | 85 | #894 | #479 | #281 | 27 | #672 | #327 | #1074 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 1689 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 177 | 1108 | 177 | 1011 | 266 | 889 | 394 | 243 | 845 | 530 |
| 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 | 6.75 | 1.89 | 0.47 | 1.85 | 1.59 | 0.85 | 0.07 | 2.37 | 0.96 | 2.12 |























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.

HCM Signalized Intersection Capacity Analysis
20: Mountain View Ave & Golden State Blvd




















Year 2035 No Project-PM

9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 1099 | 1556 | 368 | 77 | 1280 | 437 | 390 | 692 | 27 | 531 | 745 | 1035 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3393 | | 1770 | 3356 | | 1770 | 3539 | 1541 | 1770 | 3539 | 1541 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3393 | | 1770 | 3356 | | 1770 | 3539 | 1541 | 1770 | 3539 | 1541 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1195 | 1691 | 400 | 84 | 1391 | 475 | 424 | 752 | 29 | 577 | 810 | 1125 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 42 | 0 | 0 | 0 | 7 | 0 | 0 | 163 |
| Lane Group Flow (vph) | 1195 | 2066 | 0 | 84 | 1824 | 0 | 424 | 752 | 22 | 577 | 810 | 962 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 8.0 | 25.6 | | 6.3 | 23.9 | | 12.0 | 20.1 | 20.1 | 11.0 | 19.1 | 19.1 |
| Effective Green, g (s) | 8.0 | 25.6 | | 6.3 | 23.9 | | 12.0 | 20.1 | 20.1 | 11.0 | 19.1 | 19.1 |
| Actuated g/C Ratio | 0.10 | 0.32 | | 0.08 | 0.30 | | 0.15 | 0.25 | 0.25 | 0.14 | 0.24 | 0.24 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 175 | 1075 | | 138 | 993 | | 263 | 880 | 383 | 241 | 837 | 364 |
| v/s Ratio Prot | c0.68 | c0.61 | | 0.05 | 0.54 | | 0.24 | 0.21 | | c0.33 | 0.23 | |
| v/s Ratio Perm | | | | | | | | | 0.01 | | | c0.62 |
| v/c Ratio | 6.83 | 1.92 | | 0.61 | 1.84 | | 1.61 | 0.85 | 0.06 | 2.39 | 0.97 | 2.64 |
| Uniform Delay, d1 | 36.4 | 27.6 | | 36.1 | 28.4 | | 34.4 | 29.0 | 23.1 | 34.9 | 30.5 | 30.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2634.9 | 418.5 | | 7.4 | 380.7 | | 292.5 | 8.1 | 0.1 | 640.0 | 23.2 | 747.6 |
| Delay (s) | 2671.3 | 446.1 | | 43.5 | 409.2 | | 326.9 | 37.1 | 23.2 | 674.9 | 53.8 | 778.4 |
| Level of Service | F | F | | D | F | | F | D | C | F | D | F |
| Approach Delay (s) | | 1255.3 | | | 393.4 | | | 138.7 | | | 521.0 | |
| Approach LOS | | F | | | F | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 711.3 | | | | | HCM Level of Service | | F | | | |
| HCM Volume to Capacity ratio | | 2.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 80.8 | | | | | Sum of lost time (s) | | 12.9 | | | |
| Intersection Capacity Utilization | | 173.9% | | | | | ICU Level of Service | | H | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.
















Year 2035 No Project-PM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (veh/h) | 180 | 1707 | 99 | 70 | 1172 | 14 | 74 | 77 | 97 | 20 | 55 | 148 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |
| Grade | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 196 | 1855 | 108 | 76 | 1274 | 15 | 80 | 84 | 105 | 22 | 60 | 161 |
| Pedestrians | 10 | | | 10 | | | 10 | | | 10 | | |
| Lane Width (ft) | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Percent Blockage | 1 | | | 1 | | | 1 | | | 1 | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1299 | | | 1973 | | | 3300 | 3762 | 1002 | 2920 | 3808 | 665 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1299 | | | 1973 | | | 3300 | 3762 | 1002 | 2920 | 3808 | 665 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 63 | | | 74 | | | 0 | 0 | 56 | 0 | 0 | 59 |
| cM capacity (veh/h) | 525 | | | 288 | | | 0 | 2 | 237 | 0 | 2 | 396 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | |
| Volume Total | 196 | 1237 | 726 | 76 | 849 | 440 | 270 | 242 | | | | |
| Volume Left | 196 | 0 | 0 | 76 | 0 | 0 | 80 | 22 | | | | |
| Volume Right | 0 | 0 | 108 | 0 | 0 | 15 | 105 | 161 | | | | |
| cSH | 525 | 1700 | 1700 | 288 | 1700 | 1700 | 0 | 0 | | | | |
| Volume to Capacity | 0.37 | 0.73 | 0.43 | 0.26 | 0.50 | 0.26 | Err | Err | | | | |
| Queue Length 95th (ft) | 43 | 0 | 0 | 26 | 0 | 0 | Err | Err | | | | |
| Control Delay (s) | 15.9 | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | Err | Err | | | | |
| Lane LOS | C | | | C | | | F | F | | | | |
| Approach Delay (s) | 1.4 | | | 1.2 | | | Err | Err | | | | |
| Approach LOS | | | | | | | F | F | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | | Err | | | | | | | | |
| Intersection Capacity Utilization | | | | 95.9% | | | ICU Level of Service | | | F | | |
| Analysis Period (min) | | | | 15 | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave












Year 2035 No Project-PM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (veh/h) | 207 | 1510 | 112 | 103 | 1000 | 98 | 91 | 308 | 62 | 44 | 112 | 173 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 225 | 1641 | 122 | 112 | 1087 | 107 | 99 | 335 | 67 | 48 | 122 | 188 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1203 | | | 1773 | | | 3785 | 3590 | 1722 | 3771 | 3597 | 1160 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1203 | | | 1773 | | | 3785 | 3590 | 1722 | 3771 | 3597 | 1160 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 61 | | | 68 | | | 0 | 0 | 38 | 0 | 0 | 20 |
| cM capacity (veh/h) | 575 | | | 348 | | | 0 | 2 | 109 | 0 | 2 | 234 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 1988 | 1305 | 501 | 358 | | | | | | | | |
| Volume Left | 225 | 112 | 99 | 48 | | | | | | | | |
| Volume Right | 122 | 107 | 67 | 188 | | | | | | | | |
| cSH | 575 | 348 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.39 | 0.32 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 46 | 34 | Err | Err | | | | | | | | |
| Control Delay (s) | 1.7 | 20.2 | Err | Err | | | | | | | | |
| Lane LOS | A | C | F | F | | | | | | | | |
| Approach Delay (s) | 1.7 | 20.2 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | 184.8% | | ICU Level of Service | | H | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 25: Amber Ave & Golden State Blvd

Year 2035 No Project-PM
9/19/2011





| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |   |   | |
| Volume (veh/h) | 266 | 144 | 247 | 839 | 939 | 251 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 302 | 164 | 281 | 953 | 1067 | 285 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.79 | 0.79 | 0.79 | | | |
| vC, conflicting volume | 2268 | 696 | 1362 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2068 | 69 | 916 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 0 | 78 | 51 | | | |
| cM capacity (veh/h) | 19 | 758 | 577 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 466 | 598 | 636 | 711 | 641 | |
| Volume Left | 302 | 281 | 0 | 0 | 0 | |
| Volume Right | 164 | 0 | 0 | 0 | 285 | |
| cSH | 28 | 577 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 16.48 | 0.49 | 0.37 | 0.42 | 0.38 | |
| Queue Length 95th (ft) | Err | 66 | 0 | 0 | 0 | |
| Control Delay (s) | Err | 13.4 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | F | B | | | | |
| Approach Delay (s) | Err | 6.5 | | 0.0 | | |
| Approach LOS | F | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1528.9 | | | | |
| Intersection Capacity Utilization | | 98.5% | | ICU Level of Service | | F |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 31: Kamm Ave (SR 99 NB On) & Bethel Ave

Year 2035 No Project-PM




















9/19/2011



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|---|-------|------|---|---|---|
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 4 | 2 | 64 | 888 | 499 | 304 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 2 | 70 | 965 | 542 | 330 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1667 | 562 | 552 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1667 | 562 | 552 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 96 | 100 | 93 | | | |
| cM capacity (veh/h) | 97 | 517 | 1009 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 7 | 1035 | 542 | 330 | | |
| Volume Left | 4 | 70 | 0 | 0 | | |
| Volume Right | 2 | 0 | 0 | 330 | | |
| cSH | 133 | 1009 | 1700 | 1700 | | |
| Volume to Capacity | 0.05 | 0.07 | 0.32 | 0.19 | | |
| Queue Length 95th (ft) | 4 | 6 | 0 | 0 | | |
| Control Delay (s) | 33.4 | 1.9 | 0.0 | 0.0 | | |
| Lane LOS | D | A | | | | |
| Approach Delay (s) | 33.4 | 1.9 | 0.0 | | | |
| Approach LOS | D | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | 92.7% | | ICU Level of Service | | F |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Year 2035 No Project-PM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  |  | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 370 | 386 | 143 | 137 | 378 | 291 | 95 | 441 | 23 | 280 | 505 | 330 |
| 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 |
| Hourly flow rate (vph) | 402 | 420 | 155 | 149 | 411 | 316 | 103 | 479 | 25 | 304 | 549 | 359 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 822 | 155 | 876 | 343 | 265 | 487 | 366 | 359 | | | | |
| Volume Left (vph) | 402 | 0 | 149 | 103 | 0 | 304 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 155 | 316 | 0 | 25 | 0 | 0 | 359 | | | | |
| Hadj (s) | 0.13 | -0.57 | -0.15 | 0.18 | -0.03 | 0.35 | 0.03 | -0.67 | | | | |
| Departure Headway (s) | 9.5 | 3.2 | 9.2 | 9.8 | 9.6 | 9.9 | 9.6 | 3.2 | | | | |
| Degree Utilization, x | 2.16 | 0.14 | 2.24 | 0.93 | 0.71 | 1.34 | 0.97 | 0.32 | | | | |
| Capacity (veh/h) | 387 | 1121 | 399 | 361 | 368 | 371 | 366 | 1113 | | | | |
| Control Delay (s) | 552.7 | 6.7 | 585.8 | 62.8 | 31.4 | 196.9 | 70.8 | 6.5 | | | | |
| Approach Delay (s) | 465.9 | | 585.8 | 49.1 | | 102.5 | | | | | | |
| Approach LOS | F | | F | E | | F | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 305.6 | | | | | | | | | |
| HCM Level of Service | | | F | | | | | | | | | |
| Intersection Capacity Utilization | | | 137.5% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
33: Bethel Ave & Kamm Ave

















Year 2035 No Project-PM
9/19/2011

| | | | | | | |
|-----------------------------------|-------|------|--------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↰ | | | ↱ | ↰ | ↱ |
| Sign Control | Stop | | | Stop | Stop | |
| Volume (vph) | 134 | 556 | 107 | 383 | 423 | 114 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 146 | 604 | 116 | 416 | 460 | 124 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total (vph) | 750 | 533 | 584 | | | |
| Volume Left (vph) | 0 | 116 | 460 | | | |
| Volume Right (vph) | 604 | 0 | 124 | | | |
| Hadj (s) | -0.45 | 0.08 | 0.06 | | | |
| Departure Headway (s) | 6.5 | 7.1 | 7.0 | | | |
| Degree Utilization, x | 1.36 | 1.04 | 1.14 | | | |
| Capacity (veh/h) | 563 | 515 | 515 | | | |
| Control Delay (s) | 194.0 | 78.6 | 110.4 | | | |
| Approach Delay (s) | 194.0 | 78.6 | 110.4 | | | |
| Approach LOS | F | F | F | | | |
| Intersection Summary | | | | | | |
| Delay | | | 134.9 | | | |
| HCM Level of Service | | | F | | | |
| Intersection Capacity Utilization | | | 108.8% | ICU Level of Service | G | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 34: Kamm Ave & Academy Ave










Year 2035 No Project-PM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | | |  | | |  | | |  | | |
| Sign Control | Stop | | | Stop | | | Stop | | | Stop | | |
| Volume (vph) | 89 | 523 | 273 | 180 | 262 | 95 | 211 | 322 | 112 | 133 | 326 | 53 |
| 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 |
| Hourly flow rate (vph) | 97 | 568 | 297 | 196 | 285 | 103 | 229 | 350 | 122 | 145 | 354 | 58 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 962 | 584 | 579 | 122 | 557 | | | | | | | |
| Volume Left (vph) | 97 | 196 | 229 | 0 | 145 | | | | | | | |
| Volume Right (vph) | 297 | 103 | 0 | 122 | 58 | | | | | | | |
| Hadj (s) | -0.13 | -0.01 | 0.23 | -0.67 | 0.02 | | | | | | | |
| Departure Headway (s) | 9.4 | 9.5 | 9.9 | 9.0 | 9.7 | | | | | | | |
| Degree Utilization, x | 2.51 | 1.54 | 1.59 | 0.30 | 1.49 | | | | | | | |
| Capacity (veh/h) | 392 | 391 | 367 | 396 | 384 | | | | | | | |
| Control Delay (s) | 707.8 | 282.0 | 302.7 | 14.7 | 260.3 | | | | | | | |
| Approach Delay (s) | 707.8 | 282.0 | 252.7 | 260.3 | | | | | | | | |
| Approach LOS | F | F | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | 416.5 | | | | | | | | | | | |
| HCM Level of Service | F | | | | | | | | | | | |
| Intersection Capacity Utilization | 136.4% | | | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |


















HCM Unsignalized Intersection Capacity Analysis
35: SR 99 NB Off & Bethel Ave

Year 2035 No Project-PM
9/19/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 78 | 487 | 466 | 0 | 0 | 501 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 85 | 529 | 507 | 0 | 0 | 545 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1071 | 527 | | | 517 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1071 | 527 | | | 517 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 65 | 2 | | | 100 | |
| cM capacity (veh/h) | 240 | 542 | | | 1041 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 614 | 507 | 545 | | | |
| Volume Left | 85 | 0 | 0 | | | |
| Volume Right | 529 | 0 | 0 | | | |
| cSH | 462 | 1700 | 1700 | | | |
| Volume to Capacity | 1.33 | 0.30 | 0.32 | | | |
| Queue Length 95th (ft) | 685 | 0 | 0 | | | |
| Control Delay (s) | 187.5 | 0.0 | 0.0 | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 187.5 | 0.0 | 0.0 | | | |
| Approach LOS | F | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 69.1 | | | |
| Intersection Capacity Utilization | | | 68.3% | ICU Level of Service | C | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave

Year 2035 No Project-PM
9/19/2011


















| | | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | |  |  | | | | |  | | |  | | |
| Volume (veh/h) | 292 | 80 | 214 | 0 | 0 | 0 | 53 | 174 | 3 | 318 | 177 | 83 | |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 | |
| Hourly flow rate (vph) | 317 | 87 | 233 | 0 | 0 | 0 | 58 | 189 | 3 | 346 | 192 | 90 | |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | | |
| Right turn flare (veh) | | | 3 | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | | |
| Median storage (veh) | | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | | |
| vC, conflicting volume | 1255 | 1256 | 258 | 1415 | 1300 | 211 | 293 | | | 202 | | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | |
| vCu, unblocked vol | 1255 | 1256 | 258 | 1415 | 1300 | 211 | 293 | | | 202 | | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | | |
| p0 queue free % | 0 | 28 | 70 | 100 | 100 | 100 | 95 | | | 75 | | | |
| cM capacity (veh/h) | 113 | 121 | 768 | 27 | 114 | 823 | 1258 | | | 1369 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | | |
| Volume Total | 637 | 250 | 628 | | | | | | | | | | |
| Volume Left | 317 | 58 | 346 | | | | | | | | | | |
| Volume Right | 233 | 3 | 90 | | | | | | | | | | |
| cSH | 167 | 1258 | 1369 | | | | | | | | | | |
| Volume to Capacity | 3.82 | 0.05 | 0.25 | | | | | | | | | | |
| Queue Length 95th (ft) | Err | 4 | 25 | | | | | | | | | | |
| Control Delay (s) | Err | 2.2 | 5.8 | | | | | | | | | | |
| Lane LOS | F | A | A | | | | | | | | | | |
| Approach Delay (s) | Err | 2.2 | 5.8 | | | | | | | | | | |
| Approach LOS | F | | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| Average Delay | | 4206.1 | | | | | | | | | | | |
| Intersection Capacity Utilization | | 81.7% | ICU Level of Service | D | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | | |

2035 With-Project Conditions

HCM Unsignalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB Off / Van Horn

Year 2035 Plus Project-AM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 1002 | 125 | 505 | 925 | 0 | 102 | 0 | 402 | 353 | 272 | 465 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 0 | 1089 | 136 | 549 | 1005 | 0 | 111 | 0 | 437 | 384 | 296 | 505 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1015 | | | 1235 | | | 3681 | 3280 | 1177 | 3717 | 3348 | 1025 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1015 | | | 1235 | | | 3681 | 3280 | 1177 | 3717 | 3348 | 1025 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.4 |
| p0 queue free % | 100 | | | 2 | | | 0 | 100 | 0 | 0 | 0 | 0 |
| cM capacity (veh/h) | 677 | | | 559 | | | 0 | 0 | 229 | 0 | 0 | 273 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 1225 | 1554 | 548 | 1185 | | | | | | | | |
| Volume Left | 0 | 549 | 111 | 384 | | | | | | | | |
| Volume Right | 136 | 0 | 437 | 505 | | | | | | | | |
| cSH | 1700 | 559 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.72 | 0.98 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 0 | 343 | Err | Err | | | | | | | | |
| Control Delay (s) | 0.0 | 60.7 | Err | Err | | | | | | | | |
| Lane LOS | | F | F | F | | | | | | | | |
| Approach Delay (s) | 0.0 | 60.7 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 215.5% | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 17: Mountain View Ave & SR 99 SB On

Year 2035 Plus Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↰ | | | ↱ | | |
| Volume (veh/h) | 1543 | 214 | 59 | 1430 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1677 | 233 | 64 | 1554 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 1920 | | 3496 | 1813 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1920 | | 3496 | 1813 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 79 | | 100 | 100 |
| cM capacity (veh/h) | | | 308 | | 6 | 97 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 1910 | 1618 | | | | |
| Volume Left | 0 | 64 | | | | |
| Volume Right | 233 | 0 | | | | |
| cSH | 1700 | 308 | | | | |
| Volume to Capacity | 1.12 | 0.21 | | | | |
| Queue Length 95th (ft) | 0 | 19 | | | | |
| Control Delay (s) | 0.0 | 19.8 | | | | |
| Lane LOS | | C | | | | |
| Approach Delay (s) | 0.0 | 19.8 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 9.1 | | | | |
| Intersection Capacity Utilization | | 135.9% | ICU Level of Service | | H | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 18: Mountain View Ave & SR 99 NB On

Year 2035 Plus Project-AM
9/19/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------|--------|----------------------|------|------|------|
| Lane Configurations | | ↔ | ↔ | | | |
| Volume (veh/h) | 304 | 1239 | 1489 | 546 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 330 | 1347 | 1618 | 593 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2222 | | | | 3943 | 1935 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2222 | | | | 3943 | 1935 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 0 | | | | 0 | 100 |
| cM capacity (veh/h) | 234 | | | | 0 | 81 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 1677 | 2212 | | | | |
| Volume Left | 330 | 0 | | | | |
| Volume Right | 0 | 593 | | | | |
| cSH | 234 | 1700 | | | | |
| Volume to Capacity | 1.41 | 1.30 | | | | |
| Queue Length 95th (ft) | 466 | 0 | | | | |
| Control Delay (s) | 247.8 | 0.0 | | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 247.8 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 106.8 | | | | |
| Intersection Capacity Utilization | | 210.1% | ICU Level of Service | | H | |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 19: Mountain View Ave & SR 99 NB Off























Year 2035 Plus Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↘ | ↗ |
| Volume (veh/h) | 1239 | 0 | 0 | 1789 | 246 | 101 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1347 | 0 | 0 | 1945 | 267 | 110 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.63 | |
| vC, conflicting volume | | | 1357 | | 3311 | 1367 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 1357 | | 4373 | 1367 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.5 |
| p0 queue free % | | | 100 | | 0 | 32 |
| cM capacity (veh/h) | | | 503 | | 1 | 162 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 1347 | 1945 | 377 | | | |
| Volume Left | 0 | 0 | 267 | | | |
| Volume Right | 0 | 0 | 110 | | | |
| cSH | 1700 | 1700 | 2 | | | |
| Volume to Capacity | 0.79 | 1.14 | 237.59 | | | |
| Queue Length 95th (ft) | 0 | 0 | Err | | | |
| Control Delay (s) | 0.0 | 0.0 | Err | | | |
| Lane LOS | | | F | | | |
| Approach Delay (s) | 0.0 | 0.0 | Err | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1028.0 | | | | |
| Intersection Capacity Utilization | | 114.5% | ICU Level of Service | H | | |
| Analysis Period (min) | | 15 | | | | |

HCM Signalized Intersection Capacity Analysis 20: Mountain View Ave & Golden State Blvd

Year 2035 Plus Project-AM

9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 422 | 790 | 127 | 63 | 1154 | 202 | 209 | 338 | 9 | 127 | 295 | 475 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3368 | | 1770 | 3309 | | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3368 | | 1770 | 3309 | | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 459 | 859 | 138 | 68 | 1254 | 220 | 227 | 367 | 10 | 138 | 321 | 516 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 20 | 0 | 0 | 0 | 5 | 0 | 0 | 203 |
| Lane Group Flow (vph) | 459 | 981 | 0 | 68 | 1454 | 0 | 227 | 367 | 5 | 138 | 321 | 313 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 5% | 2% | 2% | 7% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 8.0 | 24.3 | | 4.7 | 21.0 | | 8.0 | 15.9 | 15.9 | 7.8 | 15.7 | 15.7 |
| Effective Green, g (s) | 8.0 | 24.3 | | 4.7 | 21.0 | | 8.0 | 15.9 | 15.9 | 7.8 | 15.7 | 15.7 |
| Actuated g/C Ratio | 0.11 | 0.34 | | 0.07 | 0.30 | | 0.11 | 0.23 | 0.23 | 0.11 | 0.22 | 0.22 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 201 | 1161 | | 118 | 986 | | 201 | 798 | 348 | 196 | 788 | 344 |
| v/s Ratio Prot | c0.26 | c0.29 | | 0.04 | c0.44 | | c0.13 | 0.10 | | 0.08 | 0.09 | |
| v/s Ratio Perm | | | | | | | | | 0.00 | | | c0.20 |
| v/c Ratio | 2.28 | 0.84 | | 0.58 | 1.47 | | 1.13 | 0.46 | 0.01 | 0.70 | 0.41 | 0.91 |
| Uniform Delay, d1 | 31.2 | 21.4 | | 31.9 | 24.8 | | 31.2 | 23.6 | 21.2 | 30.2 | 23.4 | 26.7 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 593.1 | 5.8 | | 6.7 | 219.3 | | 102.6 | 0.4 | 0.0 | 10.9 | 0.3 | 27.2 |
| Delay (s) | 624.4 | 27.1 | | 38.6 | 244.0 | | 133.8 | 24.0 | 21.2 | 41.1 | 23.8 | 53.9 |
| Level of Service | F | C | | D | F | | F | C | C | D | C | D |
| Approach Delay (s) | | 215.4 | | | 235.0 | | | 65.2 | | | 42.2 | |
| Approach LOS | | F | | | F | | | E | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 165.3 | | | HCM Level of Service | | | F | | | | | |
| HCM Volume to Capacity ratio | 1.45 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.5 | | | Sum of lost time (s) | | | 22.7 | | | | | |
| Intersection Capacity Utilization | 97.9% | | | ICU Level of Service | | | F | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-AM

20: Mountain View Ave & Golden State Blvd

9/19/2011



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|-------|------|------|------|------|------|
| Lane Group Flow (vph) | 459 | 997 | 68 | 1474 | 227 | 367 | 10 | 138 | 321 | 516 |
| v/c Ratio | 2.24 | 0.83 | 0.37 | 1.55 | 1.11 | 0.45 | 0.03 | 0.69 | 0.40 | 0.93 |
| Control Delay | 591.9 | 31.2 | 34.7 | 274.8 | 127.7 | 24.7 | 14.6 | 50.0 | 24.2 | 40.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 591.9 | 31.2 | 34.7 | 274.8 | 127.7 | 24.7 | 14.6 | 50.0 | 24.2 | 40.1 |
| Queue Length 50th (ft) | -328 | -247 | 28 | -487 | -115 | 70 | 1 | 58 | 61 | 109 |
| Queue Length 95th (ft) | #495 | #364 | 63 | #617 | #242 | 108 | 12 | #136 | 95 | #294 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 1682 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 205 | 1206 | 205 | 953 | 205 | 863 | 382 | 205 | 863 | 574 |
| 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 | 2.24 | 0.83 | 0.33 | 1.55 | 1.11 | 0.43 | 0.03 | 0.67 | 0.37 | 0.90 |

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.

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.
















Year 2035 Plus Project-AM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (veh/h) | 44 | 588 | 72 | 85 | 1127 | 16 | 33 | 61 | 91 | 6 | 71 | 85 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 48 | 639 | 78 | 92 | 1225 | 17 | 36 | 66 | 99 | 7 | 77 | 92 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1252 | | | 727 | | | 1722 | 2221 | 379 | 1986 | 2252 | 641 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1252 | | | 727 | | | 1722 | 2221 | 379 | 1986 | 2252 | 641 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 91 | | | 89 | | | 0 | 0 | 84 | 0 | 0 | 77 |
| cM capacity (veh/h) | 547 | | | 865 | | | 0 | 34 | 609 | 0 | 33 | 410 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | |
| Volume Total | 48 | 426 | 291 | 92 | 817 | 426 | 201 | 176 | | | | |
| Volume Left | 48 | 0 | 0 | 92 | 0 | 0 | 36 | 7 | | | | |
| Volume Right | 0 | 0 | 78 | 0 | 0 | 17 | 99 | 92 | | | | |
| cSH | 547 | 1700 | 1700 | 865 | 1700 | 1700 | 0 | 0 | | | | |
| Volume to Capacity | 0.09 | 0.25 | 0.17 | 0.11 | 0.48 | 0.25 | Err | Err | | | | |
| Queue Length 95th (ft) | 7 | 0 | 0 | 9 | 0 | 0 | Err | Err | | | | |
| Control Delay (s) | 12.2 | 0.0 | 0.0 | 9.7 | 0.0 | 0.0 | Err | Err | | | | |
| Lane LOS | B | | | A | | | F | F | | | | |
| Approach Delay (s) | 0.8 | | | 0.7 | | | Err | Err | | | | |
| Approach LOS | | | | | | | F | F | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | | Err | | | | | | | | |
| Intersection Capacity Utilization | | | 69.9% | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave

Year 2035 Plus Project-AM

9/19/2011










| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (veh/h) | 57 | 590 | 34 | 101 | 995 | 27 | 69 | 78 | 57 | 29 | 147 | 148 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 62 | 641 | 37 | 110 | 1082 | 29 | 75 | 85 | 62 | 32 | 160 | 161 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1121 | | | 688 | | | 2360 | 2134 | 680 | 2224 | 2138 | 1116 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1121 | | | 688 | | | 2360 | 2134 | 680 | 2224 | 2138 | 1116 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 90 | | | 88 | | | 0 | 0 | 86 | 0 | 0 | 35 |
| cM capacity (veh/h) | 618 | | | 898 | | | 0 | 38 | 444 | 0 | 38 | 248 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 740 | 1221 | 222 | 352 | | | | | | | | |
| Volume Left | 62 | 110 | 75 | 32 | | | | | | | | |
| Volume Right | 37 | 29 | 62 | 161 | | | | | | | | |
| cSH | 618 | 898 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.10 | 0.12 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 8 | 10 | Err | Err | | | | | | | | |
| Control Delay (s) | 2.7 | 3.9 | Err | Err | | | | | | | | |
| Lane LOS | A | A | F | F | | | | | | | | |
| Approach Delay (s) | 2.7 | 3.9 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 115.3% | ICU Level of Service | | | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

25: Amber Ave & Golden State Blvd











Year 2035 Plus Project-AM

9/19/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Volume (veh/h) | 50 | 47 | 56 | 506 | 417 | 68 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 57 | 53 | 64 | 575 | 474 | 77 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.96 | 0.96 | 0.96 | | | |
| vC, conflicting volume | 947 | 296 | 561 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 856 | 175 | 453 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 78 | 93 | 94 | | | |
| cM capacity (veh/h) | 263 | 789 | 1049 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 110 | 265 | 383 | 316 | 235 | |
| Volume Left | 57 | 64 | 0 | 0 | 0 | |
| Volume Right | 53 | 0 | 0 | 0 | 77 | |
| cSH | 388 | 1049 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.28 | 0.06 | 0.23 | 0.19 | 0.14 | |
| Queue Length 95th (ft) | 29 | 5 | 0 | 0 | 0 | |
| Control Delay (s) | 17.9 | 2.6 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | C | A | | | | |
| Approach Delay (s) | 17.9 | 1.0 | | 0.0 | | |
| Approach LOS | C | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.0 | | | | |
| Intersection Capacity Utilization | | 47.6% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 31: Kamm Ave (SR 99 NB On) & Bethel Ave




















Year 2035 Plus Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 2 | 2 | 212 | 509 | 501 | 372 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 2 | 2 | 230 | 553 | 545 | 404 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1579 | 565 | 555 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1579 | 565 | 555 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 98 | 100 | 77 | | | |
| cM capacity (veh/h) | 91 | 516 | 1007 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 4 | 784 | 545 | 404 | | |
| Volume Left | 2 | 230 | 0 | 0 | | |
| Volume Right | 2 | 0 | 0 | 404 | | |
| cSH | 155 | 1007 | 1700 | 1700 | | |
| Volume to Capacity | 0.03 | 0.23 | 0.32 | 0.24 | | |
| Queue Length 95th (ft) | 2 | 22 | 0 | 0 | | |
| Control Delay (s) | 28.9 | 5.1 | 0.0 | 0.0 | | |
| Lane LOS | D | A | | | | |
| Approach Delay (s) | 28.9 | 5.1 | 0.0 | | | |
| Approach LOS | D | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 2.4 | | | | |
| Intersection Capacity Utilization | | 81.1% | | ICU Level of Service | | D |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-AM





















9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | |  |  | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 99 | 261 | 152 | 25 | 400 | 120 | 201 | 302 | 60 | 110 | 253 | 272 |
| 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 |
| Hourly flow rate (vph) | 108 | 284 | 165 | 27 | 435 | 130 | 218 | 328 | 65 | 120 | 275 | 296 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 391 | 165 | 592 | 383 | 229 | 211 | 183 | 296 | | | | |
| Volume Left (vph) | 108 | 0 | 27 | 218 | 0 | 120 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 165 | 130 | 0 | 65 | 0 | 0 | 296 | | | | |
| Hadj (s) | 0.10 | -0.57 | -0.08 | 0.32 | -0.17 | 0.32 | 0.03 | -0.67 | | | | |
| Departure Headway (s) | 8.9 | 3.2 | 8.9 | 9.4 | 8.9 | 9.9 | 9.6 | 3.2 | | | | |
| Degree Utilization, x | 0.97 | 0.15 | 1.46 | 1.00 | 0.57 | 0.58 | 0.49 | 0.26 | | | | |
| Capacity (veh/h) | 391 | 1121 | 421 | 383 | 391 | 353 | 361 | 1112 | | | | |
| Control Delay (s) | 67.7 | 6.8 | 245.3 | 76.7 | 21.9 | 24.4 | 20.2 | 6.1 | | | | |
| Approach Delay (s) | 49.6 | | 245.3 | 56.2 | | 15.5 | | | | | | |
| Approach LOS | E | | F | F | | C | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 88.9 | | | | | | | | | |
| HCM Level of Service | | | F | | | | | | | | | |
| Intersection Capacity Utilization | | | 89.8% | ICU Level of Service | | E | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 33: Bethel Ave & Kamm Ave


















Year 2035 Plus Project-AM

9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|--|--|--|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | | |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | | | | | |
| Sign Control | Stop | | | Stop | | | Stop | | | Stop | | | | | | |
| Volume (vph) | 138 | 266 | 132 | 41 | 307 | 113 | 281 | 271 | 108 | 110 | 317 | 74 | | | | |
| 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 | | | | |
| Hourly flow rate (vph) | 150 | 289 | 143 | 45 | 334 | 123 | 305 | 295 | 117 | 120 | 345 | 80 | | | | |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | SB 2 | | | | | | | | |
| Volume Total (vph) | 150 | 433 | 45 | 457 | 305 | 412 | 120 | 425 | | | | | | | | |
| Volume Left (vph) | 150 | 0 | 45 | 0 | 305 | 0 | 120 | 0 | | | | | | | | |
| Volume Right (vph) | 0 | 143 | 0 | 123 | 0 | 117 | 0 | 80 | | | | | | | | |
| Hadj (s) | 0.53 | -0.16 | 0.53 | -0.12 | 0.53 | -0.17 | 0.53 | -0.10 | | | | | | | | |
| Departure Headway (s) | 10.1 | 9.4 | 10.3 | 9.6 | 10.0 | 9.3 | 10.1 | 9.5 | | | | | | | | |
| Degree Utilization, x | 0.42 | 1.13 | 0.13 | 1.22 | 0.85 | 1.07 | 0.34 | 1.12 | | | | | | | | |
| Capacity (veh/h) | 344 | 395 | 345 | 379 | 356 | 392 | 352 | 390 | | | | | | | | |
| Control Delay (s) | 19.0 | 115.7 | 13.6 | 149.4 | 48.4 | 95.0 | 17.0 | 113.2 | | | | | | | | |
| Approach Delay (s) | 90.8 | 137.3 | | 75.2 | | 92.1 | | | | | | | | | | |
| Approach LOS | F | F | | F | | F | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | | | |
| Delay | 96.2 | | | | | | | | | | | | | | | |
| HCM Level of Service | F | | | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 80.8% | | | | ICU Level of Service | | | | D | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | | | |










HCM Unsignalized Intersection Capacity Analysis
34: Kamm Ave & Academy Ave

Year 2035 Plus Project-AM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  |  | |  | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 44 | 179 | 64 | 100 | 338 | 92 | 150 | 205 | 88 | 32 | 253 | 72 |
| 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 |
| Hourly flow rate (vph) | 48 | 195 | 70 | 109 | 367 | 100 | 163 | 223 | 96 | 35 | 275 | 78 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 312 | 576 | 386 | 96 | 388 | | | | | | | |
| Volume Left (vph) | 48 | 109 | 163 | 0 | 35 | | | | | | | |
| Volume Right (vph) | 70 | 100 | 0 | 96 | 78 | | | | | | | |
| Hadj (s) | -0.07 | -0.03 | 0.25 | -0.67 | -0.07 | | | | | | | |
| Departure Headway (s) | 9.4 | 9.0 | 9.5 | 8.6 | 9.1 | | | | | | | |
| Degree Utilization, x | 0.82 | 1.44 | 1.02 | 0.23 | 0.98 | | | | | | | |
| Capacity (veh/h) | 377 | 408 | 386 | 415 | 388 | | | | | | | |
| Control Delay (s) | 42.8 | 236.7 | 81.6 | 12.9 | 71.0 | | | | | | | |
| Approach Delay (s) | 42.8 | 236.7 | 67.9 | | 71.0 | | | | | | | |
| Approach LOS | E | F | F | | F | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 119.5 | | | | | | | | | |
| HCM Level of Service | | | F | | | | | | | | | |
| Intersection Capacity Utilization | | | 90.5% | | ICU Level of Service | | | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |


















HCM Unsignalized Intersection Capacity Analysis
35: SR 99 NB Off & Bethel Ave

Year 2035 Plus Project-AM
9/19/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 91 | 271 | 449 | 0 | 0 | 503 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 99 | 295 | 488 | 0 | 0 | 547 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1055 | 508 | | | 498 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1055 | 508 | | | 498 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 60 | 47 | | | 100 | |
| cM capacity (veh/h) | 246 | 555 | | | 1057 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 393 | 488 | 547 | | | |
| Volume Left | 99 | 0 | 0 | | | |
| Volume Right | 295 | 0 | 0 | | | |
| cSH | 422 | 1700 | 1700 | | | |
| Volume to Capacity | 0.93 | 0.29 | 0.32 | | | |
| Queue Length 95th (ft) | 263 | 0 | 0 | | | |
| Control Delay (s) | 60.1 | 0.0 | 0.0 | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 60.1 | 0.0 | 0.0 | | | |
| Approach LOS | F | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 16.6 | | | | |
| Intersection Capacity Utilization | | 55.7% | | ICU Level of Service | | B |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave


















Year 2035 Plus Project-AM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | | | | |  | | |  |  |
| Volume (veh/h) | 123 | 23 | 53 | 0 | 0 | 0 | 46 | 327 | 2 | 170 | 306 | 118 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 134 | 25 | 58 | 0 | 0 | 0 | 50 | 355 | 2 | 185 | 333 | 128 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | 3 | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1243 | 1244 | 417 | 1284 | 1307 | 377 | 471 | | | 368 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1243 | 1244 | 417 | 1284 | 1307 | 377 | 471 | | | 368 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 82 | 91 | 100 | 100 | 100 | 95 | | | 84 | | |
| cM capacity (veh/h) | 126 | 139 | 625 | 93 | 128 | 664 | 1082 | | | 1191 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 216 | 408 | 646 | | | | | | | | | |
| Volume Left | 134 | 50 | 185 | | | | | | | | | |
| Volume Right | 58 | 2 | 128 | | | | | | | | | |
| cSH | 165 | 1082 | 1191 | | | | | | | | | |
| Volume to Capacity | 1.31 | 0.05 | 0.16 | | | | | | | | | |
| Queue Length 95th (ft) | 318 | 4 | 14 | | | | | | | | | |
| Control Delay (s) | 228.6 | 1.5 | 3.8 | | | | | | | | | |
| Lane LOS | F | A | A | | | | | | | | | |
| Approach Delay (s) | 228.6 | 1.5 | 3.8 | | | | | | | | | |
| Approach LOS | F | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | 41.3 | | | | | | | | | | |
| Intersection Capacity Utilization | | 77.5% | ICU Level of Service | | D | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB Off / Van Horn

Year 2035 Plus Project-PM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Volume (veh/h) | 0 | 2197 | 165 | 555 | 1429 | 0 | 217 | 0 | 1322 | 677 | 310 | 564 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 0 | 2388 | 179 | 603 | 1553 | 0 | 236 | 0 | 1437 | 736 | 337 | 613 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | 8 |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1563 | | | 2577 | | | 5732 | 5258 | 2498 | 6694 | 5347 | 1573 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1563 | | | 2577 | | | 5732 | 5258 | 2498 | 6694 | 5347 | 1573 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 100 | | | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| cM capacity (veh/h) | 419 | | | 168 | | | 0 | 0 | 36 | 0 | 0 | 133 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 2567 | 2157 | 1673 | 1686 | | | | | | | | |
| Volume Left | 0 | 603 | 236 | 736 | | | | | | | | |
| Volume Right | 179 | 0 | 1437 | 613 | | | | | | | | |
| cSH | 1700 | 168 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 1.51 | 3.59 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 0 | Err | Err | Err | | | | | | | | |
| Control Delay (s) | 0.0 | 1219.5 | Err | Err | | | | | | | | |
| Lane LOS | | F | F | F | | | | | | | | |
| Approach Delay (s) | 0.0 | 1219.5 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 393.3% | ICU Level of Service | | | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

17: Mountain View Ave & SR 99 SB On

Year 2035 Plus Project-PM

9/19/2011

| | | | | | | |
|-----------------------------------|------|-------|--------|----------------------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↗ | | | ↖ | | |
| Volume (veh/h) | 3759 | 437 | 249 | 1984 | 0 | 0 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4086 | 475 | 271 | 2157 | 0 | 0 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 0.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 4571 | | 7041 | 4343 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 4571 | | 7041 | 4343 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 0 | | 0 | 100 |
| cM capacity (veh/h) | | | 26 | | 0 | 2 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 4561 | 2427 | | | | |
| Volume Left | 0 | 271 | | | | |
| Volume Right | 475 | 0 | | | | |
| cSH | 1700 | 26 | | | | |
| Volume to Capacity | 2.68 | 10.41 | | | | |
| Queue Length 95th (ft) | 0 | Err | | | | |
| Control Delay (s) | 0.0 | 504.7 | | | | |
| Lane LOS | | F | | | | |
| Approach Delay (s) | 0.0 | 504.7 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 175.3 | | | |
| Intersection Capacity Utilization | | | 326.1% | ICU Level of Service | H | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis 18: Mountain View Ave & SR 99 NB On

Year 2035 Plus Project-PM

9/19/2011



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|--------|--------|------|----------------------|------|------|
| Lane Configurations | | ← | ← | | | |
| Volume (veh/h) | 936 | 2823 | 2233 | 820 | 0 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1017 | 3068 | 2427 | 891 | 0 | 0 |
| Pedestrians | | 10 | 10 | | 10 | |
| Lane Width (ft) | | 12.0 | 12.0 | | 0.0 | |
| Walking Speed (ft/s) | | 4.0 | 4.0 | | 4.0 | |
| Percent Blockage | | 1 | 1 | | 0 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 3328 | | | | 7996 | 2893 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 3328 | | | | 7996 | 2893 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 0 | | | | 0 | 100 |
| cM capacity (veh/h) | 85 | | | | 0 | 21 |
| Direction, Lane # | EB 1 | WB 1 | | | | |
| Volume Total | 4086 | 3318 | | | | |
| Volume Left | 1017 | 0 | | | | |
| Volume Right | 0 | 891 | | | | |
| cSH | 85 | 1700 | | | | |
| Volume to Capacity | 12.02 | 1.95 | | | | |
| Queue Length 95th (ft) | Err | 0 | | | | |
| Control Delay (s) | 1257.7 | 0.0 | | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 1257.7 | 0.0 | | | | |
| Approach LOS | | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 694.0 | | | | |
| Intersection Capacity Utilization | | 384.2% | | ICU Level of Service | | H |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

19: Mountain View Ave & SR 99 NB Off

Year 2035 Plus Project-PM























9/19/2011

| | | | | | | |
|-----------------------------------|------|--------|----------------------|------|------|------|
| | → | ↘ | ↙ | ← | ↖ | ↗ |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | | | ↑ | ↘ | ↗ |
| Volume (veh/h) | 2823 | 0 | 0 | 2706 | 348 | 200 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 3068 | 0 | 0 | 2941 | 378 | 217 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | 1 |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 1085 | | |
| pX, platoon unblocked | | | | | 0.64 | |
| vC, conflicting volume | | | 3078 | | 6030 | 3088 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 3078 | | 8588 | 3088 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 100 | | 0 | 0 |
| cM capacity (veh/h) | | | 106 | | 0 | 16 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 3068 | 2941 | 596 | | | |
| Volume Left | 0 | 0 | 378 | | | |
| Volume Right | 0 | 0 | 217 | | | |
| cSH | 1700 | 1700 | 0 | | | |
| Volume to Capacity | 1.80 | 1.73 | Err | | | |
| Queue Length 95th (ft) | 0 | 0 | Err | | | |
| Control Delay (s) | 0.0 | 0.0 | Err | | | |
| Lane LOS | | | F | | | |
| Approach Delay (s) | 0.0 | 0.0 | Err | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 901.7 | | | | |
| Intersection Capacity Utilization | | 174.5% | ICU Level of Service | H | | |
| Analysis Period (min) | | 15 | | | | |

HCM Signalized Intersection Capacity Analysis
20: Mountain View Ave & Golden State Blvd

Year 2035 Plus Project-PM

9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  |  |  |  |  |
| Volume (vph) | 1099 | 1556 | 368 | 77 | 1280 | 437 | 390 | 692 | 27 | 531 | 745 | 1035 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3393 | | 1770 | 3356 | | 1770 | 3539 | 1541 | 1770 | 3539 | 1541 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3393 | | 1770 | 3356 | | 1770 | 3539 | 1541 | 1770 | 3539 | 1541 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1195 | 1691 | 400 | 84 | 1391 | 475 | 424 | 752 | 29 | 577 | 810 | 1125 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 42 | 0 | 0 | 0 | 7 | 0 | 0 | 163 |
| Lane Group Flow (vph) | 1195 | 2066 | 0 | 84 | 1824 | 0 | 424 | 752 | 22 | 577 | 810 | 962 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 8.0 | 25.6 | | 6.3 | 23.9 | | 12.0 | 20.1 | 20.1 | 11.0 | 19.1 | 19.1 |
| Effective Green, g (s) | 8.0 | 25.6 | | 6.3 | 23.9 | | 12.0 | 20.1 | 20.1 | 11.0 | 19.1 | 19.1 |
| Actuated g/C Ratio | 0.10 | 0.32 | | 0.08 | 0.30 | | 0.15 | 0.25 | 0.25 | 0.14 | 0.24 | 0.24 |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 175 | 1075 | | 138 | 993 | | 263 | 880 | 383 | 241 | 837 | 364 |
| v/s Ratio Prot | c0.68 | c0.61 | | 0.05 | 0.54 | | 0.24 | 0.21 | | c0.33 | 0.23 | |
| v/s Ratio Perm | | | | | | | | | 0.01 | | | c0.62 |
| v/c Ratio | 6.83 | 1.92 | | 0.61 | 1.84 | | 1.61 | 0.85 | 0.06 | 2.39 | 0.97 | 2.64 |
| Uniform Delay, d1 | 36.4 | 27.6 | | 36.1 | 28.4 | | 34.4 | 29.0 | 23.1 | 34.9 | 30.5 | 30.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2634.9 | 418.5 | | 7.4 | 380.7 | | 292.5 | 8.1 | 0.1 | 640.0 | 23.2 | 747.6 |
| Delay (s) | 2671.3 | 446.1 | | 43.5 | 409.2 | | 326.9 | 37.1 | 23.2 | 674.9 | 53.8 | 778.4 |
| Level of Service | F | F | | D | F | | F | D | C | F | D | F |
| Approach Delay (s) | | 1255.3 | | | 393.4 | | | 138.7 | | | 521.0 | |
| Approach LOS | | F | | | F | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 711.3 | | | | | HCM Level of Service | | F | | | |
| HCM Volume to Capacity ratio | | 2.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 80.8 | | | | | Sum of lost time (s) | | 12.9 | | | |
| Intersection Capacity Utilization | | 173.9% | | | | | ICU Level of Service | | H | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-PM

20: Mountain View Ave & Golden State Blvd

9/19/2011



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|--------|-------|------|-------|-------|------|------|-------|------|-------|
| Lane Group Flow (vph) | 1195 | 2091 | 84 | 1866 | 424 | 752 | 29 | 577 | 810 | 1125 |
| v/c Ratio | 6.75 | 1.89 | 0.51 | 1.85 | 1.59 | 0.85 | 0.07 | 2.37 | 0.96 | 2.12 |
| Control Delay | 2608.4 | 424.7 | 45.5 | 407.2 | 311.9 | 39.1 | 18.4 | 651.8 | 54.1 | 530.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 2608.4 | 424.7 | 45.5 | 407.2 | 311.9 | 39.1 | 18.4 | 651.8 | 54.1 | 530.5 |
| Queue Length 50th (ft) | ~1169 | ~891 | 40 | ~756 | ~308 | 188 | 8 | ~481 | 211 | ~835 |
| Queue Length 95th (ft) | #1404 | #1031 | 85 | #894 | #479 | #281 | 27 | #672 | #327 | #1074 |
| Internal Link Dist (ft) | | 476 | | 2144 | | 775 | | | 1689 | |
| Turn Bay Length (ft) | 250 | | 200 | | 200 | | 25 | 180 | | 25 |
| Base Capacity (vph) | 177 | 1108 | 177 | 1011 | 266 | 889 | 394 | 243 | 845 | 530 |
| 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 | 6.75 | 1.89 | 0.47 | 1.85 | 1.59 | 0.85 | 0.07 | 2.37 | 0.96 | 2.12 |

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.

HCM Unsignalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.

















Year 2035 Plus Project-PM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | | |  | | |  |  |
| Volume (veh/h) | 180 | 1707 | 99 | 70 | 1172 | 14 | 74 | 77 | 97 | 20 | 55 | 148 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |
| Grade | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 196 | 1855 | 108 | 76 | 1274 | 15 | 80 | 84 | 105 | 22 | 60 | 161 |
| Pedestrians | 10 | | | 10 | | | 10 | | | 10 | | |
| Lane Width (ft) | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | | |
| Percent Blockage | 1 | | | 1 | | | 1 | | | 1 | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | | | None | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1299 | | | 1973 | | | 3300 | 3762 | 1002 | 2920 | 3808 | 665 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1299 | | | 1973 | | | 3300 | 3762 | 1002 | 2920 | 3808 | 665 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 63 | | | 74 | | | 0 | 0 | 56 | 0 | 0 | 59 |
| cM capacity (veh/h) | 525 | | | 288 | | | 0 | 2 | 237 | 0 | 2 | 396 |
| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | WB 3 | NB 1 | SB 1 | | | | |
| Volume Total | 196 | 1237 | 726 | 76 | 849 | 440 | 270 | 242 | | | | |
| Volume Left | 196 | 0 | 0 | 76 | 0 | 0 | 80 | 22 | | | | |
| Volume Right | 0 | 0 | 108 | 0 | 0 | 15 | 105 | 161 | | | | |
| cSH | 525 | 1700 | 1700 | 288 | 1700 | 1700 | 0 | 0 | | | | |
| Volume to Capacity | 0.37 | 0.73 | 0.43 | 0.26 | 0.50 | 0.26 | Err | Err | | | | |
| Queue Length 95th (ft) | 43 | 0 | 0 | 26 | 0 | 0 | Err | Err | | | | |
| Control Delay (s) | 15.9 | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | Err | Err | | | | |
| Lane LOS | C | | | C | | | F | F | | | | |
| Approach Delay (s) | 1.4 | | | 1.2 | | | Err | Err | | | | |
| Approach LOS | | | | | | | F | F | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | Err | | | | | | | | | | | |
| Intersection Capacity Utilization | 95.9% | | | | | | | | | | | |
| ICU Level of Service | F | | | | | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave

Year 2035 Plus Project-PM

9/19/2011










| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (veh/h) | 207 | 1510 | 112 | 103 | 1000 | 98 | 91 | 308 | 62 | 44 | 112 | 173 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 225 | 1641 | 122 | 112 | 1087 | 107 | 99 | 335 | 67 | 48 | 122 | 188 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 12.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 1 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1203 | | | 1773 | | | 3785 | 3590 | 1722 | 3771 | 3597 | 1160 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1203 | | | 1773 | | | 3785 | 3590 | 1722 | 3771 | 3597 | 1160 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 61 | | | 68 | | | 0 | 0 | 38 | 0 | 0 | 20 |
| cM capacity (veh/h) | 575 | | | 348 | | | 0 | 2 | 109 | 0 | 2 | 234 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 1988 | 1305 | 501 | 358 | | | | | | | | |
| Volume Left | 225 | 112 | 99 | 48 | | | | | | | | |
| Volume Right | 122 | 107 | 67 | 188 | | | | | | | | |
| cSH | 575 | 348 | 0 | 0 | | | | | | | | |
| Volume to Capacity | 0.39 | 0.32 | Err | Err | | | | | | | | |
| Queue Length 95th (ft) | 46 | 34 | Err | Err | | | | | | | | |
| Control Delay (s) | 1.7 | 20.2 | Err | Err | | | | | | | | |
| Lane LOS | A | C | F | F | | | | | | | | |
| Approach Delay (s) | 1.7 | 20.2 | Err | Err | | | | | | | | |
| Approach LOS | | | F | F | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | Err | | | | | | | | | |
| Intersection Capacity Utilization | | | 184.8% | ICU Level of Service | | | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

25: Amber Ave & Golden State Blvd











Year 2035 Plus Project-PM

9/19/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  | |
| Volume (veh/h) | 266 | 144 | 247 | 839 | 939 | 251 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 302 | 164 | 281 | 953 | 1067 | 285 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.79 | 0.79 | 0.79 | | | |
| vC, conflicting volume | 2268 | 696 | 1362 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2068 | 69 | 916 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 0 | 78 | 51 | | | |
| cM capacity (veh/h) | 19 | 758 | 577 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 466 | 598 | 636 | 711 | 641 | |
| Volume Left | 302 | 281 | 0 | 0 | 0 | |
| Volume Right | 164 | 0 | 0 | 0 | 285 | |
| cSH | 28 | 577 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 16.48 | 0.49 | 0.37 | 0.42 | 0.38 | |
| Queue Length 95th (ft) | Err | 66 | 0 | 0 | 0 | |
| Control Delay (s) | Err | 13.4 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | F | B | | | | |
| Approach Delay (s) | Err | 6.5 | | 0.0 | | |
| Approach LOS | F | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 1528.9 | | | | |
| Intersection Capacity Utilization | | 98.5% | | ICU Level of Service | | F |
| Analysis Period (min) | | 15 | | | | |



















HCM Unsignalized Intersection Capacity Analysis
31: Kamm Ave (SR 99 NB On) & Bethel Ave

Year 2035 Plus Project-PM
9/19/2011

| | | | | | | |
|-----------------------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations |  | | |  |  |  |
| Volume (veh/h) | 4 | 2 | 117 | 940 | 527 | 391 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 2 | 127 | 1022 | 573 | 425 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1869 | 593 | 583 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1869 | 593 | 583 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 94 | 100 | 87 | | | |
| cM capacity (veh/h) | 68 | 497 | 983 | | | |
| Direction Lane # | EB 1 | NB 1 | SB 1 | SB 2 | | |
| Volume Total | 7 | 1149 | 573 | 425 | | |
| Volume Left | 4 | 127 | 0 | 0 | | |
| Volume Right | 2 | 0 | 0 | 425 | | |
| cSH | 96 | 983 | 1700 | 1700 | | |
| Volume to Capacity | 0.07 | 0.13 | 0.34 | 0.25 | | |
| Queue Length 95th (ft) | 5 | 11 | 0 | 0 | | |
| Control Delay (s) | 45.4 | 3.7 | 0.0 | 0.0 | | |
| Lane LOS | E | A | | | | |
| Approach Delay (s) | 45.4 | 3.7 | 0.0 | | | |
| Approach LOS | E | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | 2.1 | | | | | |
| Intersection Capacity Utilization | 99.8% | | | ICU Level of Service | F | |
| Analysis Period (min) | 15 | | | | | |





















HCM Unsignalized Intersection Capacity Analysis
32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-PM
9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  | | |  | | |  |  |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 342 | 392 | 212 | 195 | 439 | 224 | 98 | 691 | 70 | 240 | 637 | 379 |
| 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 |
| Hourly flow rate (vph) | 372 | 426 | 230 | 212 | 477 | 243 | 107 | 751 | 76 | 261 | 692 | 412 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 | | | | |
| Volume Total (vph) | 798 | 230 | 933 | 482 | 452 | 492 | 462 | 412 | | | | |
| Volume Left (vph) | 372 | 0 | 212 | 107 | 0 | 261 | 0 | 0 | | | | |
| Volume Right (vph) | 0 | 230 | 243 | 0 | 76 | 0 | 0 | 412 | | | | |
| Hadj (s) | 0.14 | 0.57 | 0.07 | 0.14 | 0.08 | 0.30 | 0.03 | 0.67 | | | | |
| Departure Headway (s) | 9.7 | 3.2 | 9.5 | 9.8 | 9.6 | 10.0 | 9.7 | 3.2 | | | | |
| Degree Utilization, x | 2.15 | 0.20 | 2.46 | 1.31 | 1.20 | 1.36 | 1.24 | 0.37 | | | | |
| Capacity (veh/h) | 378 | 1122 | 388 | 374 | 381 | 370 | 377 | 1114 | | | | |
| Control Delay (s) | 547.6 | 7.0 | 685.2 | 185.9 | 141.9 | 205.5 | 158.1 | 6.8 | | | | |
| Approach Delay (s) | 426.5 | | 685.2 | 164.6 | | 129.5 | | | | | | |
| Approach LOS | F | | F | F | | F | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 330.5 | | | | | | | | | |
| HCM Level of Service | | | F | | | | | | | | | |
| Intersection Capacity Utilization | | | 149.5% | | | ICU Level of Service | | | H | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 33: Bethel Ave & Kamm Ave


















Year 2035 Plus Project-PM
9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Sign Control | Stop | | | Stop | | | Stop | | | Stop | | |
| Volume (vph) | 90 | 476 | 507 | 107 | 518 | 13 | 371 | 211 | 162 | 77 | 264 | 295 |
| 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 |
| Hourly flow rate (vph) | 98 | 517 | 551 | 116 | 563 | 14 | 403 | 229 | 176 | 84 | 287 | 321 |
| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | NB 1 | NB 2 | SB 1 | SB 2 | | | | |
| Volume Total (vph) | 98 | 1068 | 116 | 577 | 403 | 405 | 84 | 608 | | | | |
| Volume Left (vph) | 98 | 0 | 116 | 0 | 403 | 0 | 84 | 0 | | | | |
| Volume Right (vph) | 0 | 551 | 0 | 14 | 0 | 176 | 0 | 321 | | | | |
| Hadj (s) | 0.53 | -0.30 | 0.53 | 0.07 | 0.53 | -0.27 | 0.53 | -0.34 | | | | |
| Departure Headway (s) | 10.3 | 9.5 | 10.3 | 9.9 | 10.0 | 9.2 | 10.4 | 9.5 | | | | |
| Degree Utilization, x | 0.28 | 2.82 | 0.33 | 1.58 | 1.12 | 1.04 | 0.24 | 1.61 | | | | |
| Capacity (veh/h) | 344 | 389 | 345 | 379 | 370 | 394 | 343 | 382 | | | | |
| Control Delay (s) | 16.1 | 847.0 | 17.2 | 296.9 | 115.4 | 86.3 | 15.4 | 307.1 | | | | |
| Approach Delay (s) | 777.3 | | 250.0 | | 100.8 | | 271.8 | | | | | |
| Approach LOS | F | | F | | F | | F | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | 401.6 | | | | | | | | | | | |
| HCM Level of Service | F | | | | | | | | | | | |
| Intersection Capacity Utilization | 128.4% | | | | ICU Level of Service | | | | H | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
34: Kamm Ave & Academy Ave










Year 2035 Plus Project-PM

9/19/2011

| | | | | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  |  | |  | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 89 | 523 | 273 | 180 | 262 | 95 | 211 | 380 | 112 | 133 | 396 | 53 |
| 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 |
| Hourly flow rate (vph) | 97 | 568 | 297 | 196 | 285 | 103 | 229 | 413 | 122 | 145 | 430 | 58 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | | | | | | | |
| Volume Total (vph) | 962 | 584 | 642 | 122 | 633 | | | | | | | |
| Volume Left (vph) | 97 | 196 | 229 | 0 | 145 | | | | | | | |
| Volume Right (vph) | 297 | 103 | 0 | 122 | 58 | | | | | | | |
| Hadj (s) | -0.13 | -0.01 | 0.21 | -0.67 | 0.03 | | | | | | | |
| Departure Headway (s) | 9.4 | 9.5 | 9.9 | 9.0 | 9.7 | | | | | | | |
| Degree Utilization, x | 2.51 | 1.54 | 1.76 | 0.30 | 1.70 | | | | | | | |
| Capacity (veh/h) | 392 | 391 | 369 | 396 | 377 | | | | | | | |
| Control Delay (s) | 707.8 | 282.0 | 376.2 | 14.7 | 348.0 | | | | | | | |
| Approach Delay (s) | 707.8 | 282.0 | 318.6 | | 348.0 | | | | | | | |
| Approach LOS | F | F | F | | F | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 444.9 | | | | | | | | | |
| HCM Level of Service | | | F | | | | | | | | | |
| Intersection Capacity Utilization | | | 143.1% | ICU Level of Service | | | | | | H | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 35: SR 99 NB Off & Bethel Ave


















Year 2035 Plus Project-PM
9/19/2011

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  | |  | | |  |
| Volume (veh/h) | 177 | 473 | 585 | 0 | 0 | 529 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 192 | 514 | 636 | 0 | 0 | 575 |
| Pedestrians | 10 | | 10 | | | 10 |
| Lane Width (ft) | 12.0 | | 12.0 | | | 12.0 |
| Walking Speed (ft/s) | 4.0 | | 4.0 | | | 4.0 |
| Percent Blockage | 1 | | 1 | | | 1 |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 1231 | 656 | | | 646 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1231 | 656 | | | 646 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 0 | 0 | | | 100 | |
| cM capacity (veh/h) | 193 | 458 | | | 932 | |
| Direction, Lane # | WB 1 | NB 1 | SB 1 | | | |
| Volume Total | 707 | 636 | 575 | | | |
| Volume Left | 192 | 0 | 0 | | | |
| Volume Right | 514 | 0 | 0 | | | |
| cSH | 333 | 1700 | 1700 | | | |
| Volume to Capacity | 2.12 | 0.37 | 0.34 | | | |
| Queue Length 95th (ft) | 1295 | 0 | 0 | | | |
| Control Delay (s) | 540.3 | 0.0 | 0.0 | | | |
| Lane LOS | F | | | | | |
| Approach Delay (s) | 540.3 | 0.0 | 0.0 | | | |
| Approach LOS | F | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 199.1 | | | | |
| Intersection Capacity Utilization | | 77.1% | | ICU Level of Service | | D |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave

Year 2035 Plus Project-PM

9/19/2011

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | | | | |  | | |  |  |
| Volume (veh/h) | 292 | 80 | 214 | 0 | 0 | 0 | 53 | 293 | 3 | 360 | 219 | 125 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 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 |
| Hourly flow rate (vph) | 317 | 87 | 233 | 0 | 0 | 0 | 58 | 318 | 3 | 391 | 238 | 136 |
| Pedestrians | | 10 | | | 10 | | | 10 | | | 10 | |
| Lane Width (ft) | | 12.0 | | | 0.0 | | | 12.0 | | | 12.0 | |
| Walking Speed (ft/s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | |
| Percent Blockage | | 1 | | | 0 | | | 1 | | | 1 | |
| Right turn flare (veh) | | | 3 | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1544 | 1546 | 326 | 1704 | 1612 | 340 | 384 | | | 332 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1544 | 1546 | 326 | 1704 | 1612 | 340 | 384 | | | 332 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 0 | 67 | 0 | 100 | 100 | 95 | | | 68 | | |
| cM capacity (veh/h) | 66 | 74 | 703 | 0 | 67 | 696 | 1165 | | | 1228 | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 637 | 379 | 765 | | | | | | | | | |
| Volume Left | 317 | 58 | 391 | | | | | | | | | |
| Volume Right | 233 | 3 | 136 | | | | | | | | | |
| cSH | 101 | 1165 | 1228 | | | | | | | | | |
| Volume to Capacity | 6.29 | 0.05 | 0.32 | | | | | | | | | |
| Queue Length 95th (ft) | Err | 4 | 35 | | | | | | | | | |
| Control Delay (s) | Err | 1.7 | 6.6 | | | | | | | | | |
| Lane LOS | F | A | A | | | | | | | | | |
| Approach Delay (s) | Err | 1.7 | 6.6 | | | | | | | | | |
| Approach LOS | F | | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | 3578.2 | | | | | | | | | | |
| Intersection Capacity Utilization | | 94.8% | ICU Level of Service | | F | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |

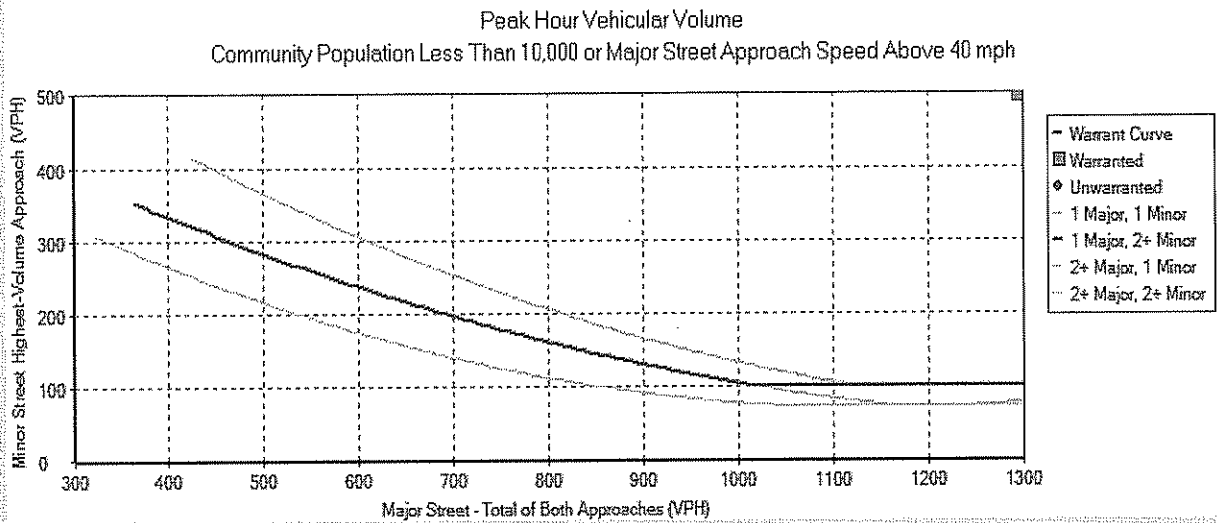
APPENDIX C

PEAK HOUR TRAFFIC SIGNAL WARRANTS

Warrant 3: Peak Hour

2035 With Project

16: SR 99 SB Off / Van Horn & Mountain View Ave

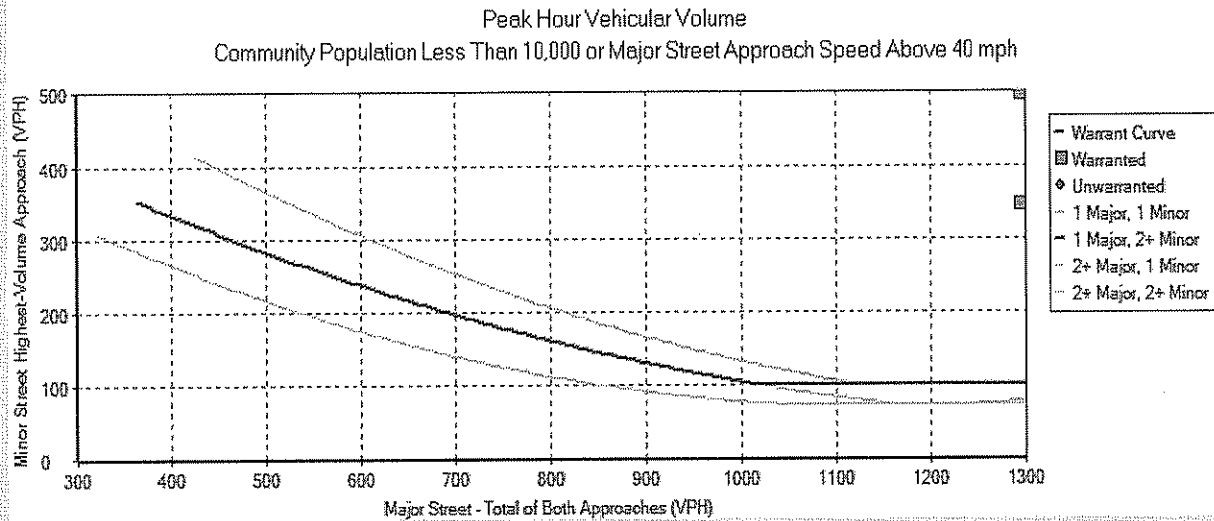


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 2557 | 1090 |
| 17:00 | 4346 | 1551 |

Warrant 3: Peak Hour

2035 With Project

19: SR 99 NB Off & Mountain View Ave

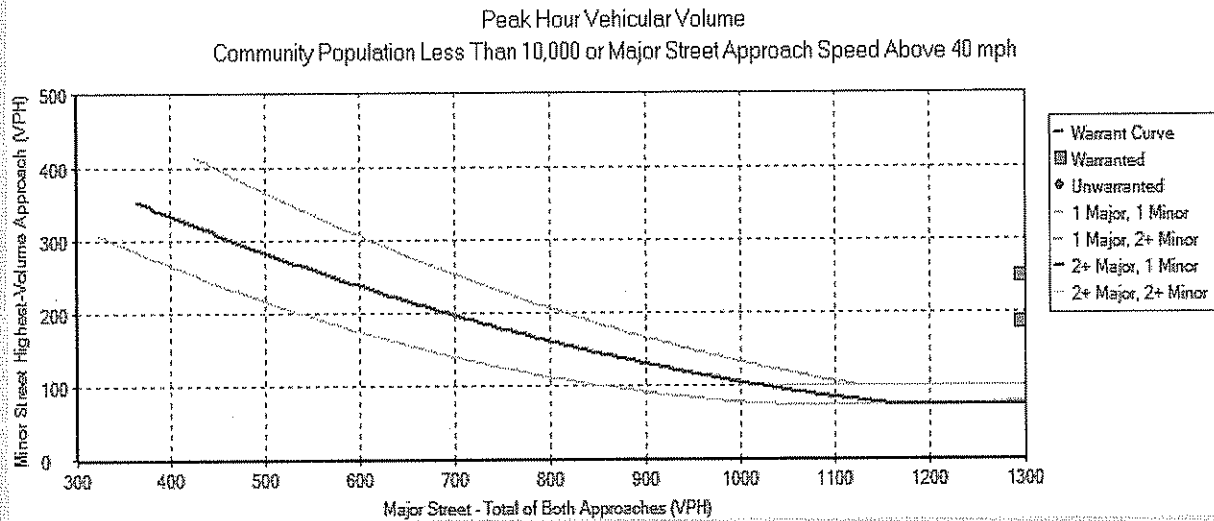


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 3028 | 347 |
| 17:00 | 5529 | 548 |

Warrant 3: Peak Hour

2035 With Project

21: Mountain View Ave & Bethel Ave.

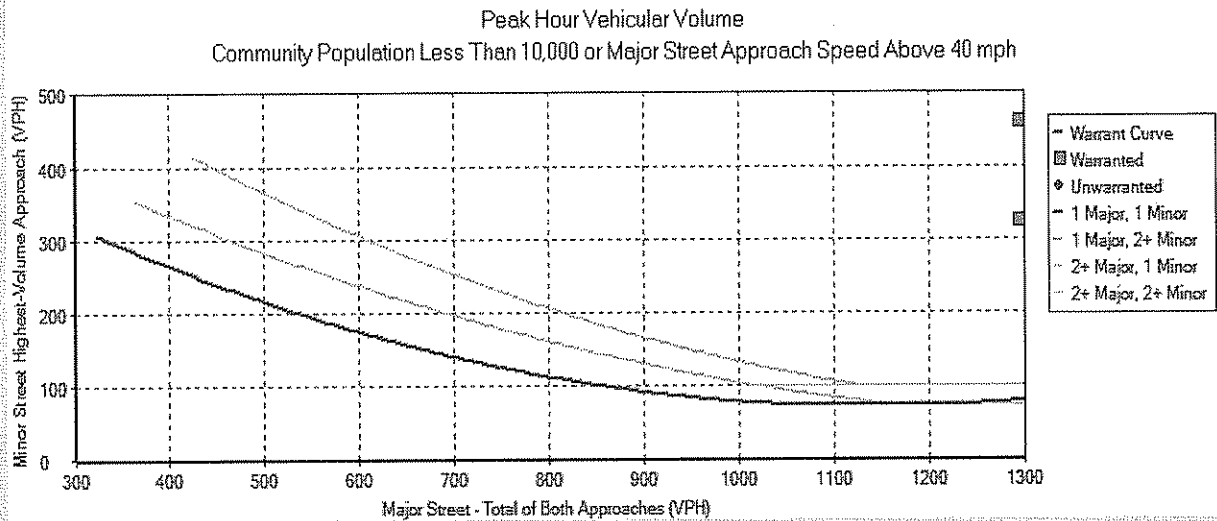


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 1902 | 185 |
| 17:00 | 3242 | 248 |

Warrant 3: Peak Hour

2035 With Project

22: Academy Ave & Mountain View Ave

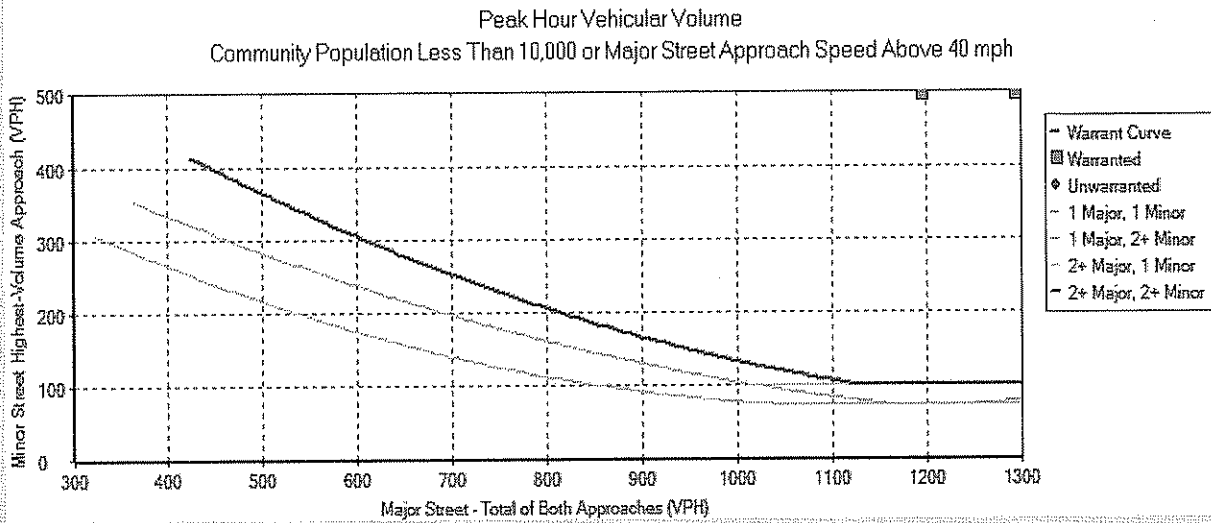


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 1804 | 324 |
| 16:45 | 3030 | 461 |

Warrant 3: Peak Hour

2035 With Project

32: Golden State Blvd & Bethel Ave

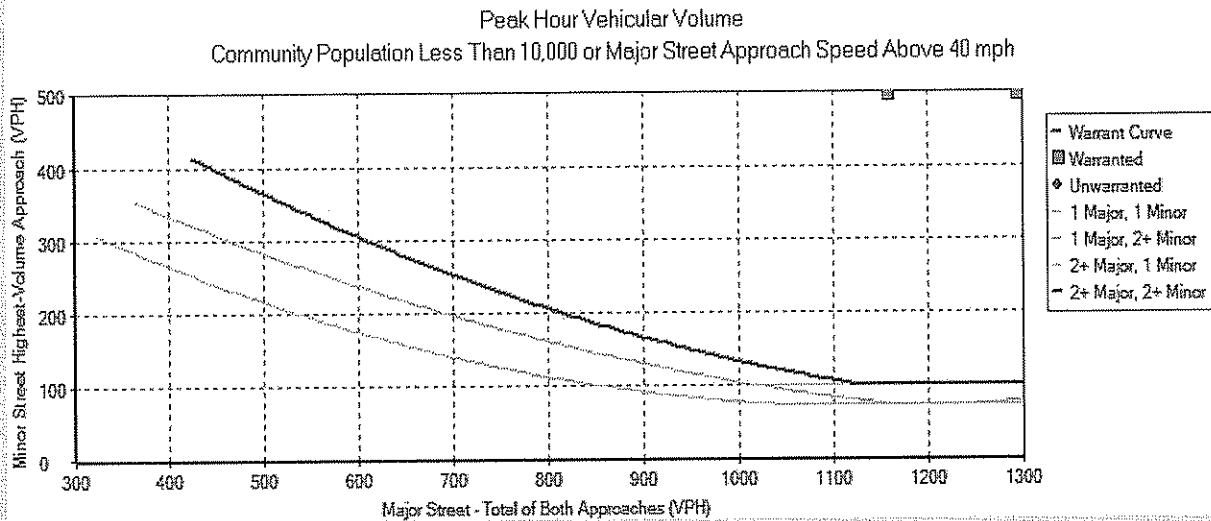


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:45 | 1198 | 545 |
| 16:45 | 2115 | 946 |

Warrant 3: Peak Hour

2035 With Project

33: Kamm Ave & Bethel Ave

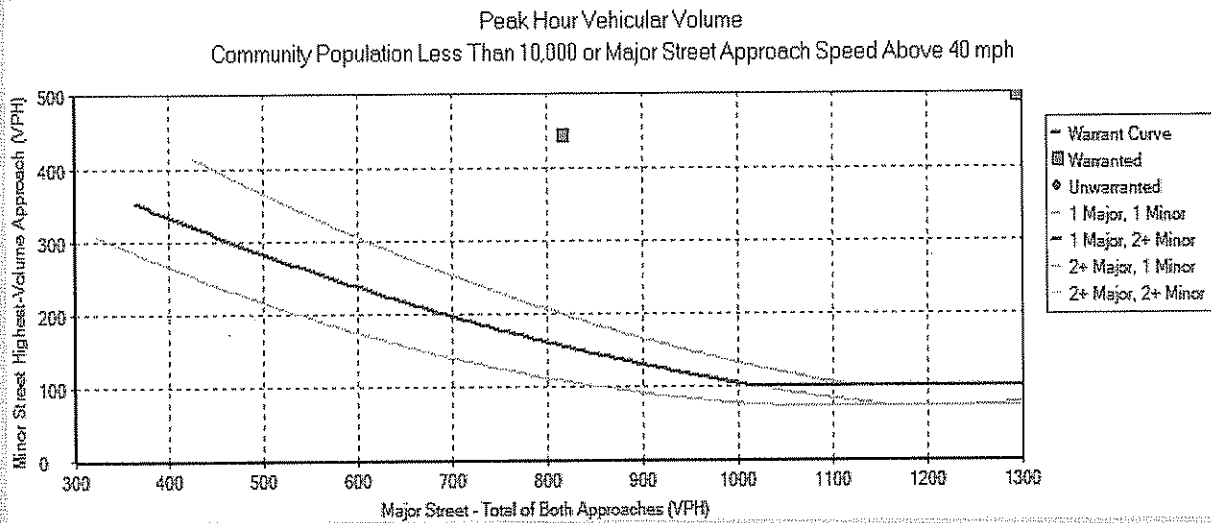


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:45 | 1161 | 536 |
| 16:45 | 1380 | 1073 |

Warrant 3: Peak Hour

2035 With Project

34: Academy Ave & Kamm Ave

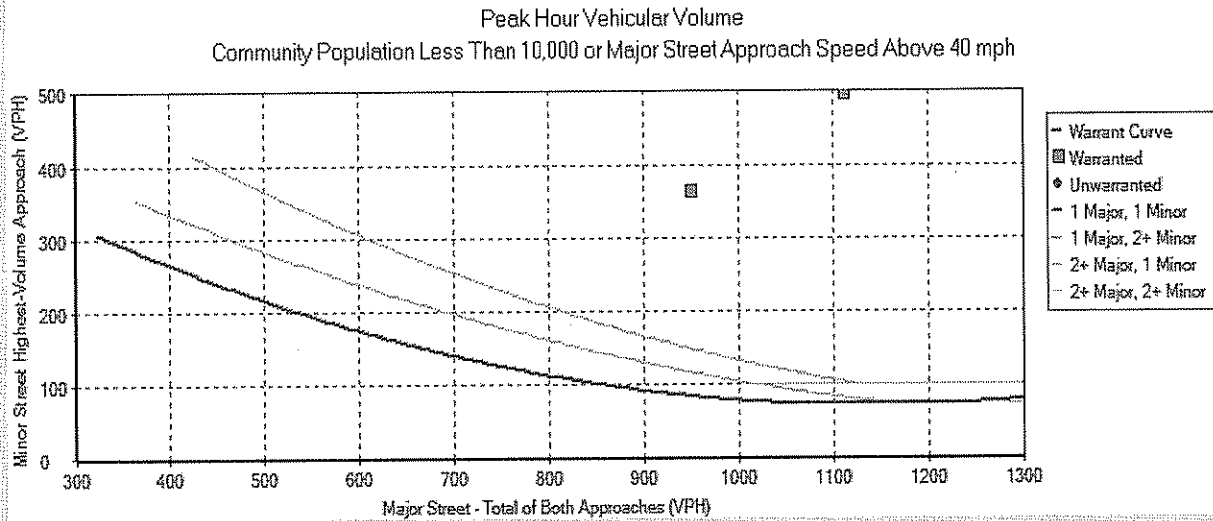


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 817 | 443 |
| 16:45 | 1422 | 703 |

Warrant 3: Peak Hour

2035 With Project

35: Bethel Ave & SR 99 NB Off

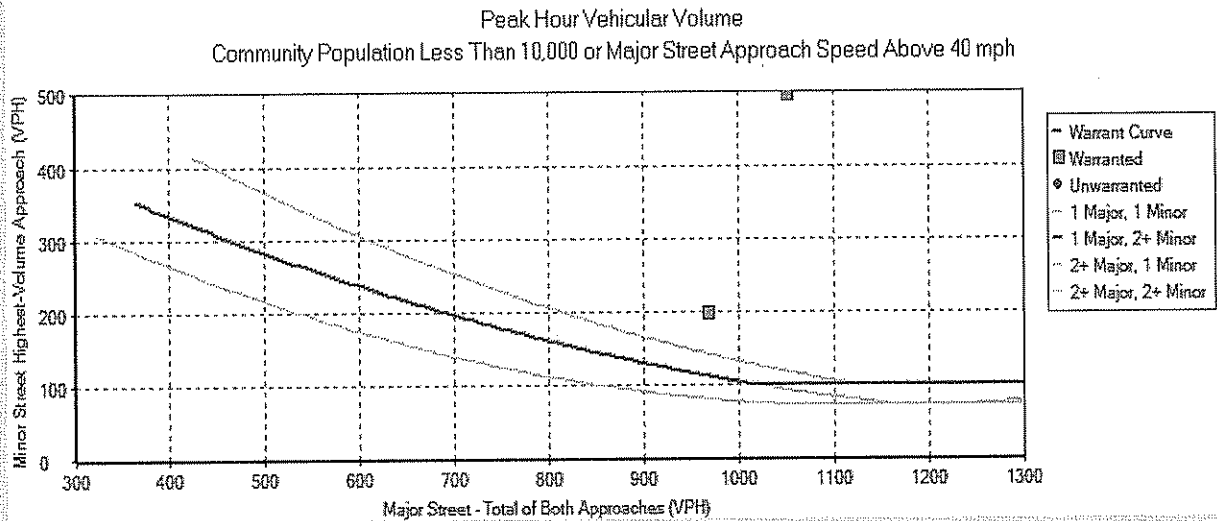


| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:30 | 952 | 362 |
| 16:30 | 1114 | 650 |

Warrant 3: Peak Hour

2035 With Project

36: Bethel Ave & Parkway Drive



| Warranted / Unwarranted | | |
|-------------------------|---|--|
| Hour | Major Street Total of both approaches (VPH) | Minor Street Highest volume approach (VPH) |
| 7:45 | 969 | 199 |
| 16:30 | 1053 | 586 |

APPENDIX D

FLORIDA TABLES FOR ROAD SEGMENT ANALYSES

TABLE 4

Generalized **Peak Hour Two-Way Volumes** for Florida's
Urbanized Areas¹

10/4/10

| STATE SIGNALIZED ARTERIALS | | | | | |
|---|-----------|-------|-------|-------|-------|
| Class I (>0.00 to 1.99 signalized intersections per mile) | | | | | |
| Lanes | Median | B | C | D | E |
| 2 | Undivided | 930 | 1,500 | 1,600 | *** |
| 4 | Divided | 2,840 | 3,440 | 3,560 | *** |
| 6 | Divided | 4,370 | 5,200 | 5,360 | *** |
| 8 | Divided | 5,900 | 6,970 | 7,160 | *** |
| Class II (2.00 to 4.50 signalized intersections per mile) | | | | | |
| Lanes | Median | B | C | D | E |
| 2 | Undivided | ** | 1,020 | 1,480 | 1,570 |
| 4 | Divided | ** | 2,420 | 3,220 | 3,400 |
| 6 | Divided | ** | 3,790 | 4,880 | 5,150 |
| 8 | Divided | ** | 5,150 | 6,530 | 6,880 |
| Class III/IV (more than 4.50 signalized intersections per mile) | | | | | |
| Lanes | Median | B | C | D | E |
| 2 | Undivided | ** | 500 | 1,150 | 1,440 |
| 4 | Divided | ** | 1,220 | 2,730 | 3,100 |
| 6 | Divided | ** | 1,910 | 4,240 | 4,680 |
| 8 | Divided | ** | 2,620 | 5,770 | 6,280 |

| FREEWAYS | | | | | |
|---------------------|--------|---------------|--------|--------|--|
| Lanes | B | C | D | E | |
| 4 | 4,000 | 5,500 | 6,770 | 7,300 | |
| 6 | 6,000 | 8,320 | 10,150 | 11,290 | |
| 8 | 8,000 | 11,050 | 13,480 | 15,270 | |
| 10 | 10,000 | 13,960 | 16,930 | 19,250 | |
| 12 | 13,730 | 18,600 | 21,950 | 23,230 | |
| Freeway Adjustments | | | | | |
| Auxiliary Lanes | | Ramp Metering | | | |
| + 1,800 | | + 5% | | | |

| UNINTERRUPTED FLOW HIGHWAYS | | | | | |
|--|-----------|----------------------|--------------------|-------|--------|
| Lanes | Median | B | C | D | E |
| 2 | Undivided | 730 | 1,460 | 2,080 | 2,620 |
| 4 | Divided | 3,220 | 4,660 | 6,040 | 6,840 |
| 6 | Divided | 4,840 | 6,990 | 9,060 | 10,280 |
| Uninterrupted Flow Highway Adjustments | | | | | |
| Lanes | Median | Exclusive left lanes | Adjustment factors | | |
| 2 | Divided | Yes | +5% | | |
| Multi | Undivided | Yes | -5% | | |
| Multi | Undivided | No | -25% | | |

| Non-State Signalized Roadway Adjustments (Alter corresponding state volumes by the indicated percent.) | |
|---|-------|
| Major City/County Roadways | - 10% |
| Other Signalized Roadways | - 35% |

| BICYCLE MODE ² | | | | | |
|---|-----|------|-------|--------|--|
| (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.) | | | | | |
| Paved Shoulder/ Bicycle Lane | | | | | |
| Coverage | B | C | D | E | |
| 0-49% | ** | 310 | 1,180 | >1,180 | |
| 50-84% | 240 | 360 | >360 | *** | |
| 85-100% | 620 | >620 | *** | *** | |

| PEDESTRIAN MODE ² | | | | | |
|---|----|-------|-------|--------|--|
| (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.) | | | | | |
| Sidewalk Coverage | B | C | D | E | |
| 0-49% | ** | ** | 480 | 1,390 | |
| 50-84% | ** | ** | 1,100 | 1,820 | |
| 85-100% | ** | 1,100 | 1,820 | >1,820 | |

| BUS MODE (Scheduled Fixed Route) ³ | | | | | |
|---|----|----|----|----|--|
| (Buses in peak hour in peak direction) | | | | | |
| Sidewalk Coverage | B | C | D | E | |
| 0-84% | >5 | ≥4 | ≥3 | ≥2 | |
| 85-100% | >4 | ≥3 | ≥2 | ≥1 | |

¹ Values shown are presented as hourly two-way volumes for levels of service and are for the automobile/truck modes unless specifically stated. Although presented as peak hour two-way volumes, they actually represent peak hour peak direction conditions with an applicable D factor applied. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual, Bicycle LOS Model, Pedestrian LOS Model and Transit Capacity and Quality of Service Manual, respectively for the automobile/truck, bicycle, pedestrian and bus modes.

² Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

³ Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

** Cannot be achieved using table input value defaults.

*** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
605 Suwannee Street, MS 19
Tallahassee, FL 32399-0450

¹ Values shown are presented as hourly two-way volumes for levels of service and are for the automobile/truck modes unless specifically stated. Although presented as peak hour two-way volumes, they actually represent peak hour peak direction conditions with an applicable D factor applied. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual, Bicycle LOS Model, Pedestrian LOS Model and Transit Capacity and Quality of Service Manual, respectively for the automobile/truck, bicycle, pedestrian and bus modes.

² Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

³ Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

** Cannot be achieved using table input value defaults.

*** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:













Florida Department of Transportation
Systems Planning Office
605 Suwannee Street, MS 19
Tallahassee, FL 32399-0450

APPENDIX E

MITIGATED INTERSECTION ANALYSIS SHEETS

HCM Signalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB ramps

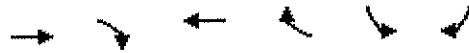
Year 2035 Plus Project-AM
Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | ↑ | | ↑↑↑ | ↑ | | | | ↑↑ | | ↑↑↑ |
| Volume (vph) | 0 | 1190 | 214 | 0 | 1430 | 59 | 0 | 0 | 0 | 353 | 0 | 737 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.9 | 4.0 | | 4.9 | 4.0 | | | | 4.9 | | 4.9 |
| Lane Util. Factor | | 0.91 | 1.00 | | 0.91 | 1.00 | | | | 0.97 | | 0.76 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 0.98 | | | | 1.00 | | 0.96 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.99 | | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5036 | 1560 | | 5036 | 1544 | | | | 3329 | | 3471 |
| Flt Permitted | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5036 | 1560 | | 5036 | 1544 | | | | 3329 | | 3471 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 1293 | 233 | 0 | 1554 | 64 | 0 | 0 | 0 | 384 | 0 | 801 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| Lane Group Flow (vph) | 0 | 1293 | 233 | 0 | 1554 | 64 | 0 | 0 | 0 | 384 | 0 | 785 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 4% | 2% | 2% |
| Turn Type | | Free | | | Free | | | | | custom | | custom |
| Protected Phases | | 4 | | | 8 | | | | | | | |
| Permitted Phases | | Free | | | Free | | | | | 6 | | 6 |
| Actuated Green, G (s) | | 28.1 | 60.0 | | 28.1 | 60.0 | | | | 22.1 | | 22.1 |
| Effective Green, g (s) | | 28.1 | 60.0 | | 28.1 | 60.0 | | | | 22.1 | | 22.1 |
| Actuated g/C Ratio | | 0.47 | 1.00 | | 0.47 | 1.00 | | | | 0.37 | | 0.37 |
| Clearance Time (s) | | 4.9 | | | 4.9 | | | | | 4.9 | | 4.9 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | | | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 2359 | 1560 | | 2359 | 1544 | | | | 1226 | | 1278 |
| v/s Ratio Prot | | 0.26 | | | 0.31 | | | | | | | |
| v/s Ratio Perm | | | 0.15 | | | 0.04 | | | | 0.12 | | 0.23 |
| v/c Ratio | | 0.55 | 0.15 | | 0.66 | 0.04 | | | | 0.31 | | 0.61 |
| Uniform Delay, d1 | | 11.4 | 0.0 | | 12.3 | 0.0 | | | | 13.5 | | 15.5 |
| Progression Factor | | 1.00 | 1.00 | | 0.66 | 1.00 | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 0.9 | 0.2 | | 1.3 | 0.0 | | | | 0.7 | | 2.2 |
| Delay (s) | | 12.3 | 0.2 | | 9.4 | 0.0 | | | | 14.2 | | 17.7 |
| Level of Service | | B | A | | A | A | | | | B | | B |
| Approach Delay (s) | | 10.5 | | | 9.0 | | | 0.0 | | | 16.6 | |
| Approach LOS | | B | | | A | | | A | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 11.6 | | HCM Level of Service | | B | | | | | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 60.0 | | Sum of lost time (s) | | 9.8 | | | | | | |
| Intersection Capacity Utilization | | 54.0% | | ICU Level of Service | | A | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues
16: Mountain View Ave & SR 99 SB ramps

Year 2035 Plus Project-AM

Mitigated



| Lane Group | EBT | EBR | WBT | WBR | SBL | SBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 1293 | 233 | 1554 | 64 | 384 | 801 |
| v/c Ratio | 0.55 | 0.15 | 0.66 | 0.04 | 0.31 | 0.62 |
| Control Delay | 12.5 | 0.2 | 9.5 | 0.1 | 14.4 | 17.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.5 | 0.2 | 9.5 | 0.1 | 14.4 | 17.5 |
| Queue Length 50th (ft) | 114 | 0 | 89 | 0 | 49 | 97 |
| Queue Length 95th (ft) | 151 | 0 | 113 | 0 | 78 | 141 |
| Internal Link Dist (ft) | 1057 | | 1034 | | | |
| Turn Bay Length (ft) | | 200 | | 250 | | 200 |
| Base Capacity (vph) | 2359 | 1560 | 2359 | 1544 | 1226 | 1294 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.55 | 0.15 | 0.66 | 0.04 | 0.31 | 0.62 |

Intersection Summary













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

HCM Signalized Intersection Capacity Analysis

18: Mountain View Ave & SR 99 NB ramps

Year 2035 Plus Project-AM

Mitigated

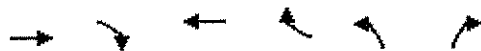
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | ↑ | | ↑↑↑ | ↑ | ↑↓ | | ↑ | | | |
| Volume (vph) | 0 | 1239 | 304 | 0 | 1243 | 546 | 246 | 0 | 101 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.9 | 4.0 | | 4.9 | 4.0 | 4.9 | | 4.9 | | | |
| Lane Util. Factor | | 0.91 | 1.00 | | 0.91 | 1.00 | 0.97 | | 1.00 | | | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | | 0.98 | | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.99 | | 1.00 | | | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 | | | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | | 5036 | 1544 | | 5036 | 1583 | 3394 | | 1547 | | | |
| Flt Permitted | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | | 5036 | 1544 | | 5036 | 1583 | 3394 | | 1547 | | | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 1347 | 330 | 0 | 1351 | 593 | 267 | 0 | 110 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 1347 | 330 | 0 | 1351 | 593 | 267 | 0 | 89 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | | | 10 | 10 | | | 10 | | 10 | | | |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | | Free | | | | Free | custom | | custom | | | |
| Protected Phases | | 4 | | | 8 | | | | | | | |
| Permitted Phases | | | Free | | | Free | 2 | | 2 | | | |
| Actuated Green, G (s) | | 31.1 | 60.0 | | 31.1 | 60.0 | 19.1 | | 19.1 | | | |
| Effective Green, g (s) | | 31.1 | 60.0 | | 31.1 | 60.0 | 19.1 | | 19.1 | | | |
| Actuated g/C Ratio | | 0.52 | 1.00 | | 0.52 | 1.00 | 0.32 | | 0.32 | | | |
| Clearance Time (s) | | 4.9 | | | 4.9 | | 4.9 | | 4.9 | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | 3.0 | | 3.0 | | | |
| Lane Grp Cap (vph) | | 2610 | 1544 | | 2610 | 1583 | 1080 | | 492 | | | |
| v/s Ratio Prot | | 0.27 | | | 0.27 | | | | | | | |
| v/s Ratio Perm | | | 0.21 | | | 0.37 | 0.08 | | 0.06 | | | |
| v/c Ratio | | 0.52 | 0.21 | | 0.52 | 0.37 | 0.25 | | 0.18 | | | |
| Uniform Delay, d1 | | 9.5 | 0.0 | | 9.5 | 0.0 | 15.1 | | 14.8 | | | |
| Progression Factor | | 0.82 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | | 0.6 | 0.3 | | 0.7 | 0.7 | 0.5 | | 0.8 | | | |
| Delay (s) | | 8.5 | 0.3 | | 10.2 | 0.7 | 15.7 | | 15.6 | | | |
| Level of Service | | A | A | | B | A | B | | B | | | |
| Approach Delay (s) | | 6.9 | | | 7.3 | | | 15.7 | | | 0.0 | |
| Approach LOS | | A | | | A | | | B | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 7.9 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 0.46 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 60.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 45.4% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c - Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-AM

18: Mountain View Ave & SR 99 NB ramps

Mitigated



| Lane Group | EBT | EBR | WBT | WBR | NBL | NBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 1347 | 330 | 1351 | 593 | 267 | 110 |
| v/c Ratio | 0.52 | 0.21 | 0.52 | 0.37 | 0.25 | 0.21 |
| Control Delay | 8.6 | 0.3 | 10.4 | 0.7 | 15.9 | 12.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.6 | 0.3 | 10.4 | 0.7 | 15.9 | 12.6 |
| Queue Length 50th (ft) | 80 | 0 | 107 | 0 | 36 | 20 |
| Queue Length 95th (ft) | 129 | 0 | 141 | 0 | 61 | 52 |
| Internal Link Dist (ft) | 1034 | | 1005 | | | |
| Turn Bay Length (ft) | | 250 | | 250 | | 200 |
| Base Capacity (vph) | 2610 | 1544 | 2610 | 1583 | 1080 | 514 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.52 | 0.21 | 0.52 | 0.37 | 0.25 | 0.21 |

























Intersection Summary

HCM Signalized Intersection Capacity Analysis

20: Mountain View Ave & Golden State Blvd

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 422 | 790 | 127 | 63 | 1154 | 202 | 209 | 338 | 9 | 127 | 295 | 475 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 5036 | 2668 | 3433 | 5036 | 2715 | 3433 | 5085 | 2715 | 3433 | 5085 | 2715 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 5036 | 2668 | 3433 | 5036 | 2715 | 3433 | 5085 | 2715 | 3433 | 5085 | 2715 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 459 | 859 | 138 | 68 | 1254 | 220 | 227 | 367 | 10 | 138 | 321 | 516 |
| RTOR Reduction (vph) | 0 | 0 | 81 | 0 | 0 | 151 | 0 | 0 | 8 | 0 | 0 | 372 |
| Lane Group Flow (vph) | 459 | 859 | 57 | 68 | 1254 | 69 | 227 | 367 | 2 | 138 | 321 | 144 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 12.6 | 30.4 | 30.4 | 5.5 | 23.3 | 23.3 | 7.9 | 14.1 | 14.1 | 6.1 | 12.3 | 12.3 |
| Effective Green, g (s) | 12.6 | 30.4 | 30.4 | 5.5 | 23.3 | 23.3 | 7.9 | 14.1 | 14.1 | 6.1 | 12.3 | 12.3 |
| Actuated g/C Ratio | 0.17 | 0.41 | 0.41 | 0.07 | 0.32 | 0.32 | 0.11 | 0.19 | 0.19 | 0.08 | 0.17 | 0.17 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 585 | 2072 | 1098 | 256 | 1588 | 856 | 367 | 970 | 518 | 283 | 846 | 452 |
| v/s Ratio Prot | c0.13 | 0.17 | | 0.02 | c0.25 | | c0.07 | c0.07 | | 0.04 | 0.06 | |
| v/s Ratio Perm | | | 0.02 | | | 0.03 | | | 0.00 | | | 0.05 |
| v/c Ratio | 0.78 | 0.41 | 0.05 | 0.27 | 0.79 | 0.08 | 0.62 | 0.38 | 0.00 | 0.49 | 0.38 | 0.32 |
| Uniform Delay, d1 | 29.4 | 15.4 | 13.1 | 32.3 | 23.1 | 17.8 | 31.6 | 26.1 | 24.2 | 32.4 | 27.4 | 27.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 6.8 | 0.1 | 0.0 | 0.6 | 2.7 | 0.0 | 3.1 | 0.2 | 0.0 | 1.3 | 0.3 | 0.4 |
| Delay (s) | 36.2 | 15.6 | 13.1 | 32.9 | 25.8 | 17.8 | 34.7 | 26.3 | 24.2 | 33.7 | 27.7 | 27.5 |
| Level of Service | D | B | B | C | C | B | C | C | C | C | C | C |
| Approach Delay (s) | | 21.8 | | | 24.9 | | | 29.4 | | | 28.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 25.3 | | | HCM Level of Service | | | C | | | | | |
| HCM Volume to Capacity ratio | 0.63 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 73.9 | | | Sum of lost time (s) | | | 12.9 | | | | | |
| Intersection Capacity Utilization | 63.0% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-AM

20: Mountain View Ave & Golden State Blvd

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 459 | 859 | 138 | 68 | 1254 | 220 | 227 | 367 | 10 | 138 | 321 | 516 |
| v/c Ratio | 0.77 | 0.40 | 0.11 | 0.21 | 0.80 | 0.22 | 0.61 | 0.37 | 0.02 | 0.39 | 0.40 | 0.64 |
| Control Delay | 39.2 | 16.7 | 3.7 | 33.2 | 28.4 | 3.9 | 39.4 | 27.7 | 14.1 | 34.9 | 28.8 | 9.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 39.2 | 16.7 | 3.7 | 33.2 | 28.4 | 3.9 | 39.4 | 27.7 | 14.1 | 34.9 | 28.8 | 9.2 |
| Queue Length 50th (ft) | 102 | 98 | 0 | 14 | 185 | 0 | 51 | 56 | 0 | 30 | 48 | 15 |
| Queue Length 95th (ft) | #185 | 154 | 18 | 35 | #267 | 26 | #94 | 82 | 6 | 60 | 73 | 59 |
| Internal Link Dist (ft) | | 1005 | | | 2144 | | | 775 | | | 1639 | |
| Turn Bay Length (ft) | 250 | | 200 | 200 | | 200 | 200 | | 200 | 180 | | 200 |
| Base Capacity (vph) | 622 | 2121 | 1201 | 383 | 1628 | 1026 | 383 | 1288 | 694 | 383 | 1275 | 1014 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.74 | 0.40 | 0.11 | 0.18 | 0.77 | 0.21 | 0.59 | 0.28 | 0.01 | 0.36 | 0.25 | 0.51 |

Intersection Summary

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






















Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

21: Mountain View Ave & Bethel Ave.

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  |  |
| Volume (vph) | 44 | 588 | 72 | 85 | 1127 | 16 | 33 | 61 | 91 | 6 | 71 | 85 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.91 | | 1.00 | 0.92 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3443 | | 1770 | 3497 | | 1770 | 3176 | | 1770 | 3209 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3443 | | 1770 | 3497 | | 1770 | 3176 | | 1770 | 3209 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 48 | 639 | 78 | 92 | 1225 | 17 | 36 | 66 | 99 | 7 | 77 | 92 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 1 | 0 | 0 | 82 | 0 | 0 | 78 | 0 |
| Lane Group Flow (vph) | 48 | 707 | 0 | 92 | 1241 | 0 | 36 | 83 | 0 | 7 | 91 | 0 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 3.8 | 27.0 | | 4.5 | 27.7 | | 2.3 | 10.5 | | 1.0 | 9.2 | |
| Effective Green, g (s) | 3.8 | 27.0 | | 4.5 | 27.7 | | 2.3 | 10.5 | | 1.0 | 9.2 | |
| Actuated g/C Ratio | 0.06 | 0.44 | | 0.07 | 0.46 | | 0.04 | 0.17 | | 0.02 | 0.15 | |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 111 | 1529 | | 131 | 1593 | | 67 | 548 | | 29 | 486 | |
| v/s Ratio Prot | 0.03 | 0.21 | | c0.05 | c0.35 | | c0.02 | 0.03 | | 0.00 | c0.03 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.43 | 0.46 | | 0.70 | 0.78 | | 0.54 | 0.15 | | 0.24 | 0.19 | |
| Uniform Delay, d1 | 27.5 | 11.8 | | 27.5 | 14.0 | | 28.7 | 21.4 | | 29.5 | 22.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.7 | 0.2 | | 15.7 | 2.5 | | 8.1 | 0.1 | | 4.3 | 0.2 | |
| Delay (s) | 30.2 | 12.0 | | 43.2 | 16.4 | | 36.8 | 21.5 | | 33.8 | 22.7 | |
| Level of Service | C | B | | D | B | | D | C | | C | C | |
| Approach Delay (s) | | 13.2 | | | 18.3 | | | 24.2 | | | 23.2 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | 17.5 | | | HCM Level of Service | | | B | | | | | |
| HCM Volume to Capacity ratio | 0.58 | | | | | | | | | | | |
| Actuated Cycle Length (s) | 60.8 | | | Sum of lost time (s) | | | 12.9 | | | | | |
| Intersection Capacity Utilization | 60.7% | | | ICU Level of Service | | | B | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-AM

21: Mountain View Ave & Bethel Ave.

Mitigated



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 48 | 717 | 92 | 1242 | 36 | 165 | 7 | 169 |
| v/c Ratio | 0.21 | 0.43 | 0.36 | 0.72 | 0.16 | 0.25 | 0.03 | 0.30 |
| Control Delay | 31.2 | 13.7 | 31.9 | 18.6 | 31.1 | 11.6 | 31.5 | 14.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 31.2 | 13.7 | 31.9 | 18.6 | 31.1 | 11.6 | 31.5 | 14.9 |
| Queue Length 50th (ft) | 15 | 76 | 29 | 155 | 11 | 11 | 2 | 12 |
| Queue Length 95th (ft) | 55 | 198 | 88 | #453 | 44 | 38 | 15 | 42 |
| Internal Link Dist (ft) | | 2167 | | 703 | | 1432 | | 1285 |
| Turn Bay Length (ft) | 200 | | 200 | | 200 | | 200 | |
| Base Capacity (vph) | 279 | 1925 | 314 | 2017 | 279 | 1147 | 279 | 1126 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.17 | 0.37 | 0.29 | 0.62 | 0.13 | 0.14 | 0.03 | 0.15 |

Intersection Summary

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

























Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

22: Mountain View Ave & Academy Ave

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 57 | 590 | 34 | 101 | 995 | 27 | 69 | 78 | 57 | 29 | 147 | 148 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1546 | 1770 | 3539 | 1546 | 1770 | 1863 | 1546 | 1770 | 1863 | 1546 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1546 | 1770 | 3539 | 1546 | 1770 | 1863 | 1546 | 1770 | 1863 | 1546 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 62 | 641 | 37 | 110 | 1082 | 29 | 75 | 85 | 62 | 32 | 160 | 161 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 0 | 17 | 0 | 0 | 49 | 0 | 0 | 130 |
| Lane Group Flow (vph) | 62 | 641 | 13 | 110 | 1082 | 12 | 75 | 85 | 13 | 32 | 160 | 31 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 3.6 | 21.5 | 21.5 | 6.8 | 24.7 | 24.7 | 3.9 | 13.3 | 13.3 | 2.5 | 11.9 | 11.9 |
| Effective Green, g (s) | 3.6 | 21.5 | 21.5 | 6.8 | 24.7 | 24.7 | 3.9 | 13.3 | 13.3 | 2.5 | 11.9 | 11.9 |
| Actuated g/C Ratio | 0.06 | 0.35 | 0.35 | 0.11 | 0.40 | 0.40 | 0.06 | 0.21 | 0.21 | 0.04 | 0.19 | 0.19 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 200 | 1229 | 537 | 194 | 1412 | 617 | 112 | 400 | 332 | 71 | 358 | 297 |
| v/s Ratio Prot | 0.02 | 0.18 | | c0.06 | c0.31 | | c0.04 | 0.05 | | 0.02 | c0.09 | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | | 0.01 | | | 0.02 |
| v/c Ratio | 0.31 | 0.52 | 0.02 | 0.57 | 0.77 | 0.02 | 0.67 | 0.21 | 0.04 | 0.45 | 0.45 | 0.10 |
| Uniform Delay, d1 | 28.0 | 16.1 | 13.3 | 26.2 | 16.1 | 11.3 | 28.4 | 20.0 | 19.2 | 29.0 | 22.1 | 20.6 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.9 | 0.4 | 0.0 | 3.8 | 2.5 | 0.0 | 14.2 | 0.3 | 0.0 | 4.5 | 0.9 | 0.2 |
| Delay (s) | 28.8 | 16.5 | 13.3 | 29.9 | 18.6 | 11.3 | 42.5 | 20.3 | 19.3 | 33.5 | 23.0 | 20.8 |
| Level of Service | C | B | B | C | B | B | D | C | B | C | C | C |
| Approach Delay (s) | | 17.4 | | | 19.5 | | | 27.5 | | | 22.9 | |
| Approach LOS | | B | | | B | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 20.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 61.9 | Sum of lost time (s) | 17.8 |
| Intersection Capacity Utilization | 58.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |













c Critical Lane Group

Queues

Year 2035 Plus Project-AM

22: Mountain View Ave & Academy Ave

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Group Flow (vph) | 62 | 641 | 37 | 110 | 1082 | 29 | 75 | 85 | 62 | 32 | 160 | 161 |
| v/c Ratio | 0.15 | 0.52 | 0.07 | 0.40 | 0.72 | 0.04 | 0.32 | 0.20 | 0.15 | 0.15 | 0.45 | 0.38 |
| Control Delay | 29.7 | 19.7 | 7.3 | 32.5 | 21.6 | 7.2 | 32.9 | 23.3 | 8.5 | 31.2 | 29.1 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 29.7 | 19.7 | 7.3 | 32.5 | 21.6 | 7.2 | 32.9 | 23.3 | 8.5 | 31.2 | 29.1 | 7.9 |
| Queue Length 50th (ft) | 12 | 115 | 0 | 43 | 213 | 0 | 30 | 24 | 0 | 13 | 63 | 0 |
| Queue Length 95th (ft) | 30 | 183 | 19 | 96 | #372 | 16 | 73 | 69 | 29 | 39 | 118 | 45 |
| Internal Link Dist (ft) | | 3716 | | | 2312 | | | 899 | | | 1126 | |
| Turn Bay Length (ft) | 200 | | 200 | 200 | | 200 | 200 | | 200 | 200 | | 200 |
| Base Capacity (vph) | 529 | 1574 | 707 | 341 | 1732 | 770 | 272 | 615 | 551 | 272 | 577 | 589 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.12 | 0.41 | 0.05 | 0.32 | 0.62 | 0.04 | 0.28 | 0.14 | 0.11 | 0.12 | 0.28 | 0.27 |

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Unsignalized Intersection Capacity Analysis

25: Amber Ave & Golden State Blvd

Year 2035 Plus Project-AM
Mitigated



























| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↗ | | ↑↑ | ↑↑↘ | |
| Volume (veh/h) | 0 | 97 | 0 | 556 | 417 | 68 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 110 | 0 | 632 | 474 | 77 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.94 | 0.94 | 0.94 | | | |
| vC, conflicting volume | 848 | 296 | 561 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 719 | 133 | 415 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 87 | 100 | | | |
| cM capacity (veh/h) | 337 | 827 | 1067 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 110 | 316 | 316 | 316 | 235 | |
| Volume Left | 0 | 0 | 0 | 0 | 0 | |
| Volume Right | 110 | 0 | 0 | 0 | 77 | |
| cSH | 827 | 1700 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.13 | 0.19 | 0.19 | 0.19 | 0.14 | |
| Queue Length 95th (ft) | 11 | 0 | 0 | 0 | 0 | |
| Control Delay (s) | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | B | | | | | |
| Approach Delay (s) | 10.0 | 0.0 | | 0.0 | | |
| Approach LOS | B | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 0.9 | | | | |
| Intersection Capacity Utilization | | 29.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Signalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 107 | 205 | 48 | 28 | 321 | 127 | 183 | 217 | 42 | 111 | 189 | 116 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.95 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1538 | 1770 | 3539 | 1538 | 1770 | 3539 | 1538 | 3433 | 3539 | 1508 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1538 | 1770 | 3539 | 1538 | 1770 | 3539 | 1538 | 3433 | 3539 | 1508 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 122 | 233 | 55 | 32 | 365 | 144 | 208 | 247 | 48 | 126 | 215 | 132 |
| RTOR Reduction (vph) | 0 | 0 | 30 | 0 | 0 | 78 | 0 | 0 | 42 | 0 | 0 | 116 |
| Lane Group Flow (vph) | 122 | 233 | 25 | 32 | 365 | 66 | 208 | 247 | 6 | 126 | 215 | 16 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 8.6 | 41.0 | 41.0 | 9.0 | 41.4 | 41.4 | 11.0 | 11.8 | 11.8 | 10.4 | 11.2 | 11.2 |
| Effective Green, g (s) | 8.6 | 41.0 | 41.0 | 9.0 | 41.4 | 41.4 | 11.0 | 11.8 | 11.8 | 10.4 | 11.2 | 11.2 |
| Actuated g/C Ratio | 0.10 | 0.46 | 0.46 | 0.10 | 0.46 | 0.46 | 0.12 | 0.13 | 0.13 | 0.12 | 0.12 | 0.12 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 328 | 1612 | 701 | 177 | 1628 | 707 | 216 | 464 | 202 | 397 | 440 | 188 |
| v/s Ratio Prot | c0.04 | 0.07 | | 0.02 | c0.10 | | c0.12 | 0.07 | | 0.04 | c0.06 | |
| v/s Ratio Perm | | | 0.02 | | | 0.04 | | | 0.00 | | | 0.01 |
| v/c Ratio | 0.37 | 0.14 | 0.04 | 0.18 | 0.22 | 0.09 | 0.96 | 0.53 | 0.03 | 0.32 | 0.49 | 0.09 |
| Uniform Delay, d1 | 38.2 | 14.3 | 13.6 | 37.1 | 14.6 | 13.7 | 39.3 | 36.5 | 34.1 | 36.5 | 36.7 | 34.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.60 | 0.57 | 0.36 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.2 | 0.1 | 0.5 | 0.3 | 0.2 | 50.4 | 1.2 | 0.1 | 0.5 | 0.9 | 0.2 |
| Delay (s) | 38.9 | 14.5 | 13.7 | 22.8 | 8.6 | 5.2 | 89.7 | 37.7 | 34.2 | 37.0 | 37.6 | 35.1 |
| Level of Service | D | B | B | C | A | A | F | D | C | D | D | D |
| Approach Delay (s) | | 21.6 | | | 8.6 | | | 58.9 | | | 36.7 | |
| Approach LOS | | C | | | A | | | E | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 31.4 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.37 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | | Sum of lost time (s) | | | 12.9 | | |
| Intersection Capacity Utilization | | | 49.2% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-AM

32: Bethel Ave & Golden State Blvd

Mitigated

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 122 | 233 | 55 | 32 | 365 | 144 | 208 | 247 | 48 | 126 | 215 | 132 |
| v/c Ratio | 0.37 | 0.14 | 0.07 | 0.14 | 0.22 | 0.18 | 0.96 | 0.53 | 0.20 | 0.32 | 0.49 | 0.43 |
| Control Delay | 41.1 | 16.7 | 6.2 | 21.1 | 9.2 | 1.7 | 94.2 | 40.3 | 12.0 | 38.9 | 39.9 | 11.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.1 | 16.7 | 6.2 | 21.1 | 10.1 | 2.5 | 94.2 | 40.3 | 12.0 | 38.9 | 39.9 | 11.1 |
| Queue Length 50th (ft) | 34 | 44 | 0 | 10 | 28 | 0 | 120 | 70 | 0 | 34 | 61 | 0 |
| Queue Length 95th (ft) | 58 | 75 | 24 | m22 | 54 | 3 | #247 | 100 | 28 | 59 | 88 | 45 |
| Internal Link Dist (ft) | | 365 | | | 80 | | | 574 | | | 5552 | |
| Turn Bay Length (ft) | 100 | | 100 | 100 | | | 200 | | | 200 | | 100 |
| Base Capacity (vph) | 610 | 1674 | 756 | 295 | 1628 | 785 | 216 | 849 | 406 | 496 | 928 | 493 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 954 | 418 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.20 | 0.14 | 0.07 | 0.11 | 0.54 | 0.39 | 0.96 | 0.29 | 0.12 | 0.26 | 0.23 | 0.27 |

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.

HCM Signalized Intersection Capacity Analysis

33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-AM

Mitigated

| | → | ↘ | ↙ | ← | ↖ | ↗ |
|-----------------------------------|-------|-------|-------|----------------------|-------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Volume (vph) | 184 | 174 | 59 | 134 | 343 | 139 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1863 | 1538 | 1770 | 1863 | 1770 | 1508 |
| Flt Permitted | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1863 | 1538 | 1770 | 1863 | 1770 | 1508 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 209 | 198 | 67 | 152 | 390 | 158 |
| RTOR Reduction (vph) | 0 | 106 | 0 | 0 | 0 | 113 |
| Lane Group Flow (vph) | 209 | 92 | 67 | 152 | 390 | 45 |
| Confl. Peds. (#/hr) | | 10 | 10 | | 10 | 10 |
| Turn Type | | Perm | Prot | | Perm | |
| Protected Phases | 4 | | 3 | 8 | 2 | |
| Permitted Phases | | 4 | | | | 2 |
| Actuated Green, G (s) | 41.8 | 41.8 | 7.6 | 54.3 | 25.9 | 25.9 |
| Effective Green, g (s) | 41.8 | 41.8 | 7.6 | 54.3 | 25.9 | 25.9 |
| Actuated g/C Ratio | 0.46 | 0.46 | 0.08 | 0.60 | 0.29 | 0.29 |
| Clearance Time (s) | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 865 | 714 | 149 | 1124 | 509 | 434 |
| v/s Ratio Prot | c0.11 | | c0.04 | 0.08 | c0.22 | |
| v/s Ratio Perm | | 0.06 | | | | 0.03 |
| v/c Ratio | 0.24 | 0.13 | 0.45 | 0.14 | 0.77 | 0.10 |
| Uniform Delay, d1 | 14.5 | 13.7 | 39.2 | 7.7 | 29.3 | 23.5 |
| Progression Factor | 0.41 | 0.07 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.4 | 2.2 | 0.3 | 6.8 | 0.1 |
| Delay (s) | 6.7 | 1.3 | 41.4 | 8.0 | 36.1 | 23.6 |
| Level of Service | A | A | D | A | D | C |
| Approach Delay (s) | 4.1 | | | 18.2 | 32.5 | |
| Approach LOS | A | | | B | C | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 20.0 | | HCM Level of Service | | B |
| HCM Volume to Capacity ratio | | 0.44 | | | | |
| Actuated Cycle Length (s) | | 90.0 | | Sum of lost time (s) | | 14.7 |
| Intersection Capacity Utilization | | 47.9% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |
| c Critical Lane Group | | | | | | |

Queues
33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-AM
Mitigated



| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 209 | 198 | 67 | 152 | 390 | 158 |
| v/c Ratio | 0.24 | 0.24 | 0.39 | 0.14 | 0.76 | 0.29 |
| Control Delay | 8.0 | 0.9 | 43.9 | 9.6 | 38.8 | 4.8 |
| Queue Delay | 0.8 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.8 | 1.5 | 43.9 | 9.6 | 38.8 | 4.8 |
| Queue Length 50th (ft) | 23 | 0 | 36 | 34 | 202 | 0 |
| Queue Length 95th (ft) | 43 | 1 | 72 | 75 | 256 | 35 |
| Internal Link Dist (ft) | 80 | | | 95 | 528 | |
| Turn Bay Length (ft) | | | | | | |
| Base Capacity (vph) | 884 | 834 | 222 | 1123 | 769 | 745 |
| Starvation Cap Reductn | 419 | 356 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.45 | 0.41 | 0.30 | 0.14 | 0.51 | 0.21 |
| Intersection Summary | | | | | | |

HCM Unsignalized Intersection Capacity Analysis 31: Kamm Ave (SR 99 NB On) & Bethel Ave

Year 2035 Plus Project-AM
Mitigated



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | ← | → | ← | ↑ | ↑ | → |
| Volume (veh/h) | 2 | 2 | 212 | 509 | 501 | 372 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 2 | 2 | 230 | 553 | 545 | 404 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 664 | 445 | |
| pX, platoon unblocked | 0.91 | 0.91 | 0.91 | | | |
| vC, conflicting volume | 1579 | 565 | 555 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1587 | 471 | 460 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 97 | 100 | 77 | | | |
| cM capacity (veh/h) | 82 | 530 | 993 | | | |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | NB 2 | SB 1 | SB 2 |
| Volume Total | 2 | 2 | 230 | 553 | 545 | 404 |
| Volume Left | 2 | 0 | 230 | 0 | 0 | 0 |
| Volume Right | 0 | 2 | 0 | 0 | 0 | 404 |
| cSH | 82 | 530 | 993 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.03 | 0.00 | 0.23 | 0.33 | 0.32 | 0.24 |
| Queue Length 95th (ft) | 2 | 0 | 22 | 0 | 0 | 0 |
| Control Delay (s) | 50.3 | 11.8 | 9.7 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | B | A | | | |
| Approach Delay (s) | 31.1 | | 2.9 | | 0.0 | |
| Approach LOS | D | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.4 | | | |
| Intersection Capacity Utilization | | | 54.3% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

Queues

Year 2035 Plus Project-AM

32: Bethel Ave & Golden State Blvd

Mitigated



























| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 108 | 284 | 165 | 27 | 435 | 130 | 218 | 328 | 65 | 120 | 275 | 296 |
| v/c Ratio | 0.30 | 0.20 | 0.23 | 0.16 | 0.36 | 0.21 | 0.76 | 0.45 | 0.18 | 0.24 | 0.48 | 0.60 |
| Control Delay | 31.0 | 16.7 | 5.1 | 30.6 | 20.5 | 5.6 | 46.3 | 27.0 | 8.0 | 26.8 | 28.8 | 8.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 31.0 | 16.7 | 5.1 | 30.6 | 20.5 | 5.6 | 46.3 | 27.0 | 8.0 | 26.8 | 28.8 | 8.9 |
| Queue Length 50th (ft) | 22 | 34 | 0 | 11 | 76 | 0 | 90 | 68 | 0 | 23 | 57 | 0 |
| Queue Length 95th (ft) | 44 | 86 | 43 | 32 | 129 | 39 | #185 | 99 | 28 | 44 | 84 | 57 |
| Internal Link Dist (ft) | | 365 | | | 939 | | | 574 | | | 5552 | |
| Turn Bay Length (ft) | 100 | | 100 | 100 | | 100 | 200 | | | 200 | | 100 |
| Base Capacity (vph) | 395 | 1447 | 729 | 202 | 1217 | 616 | 303 | 1020 | 492 | 527 | 809 | 575 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.20 | 0.23 | 0.13 | 0.36 | 0.21 | 0.72 | 0.32 | 0.13 | 0.23 | 0.34 | 0.51 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-AM
Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 99 | 261 | 152 | 25 | 400 | 120 | 201 | 302 | 60 | 110 | 253 | 272 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1544 | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 | 3433 | 3539 | 1518 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1544 | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 | 3433 | 3539 | 1518 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 108 | 284 | 165 | 27 | 435 | 130 | 218 | 328 | 65 | 120 | 275 | 296 |
| RTOR Reduction (vph) | 0 | 0 | 105 | 0 | 0 | 88 | 0 | 0 | 52 | 0 | 0 | 245 |
| Lane Group Flow (vph) | 108 | 284 | 60 | 27 | 435 | 42 | 218 | 328 | 13 | 120 | 275 | 51 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 6.1 | 25.5 | 25.5 | 3.2 | 22.6 | 22.6 | 11.4 | 14.4 | 14.4 | 9.1 | 12.1 | 12.1 |
| Effective Green, g (s) | 6.1 | 25.5 | 25.5 | 3.2 | 22.6 | 22.6 | 11.4 | 14.4 | 14.4 | 9.1 | 12.1 | 12.1 |
| Actuated g/C Ratio | 0.09 | 0.36 | 0.36 | 0.05 | 0.32 | 0.32 | 0.16 | 0.21 | 0.21 | 0.13 | 0.17 | 0.17 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 299 | 1289 | 562 | 81 | 1143 | 498 | 288 | 728 | 318 | 446 | 612 | 262 |
| v/s Ratio Prot | c0.03 | 0.08 | | 0.02 | c0.12 | | c0.12 | 0.09 | | 0.03 | c0.08 | |
| v/s Ratio Perm | | | 0.04 | | | 0.03 | | | 0.01 | | | 0.03 |
| v/c Ratio | 0.36 | 0.22 | 0.11 | 0.33 | 0.38 | 0.08 | 0.76 | 0.45 | 0.04 | 0.27 | 0.45 | 0.20 |
| Uniform Delay, d1 | 30.1 | 15.4 | 14.7 | 32.4 | 18.3 | 16.5 | 28.0 | 24.3 | 22.3 | 27.5 | 26.0 | 24.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.7 | 0.4 | 0.4 | 2.4 | 1.0 | 0.3 | 10.8 | 0.4 | 0.1 | 0.3 | 0.5 | 0.4 |
| Delay (s) | 30.9 | 15.8 | 15.1 | 34.8 | 19.3 | 16.8 | 38.8 | 24.8 | 22.3 | 27.8 | 26.5 | 25.1 |
| Level of Service | C | B | B | C | B | B | D | C | C | C | C | C |
| Approach Delay (s) | | 18.5 | | | 19.4 | | | 29.5 | | | 26.1 | |
| Approach LOS | | B | | | B | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 23.6 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 70.0 | | | | Sum of lost time (s) | | | 17.8 | | |
| Intersection Capacity Utilization | | | 53.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Queues

Year 2035 Plus Project-AM

33: Bethel Ave & Kamm Ave

Mitigated

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 150 | 289 | 143 | 45 | 334 | 123 | 305 | 295 | 117 | 120 | 345 | 80 |
| v/c Ratio | 0.59 | 0.21 | 0.21 | 0.27 | 0.32 | 0.22 | 0.55 | 0.36 | 0.26 | 0.54 | 0.58 | 0.24 |
| Control Delay | 42.4 | 19.0 | 5.5 | 35.2 | 23.7 | 6.5 | 32.5 | 25.6 | 6.3 | 39.5 | 32.3 | 8.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 42.4 | 19.0 | 5.5 | 35.2 | 23.7 | 6.5 | 32.5 | 25.6 | 6.3 | 39.5 | 32.3 | 8.5 |
| Queue Length 50th (ft) | 64 | 50 | 0 | 20 | 65 | 0 | 68 | 64 | 0 | 53 | 78 | 0 |
| Queue Length 95th (ft) | #162 | 95 | 43 | 49 | 108 | 39 | 99 | 87 | 35 | 102 | 111 | 32 |
| Internal Link Dist (ft) | 939 | | | 1312 | | | 473 | | | 1475 | | |
| Turn Bay Length (ft) | 150 | 100 | | 150 | 100 | | 150 | 100 | | 150 | 100 | |
| Base Capacity (vph) | 253 | 1384 | 690 | 191 | 1028 | 547 | 774 | 1033 | 533 | 260 | 762 | 404 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.59 | 0.21 | 0.21 | 0.24 | 0.32 | 0.22 | 0.39 | 0.29 | 0.22 | 0.46 | 0.45 | 0.20 |

Intersection Summary

























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

HCM Signalized Intersection Capacity Analysis

33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 138 | 266 | 132 | 41 | 307 | 113 | 281 | 271 | 108 | 110 | 317 | 74 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3539 | 1543 | 1770 | 3539 | 1583 | 3433 | 3539 | 1543 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3539 | 1543 | 1770 | 3539 | 1583 | 3433 | 3539 | 1543 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 150 | 289 | 143 | 45 | 334 | 123 | 305 | 295 | 117 | 120 | 345 | 80 |
| RTOR Reduction (vph) | 0 | 0 | 92 | 0 | 0 | 89 | 0 | 0 | 90 | 0 | 0 | 66 |
| Lane Group Flow (vph) | 150 | 289 | 51 | 45 | 334 | 34 | 305 | 295 | 27 | 120 | 345 | 14 |
| Confl. Peds. (#/hr) | | | 10 | 10 | | | 10 | | 10 | | | |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 10.7 | 26.9 | 26.9 | 4.8 | 21.0 | 21.0 | 12.1 | 17.3 | 17.3 | 8.2 | 13.4 | 13.4 |
| Effective Green, g (s) | 10.7 | 26.9 | 26.9 | 4.8 | 21.0 | 21.0 | 12.1 | 17.3 | 17.3 | 8.2 | 13.4 | 13.4 |
| Actuated g/C Ratio | 0.14 | 0.36 | 0.36 | 0.06 | 0.28 | 0.28 | 0.16 | 0.23 | 0.23 | 0.11 | 0.18 | 0.18 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 253 | 1269 | 553 | 113 | 991 | 443 | 554 | 816 | 356 | 194 | 632 | 283 |
| v/s Ratio Prot | c0.08 | 0.08 | | 0.03 | c0.09 | | c0.09 | c0.08 | | 0.07 | c0.10 | |
| v/s Ratio Perm | | | 0.03 | | | 0.02 | | | 0.02 | | | 0.01 |
| v/c Ratio | 0.59 | 0.23 | 0.09 | 0.40 | 0.34 | 0.08 | 0.55 | 0.36 | 0.08 | 0.62 | 0.55 | 0.05 |
| Uniform Delay, d1 | 30.1 | 16.8 | 16.0 | 33.7 | 21.5 | 19.9 | 28.9 | 24.2 | 22.6 | 31.9 | 28.0 | 25.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.7 | 0.4 | 0.3 | 2.3 | 0.9 | 0.3 | 1.2 | 0.3 | 0.1 | 5.8 | 1.0 | 0.1 |
| Delay (s) | 33.8 | 17.2 | 16.3 | 36.0 | 22.4 | 20.2 | 30.1 | 24.5 | 22.7 | 37.7 | 29.0 | 25.6 |
| Level of Service | C | B | B | D | C | C | C | C | C | D | C | C |
| Approach Delay (s) | | 21.3 | | | 23.1 | | | 26.6 | | | 30.4 | |
| Approach LOS | | C | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 25.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.51 | | |
| Actuated Cycle Length (s) | 75.0 | Sum of lost time (s) | 22.7 |
| Intersection Capacity Utilization | 48.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

Queues

Year 2035 Plus Project-AM

34: Kamm Ave & Academy Ave

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 48 | 195 | 70 | 109 | 367 | 100 | 163 | 223 | 96 | 35 | 275 | 78 |
| v/c Ratio | 0.19 | 0.26 | 0.18 | 0.39 | 0.34 | 0.19 | 0.47 | 0.19 | 0.17 | 0.14 | 0.37 | 0.20 |
| Control Delay | 26.9 | 21.2 | 7.6 | 29.8 | 18.1 | 6.5 | 28.3 | 15.7 | 5.9 | 26.7 | 22.1 | 7.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 26.9 | 21.2 | 7.6 | 29.8 | 18.1 | 6.5 | 28.3 | 15.7 | 5.9 | 26.7 | 22.1 | 7.7 |
| Queue Length 50th (ft) | 14 | 30 | 0 | 33 | 42 | 0 | 47 | 21 | 0 | 10 | 42 | 0 |
| Queue Length 95th (ft) | 48 | 61 | 29 | #93 | 107 | 34 | #122 | 64 | 31 | 38 | 82 | 30 |
| Internal Link Dist (ft) | 2997 | | | 2339 | | | 887 | | | 4138 | | |
| Turn Bay Length (ft) | 200 | | 150 | 200 | | 150 | 200 | | 250 | 200 | | 150 |
| Base Capacity (vph) | 317 | 1266 | 597 | 317 | 1362 | 646 | 435 | 1661 | 776 | 317 | 1361 | 642 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.15 | 0.15 | 0.12 | 0.34 | 0.27 | 0.15 | 0.37 | 0.13 | 0.12 | 0.11 | 0.20 | 0.12 |

Intersection Summary

























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

HCM Signalized Intersection Capacity Analysis

34: Kamm Ave & Academy Ave

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 44 | 179 | 64 | 100 | 338 | 92 | 150 | 205 | 88 | 32 | 253 | 72 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3539 | 1548 | 1770 | 3539 | 1525 | 1770 | 3539 | 1548 | 1770 | 3539 | 1548 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3539 | 1548 | 1770 | 3539 | 1525 | 1770 | 3539 | 1548 | 1770 | 3539 | 1548 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 48 | 195 | 70 | 109 | 367 | 100 | 163 | 223 | 96 | 35 | 275 | 78 |
| RTOR Reduction (vph) | 0 | 0 | 54 | 0 | 0 | 72 | 0 | 0 | 66 | 0 | 0 | 61 |
| Lane Group Flow (vph) | 48 | 195 | 16 | 109 | 367 | 28 | 163 | 223 | 30 | 35 | 275 | 17 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 2.5 | 12.5 | 12.5 | 5.6 | 15.6 | 15.6 | 7.3 | 17.2 | 17.2 | 2.4 | 12.3 | 12.3 |
| Effective Green, g (s) | 2.5 | 12.5 | 12.5 | 5.6 | 15.6 | 15.6 | 7.3 | 17.2 | 17.2 | 2.4 | 12.3 | 12.3 |
| Actuated g/C Ratio | 0.05 | 0.23 | 0.23 | 0.10 | 0.28 | 0.28 | 0.13 | 0.31 | 0.31 | 0.04 | 0.22 | 0.22 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 80 | 797 | 349 | 179 | 995 | 429 | 233 | 1097 | 480 | 77 | 784 | 343 |
| v/s Ratio Prot | 0.03 | 0.06 | | c0.06 | c0.10 | | c0.09 | 0.06 | | 0.02 | c0.08 | |
| v/s Ratio Perm | | | 0.01 | | | 0.02 | | | 0.02 | | | 0.01 |
| v/c Ratio | 0.60 | 0.24 | 0.05 | 0.61 | 0.37 | 0.07 | 0.70 | 0.20 | 0.06 | 0.45 | 0.35 | 0.05 |
| Uniform Delay, d1 | 26.0 | 17.6 | 16.8 | 23.9 | 16.0 | 14.6 | 23.1 | 14.1 | 13.5 | 25.9 | 18.2 | 17.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 11.5 | 0.2 | 0.1 | 5.8 | 0.2 | 0.1 | 8.8 | 0.1 | 0.1 | 4.2 | 0.3 | 0.1 |
| Delay (s) | 37.6 | 17.8 | 16.9 | 29.7 | 16.2 | 14.7 | 31.9 | 14.2 | 13.5 | 30.1 | 18.5 | 17.1 |
| Level of Service | D | B | B | C | B | B | C | B | B | C | B | B |
| Approach Delay (s) | | 20.6 | | | 18.5 | | | 20.0 | | | 19.3 | |
| Approach LOS | | C | | | B | | | C | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 19.5 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.47 | | |
| Actuated Cycle Length (s) | 55.5 | Sum of lost time (s) | 17.8 |
| Intersection Capacity Utilization | 45.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

Queues
35: SR 99 NB Off & Bethel Ave











Year 2035 Plus Project-AM
Mitigated



| Lane Group | WBL | WBR | NBT | SBT |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph) | 99 | 295 | 488 | 547 |
| v/c Ratio | 0.23 | 0.49 | 0.56 | 0.63 |
| Control Delay | 13.0 | 5.4 | 10.1 | 11.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 13.0 | 5.4 | 10.1 | 11.3 |
| Queue Length 50th (ft) | 13 | 0 | 52 | 61 |
| Queue Length 95th (ft) | 48 | 42 | 160 | 187 |
| Internal Link Dist (ft) | 341 | | 745 | 584 |
| Turn Bay Length (ft) | | | | |
| Base Capacity (vph) | 1412 | 1286 | 1863 | 1863 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.07 | 0.23 | 0.26 | 0.29 |
| Intersection Summary | | | | |

HCM Signalized Intersection Capacity Analysis 35: SR 99 NB Off & Bethel Ave

Year 2035 Plus Project-AM
Mitigated

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  |  |  | | |  |
| Volume (vph) | 91 | 271 | 449 | 0 | 0 | 503 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | 4.9 | | | 4.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | 1.00 | | | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | | | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | | 1.00 |
| Satd. Flow (prot) | 1770 | 1554 | 1863 | | | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | | 1.00 |
| Satd. Flow (perm) | 1770 | 1554 | 1863 | | | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 99 | 295 | 488 | 0 | 0 | 547 |
| RTOR Reduction (vph) | 0 | 223 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 99 | 72 | 488 | 0 | 0 | 547 |
| Confl. Peds. (#/hr) | 10 | 10 | | 10 | 10 | |
| Turn Type | Perm | | | | | |
| Protected Phases | 8 | | 2 | | | 6 |
| Permitted Phases | | 8 | | | | |
| Actuated Green, G (s) | 8.6 | 8.6 | 16.6 | | | 16.6 |
| Effective Green, g (s) | 8.6 | 8.6 | 16.6 | | | 16.6 |
| Actuated g/C Ratio | 0.25 | 0.25 | 0.47 | | | 0.47 |
| Clearance Time (s) | 4.9 | 4.9 | 4.9 | | | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | 3.0 |
| Lane Grp Cap (vph) | 435 | 382 | 884 | | | 884 |
| v/s Ratio Prot | c0.06 | | 0.26 | | | c0.29 |
| v/s Ratio Perm | | 0.05 | | | | |
| v/c Ratio | 0.23 | 0.19 | 0.55 | | | 0.62 |
| Uniform Delay, d1 | 10.5 | 10.4 | 6.6 | | | 6.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Incremental Delay, d2 | 0.3 | 0.2 | 0.7 | | | 1.3 |
| Delay (s) | 10.8 | 10.7 | 7.3 | | | 8.1 |
| Level of Service | B | B | A | | | A |
| Approach Delay (s) | 10.7 | | 7.3 | | | 8.1 |
| Approach LOS | B | | A | | | A |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | 8.6 | | HCM Level of Service | | A |
| HCM Volume to Capacity ratio | | 0.49 | | | | |
| Actuated Cycle Length (s) | | 35.0 | | Sum of lost time (s) | | 9.8 |
| Intersection Capacity Utilization | | 49.6% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

c Critical Lane Group

Queues
36: Parkway Drive & Bethel Ave

Year 2035 Plus Project-AM

Mitigated



| Lane Group | EBL | EBT | EBR | NBL | NBT | SBL | SBT |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 134 | 25 | 58 | 50 | 357 | 185 | 461 |
| v/c Ratio | 0.37 | 0.07 | 0.18 | 0.19 | 0.49 | 0.31 | 0.43 |
| Control Delay | 21.5 | 19.2 | 8.2 | 23.7 | 15.7 | 21.4 | 10.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 21.5 | 19.2 | 8.2 | 23.7 | 15.7 | 21.4 | 10.9 |
| Queue Length 50th (ft) | 29 | 5 | 0 | 11 | 74 | 21 | 48 |
| Queue Length 95th (ft) | 91 | 26 | 26 | 48 | 177 | 63 | 221 |
| Internal Link Dist (ft) | | 474 | | | 214 | | 745 |
| Turn Bay Length (ft) | 200 | | 73 | 200 | | 200 | |
| Base Capacity (vph) | 783 | 787 | 671 | 431 | 1669 | 987 | 1607 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.17 | 0.03 | 0.09 | 0.12 | 0.21 | 0.19 | 0.29 |





















Intersection Summary

HCM Signalized Intersection Capacity Analysis

36: Parkway Drive & Bethel Ave

Year 2035 Plus Project-AM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  | | | |  |  | |  |  |  |
| Volume (vph) | 123 | 23 | 53 | 0 | 0 | 0 | 46 | 327 | 2 | 170 | 306 | 118 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | | | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 0.97 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | | | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1527 | | | | 1770 | 1861 | | 3433 | 1767 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1527 | | | | 1770 | 1861 | | 3433 | 1767 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 134 | 25 | 58 | 0 | 0 | 0 | 50 | 355 | 2 | 185 | 333 | 128 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 134 | 25 | 8 | 0 | 0 | 0 | 50 | 357 | 0 | 185 | 446 | 0 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | | | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 8.3 | 7.4 | 7.4 | | | | 2.7 | 21.6 | | 8.5 | 27.4 | |
| Effective Green, g (s) | 8.3 | 7.4 | 7.4 | | | | 2.7 | 21.6 | | 8.5 | 27.4 | |
| Actuated g/C Ratio | 0.16 | 0.14 | 0.14 | | | | 0.05 | 0.42 | | 0.17 | 0.53 | |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | | | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 286 | 269 | 220 | | | | 93 | 784 | | 569 | 944 | |
| v/s Ratio Prot | c0.08 | 0.01 | | | | | c0.03 | 0.19 | | 0.05 | c0.25 | |
| v/s Ratio Perm | | | 0.01 | | | | | | | | | |
| v/c Ratio | 0.47 | 0.09 | 0.04 | | | | 0.54 | 0.46 | | 0.33 | 0.47 | |
| Uniform Delay, d1 | 19.5 | 19.0 | 18.9 | | | | 23.7 | 10.6 | | 18.9 | 7.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.2 | 0.2 | 0.1 | | | | 5.9 | 0.4 | | 0.3 | 0.4 | |
| Delay (s) | 20.7 | 19.2 | 19.0 | | | | 29.6 | 11.1 | | 19.2 | 7.8 | |
| Level of Service | C | B | B | | | | C | B | | B | A | |
| Approach Delay (s) | | 20.1 | | | 0.0 | | | 13.3 | | | 11.1 | |
| Approach LOS | | C | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 13.3 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.48 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 51.3 | | | | Sum of lost time (s) | | | 12.9 | | |
| Intersection Capacity Utilization | | | 44.6% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

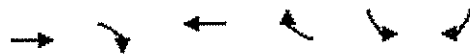
c Critical Lane Group

Queues

Year 2035 Plus Project-PM

16: Mountain View Ave & SR 99 SB ramps

Mitigated



| Lane Group | EBT | EBR | WBT | WBR | SBL | SBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 3350 | 475 | 2157 | 271 | 736 | 950 |
| v/c Ratio | 1.03 | 0.30 | 0.66 | 0.18 | 0.88 | 1.07 |
| Control Delay | 41.1 | 0.5 | 8.8 | 0.2 | 49.4 | 87.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.1 | 0.5 | 8.8 | 0.2 | 49.4 | 87.4 |
| Queue Length 50th (ft) | ~838 | 0 | 205 | 0 | 232 | ~291 |
| Queue Length 95th (ft) | #926 | 0 | 213 | 0 | #334 | #398 |
| Internal Link Dist (ft) | 1057 | | 1034 | | | |
| Turn Bay Length (ft) | | 200 | | 250 | | 200 |
| Base Capacity (vph) | 3268 | 1560 | 3268 | 1544 | 836 | 886 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.03 | 0.30 | 0.66 | 0.18 | 0.88 | 1.07 |

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.

HCM Signalized Intersection Capacity Analysis 16: Mountain View Ave & SR 99 SB ramps

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  | | | |  | |  |
| Volume (vph) | 0 | 3082 | 437 | 0 | 1984 | 249 | 0 | 0 | 0 | 677 | 0 | 874 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.9 | 4.0 | | 4.9 | 4.0 | | | | 4.9 | | 4.9 |
| Lane Util. Factor | | 0.91 | 1.00 | | 0.91 | 1.00 | | | | 0.97 | | 0.76 |
| Frpb, ped/bikes | | 1.00 | 0.99 | | 1.00 | 0.98 | | | | 1.00 | | 0.95 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.98 | | 1.00 |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | | | 1.00 | | 0.85 |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.95 | | 1.00 |
| Satd. Flow (prot) | | 5036 | 1560 | | 5036 | 1544 | | | | 3304 | | 3427 |
| Flt Permitted | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | 0.95 | | 1.00 |
| Satd. Flow (perm) | | 5036 | 1560 | | 5036 | 1544 | | | | 3304 | | 3427 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 3350 | 475 | 0 | 2157 | 271 | 0 | 0 | 0 | 736 | 0 | 950 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 19 |
| Lane Group Flow (vph) | 0 | 3350 | 475 | 0 | 2157 | 271 | 0 | 0 | 0 | 736 | 0 | 931 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 4% | 2% | 2% |
| Turn Type | | Free | | | Free | | | | | custom | | custom |
| Protected Phases | | 4 | | | 8 | | | | | | | |
| Permitted Phases | | Free | | | Free | | | | | 6 | | 6 |
| Actuated Green, G (s) | | 64.9 | | | 64.9 | | | | | 25.3 | | 25.3 |
| Effective Green, g (s) | | 64.9 | | | 64.9 | | | | | 25.3 | | 25.3 |
| Actuated g/C Ratio | | 0.65 | | | 0.65 | | | | | 0.25 | | 0.25 |
| Clearance Time (s) | | 4.9 | | | 4.9 | | | | | 4.9 | | 4.9 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | | | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 3268 | 1560 | | 3268 | 1544 | | | | 836 | | 867 |
| v/s Ratio Prot | | c0.67 | | | 0.43 | | | | | | | |
| v/s Ratio Perm | | 0.30 | | | 0.18 | | | | | 0.22 | | c0.27 |
| v/c Ratio | | 1.03 | 0.30 | | 0.66 | 0.18 | | | | 0.88 | | 1.07 |
| Uniform Delay, d1 | | 17.5 | 0.0 | | 10.8 | 0.0 | | | | 35.9 | | 37.4 |
| Progression Factor | | 1.00 | 1.00 | | 0.72 | 1.00 | | | | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 22.6 | 0.5 | | 0.9 | 0.2 | | | | 12.8 | | 52.5 |
| Delay (s) | | 40.1 | 0.5 | | 8.7 | 0.2 | | | | 48.7 | | 89.9 |
| Level of Service | | D | A | | A | A | | | | D | | F |
| Approach Delay (s) | | 35.2 | | | 7.7 | | | 0.0 | | | | 71.9 |
| Approach LOS | | D | | | A | | | A | | | | E |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 34.6 | | | HCM Level of Service | | | C | | | | |
| HCM Volume to Capacity ratio | | 1.04 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 100.0 | | | Sum of lost time (s) | | | 9.8 | | | | |
| Intersection Capacity Utilization | | 87.0% | | | ICU Level of Service | | | E | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-PM

18: Mountain View Ave & SR 99 NB ramps

Mitigated



| Lane Group | EBT | EBR | WBT | WBR | NBL | NBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 3068 | 1017 | 2049 | 891 | 378 | 217 |
| v/c Ratio | 0.87 | 0.66 | 0.58 | 0.56 | 0.56 | 0.70 |
| Control Delay | 5.6 | 0.7 | 8.4 | 1.5 | 39.6 | 50.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.6 | 0.7 | 8.4 | 1.5 | 39.6 | 50.2 |
| Queue Length 50th (ft) | 140 | 0 | 210 | 0 | 112 | 128 |
| Queue Length 95th (ft) | m139 | m0 | 246 | 0 | 160 | #227 |
| Internal Link Dist (ft) | 1034 | | 1005 | | | |
| Turn Bay Length (ft) | | 250 | | 250 | | 200 |
| Base Capacity (vph) | 3530 | 1544 | 3530 | 1583 | 677 | 310 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.87 | 0.66 | 0.58 | 0.56 | 0.56 | 0.70 |

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.

HCM Signalized Intersection Capacity Analysis 18: Mountain View Ave & SR 99 NB ramps

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑↑ | ↑ | | ↑↑↑ | ↑ | ↑↑ | | ↑ | | | |
| Volume (vph) | 0 | 2823 | 936 | 0 | 1885 | 820 | 348 | 0 | 200 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.9 | 4.0 | | 4.9 | 4.0 | 4.9 | | 4.9 | | | |
| Lane Util. Factor | | 0.91 | 1.00 | | 0.91 | 1.00 | 0.97 | | 1.00 | | | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 1.00 | 1.00 | 1.00 | | 0.97 | | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | | 1.00 | | | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | 1.00 | | 0.85 | | | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.95 | | 1.00 | | | |
| Satd. Flow (prot) | | 5036 | 1544 | | 5036 | 1583 | 3369 | | 1535 | | | |
| Flt Permitted | | 1.00 | 1.00 | | 1.00 | 1.00 | 0.95 | | 1.00 | | | |
| Satd. Flow (perm) | | 5036 | 1544 | | 5036 | 1583 | 3369 | | 1535 | | | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 3068 | 1017 | 0 | 2049 | 891 | 378 | 0 | 217 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 3068 | 1017 | 0 | 2049 | 891 | 378 | 0 | 215 | 0 | 0 | 0 |
| Confl. Peds. (#/hr) | | | 10 | 10 | | | 10 | | 10 | | | |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | | Free | | | | Free | custom | | custom | | | |
| Protected Phases | | 4 | | | 8 | | | | | | | |
| Permitted Phases | | Free | | | | Free | 2 | | 2 | | | |
| Actuated Green, G (s) | | 70.1 | 100.0 | | 70.1 | 100.0 | 20.1 | | 20.1 | | | |
| Effective Green, g (s) | | 70.1 | 100.0 | | 70.1 | 100.0 | 20.1 | | 20.1 | | | |
| Actuated g/C Ratio | | 0.70 | 1.00 | | 0.70 | 1.00 | 0.20 | | 0.20 | | | |
| Clearance Time (s) | | 4.9 | | | 4.9 | | 4.9 | | 4.9 | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | 3.0 | | 3.0 | | | |
| Lane Grp Cap (vph) | | 3530 | 1544 | | 3530 | 1583 | 677 | | 309 | | | |
| v/s Ratio Prot | | 0.61 | | | 0.41 | | | | | | | |
| v/s Ratio Perm | | | 0.66 | | | 0.56 | 0.11 | | 0.14 | | | |
| v/c Ratio | | 0.87 | 0.66 | | 0.58 | 0.56 | 0.56 | | 0.70 | | | |
| Uniform Delay, d1 | | 11.4 | 0.0 | | 7.5 | 0.0 | 36.0 | | 37.1 | | | |
| Progression Factor | | 0.41 | 1.00 | | 1.00 | 1.00 | 1.00 | | 1.00 | | | |
| Incremental Delay, d2 | | 0.8 | 0.5 | | 0.7 | 1.5 | 3.3 | | 12.3 | | | |
| Delay (s) | | 5.5 | 0.5 | | 8.2 | 1.5 | 39.3 | | 49.4 | | | |
| Level of Service | | A | A | | A | A | D | | D | | | |
| Approach Delay (s) | | 4.2 | | | 6.2 | | | 43.0 | | | 0.0 | |
| Approach LOS | | A | | | A | | | D | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 8.0 | | | | | | | | | | |
| HCM Volume to Capacity ratio | | 0.81 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 100.0 | | | | | | | | | | |
| Intersection Capacity Utilization | | 76.1% | | | | | | | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-PM

20: Mountain View Ave & Golden State Blvd

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|------|-------|------|-------|------|------|-------|------|------|
| Lane Group Flow (vph) | 1195 | 1691 | 400 | 84 | 1391 | 475 | 424 | 752 | 29 | 577 | 810 | 1125 |
| v/c Ratio | 1.11 | 0.65 | 0.27 | 0.47 | 1.08 | 0.54 | 1.16 | 0.93 | 0.06 | 1.10 | 0.78 | 0.92 |
| Control Delay | 109.7 | 27.8 | 5.9 | 78.2 | 101.7 | 22.4 | 153.9 | 80.8 | 19.6 | 125.2 | 62.2 | 26.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 109.7 | 27.8 | 5.9 | 78.2 | 101.7 | 22.4 | 153.9 | 80.8 | 19.6 | 125.2 | 62.2 | 26.4 |
| Queue Length 50th (ft) | ~687 | 432 | 30 | 41 | ~556 | 96 | ~252 | 269 | 1 | ~328 | 277 | 177 |
| Queue Length 95th (ft) | #825 | 483 | 62 | 72 | #653 | 160 | #363 | #349 | 18 | #450 | 329 | #342 |
| Internal Link Dist (ft) | | 1005 | | | 2144 | | | 775 | | | 1639 | |
| Turn Bay Length (ft) | 250 | | 200 | 200 | | 200 | 200 | | 200 | 180 | | 200 |
| Base Capacity (vph) | 1077 | 2606 | 1486 | 183 | 1287 | 884 | 366 | 811 | 449 | 526 | 1049 | 1226 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.11 | 0.65 | 0.27 | 0.46 | 1.08 | 0.54 | 1.16 | 0.93 | 0.06 | 1.10 | 0.77 | 0.92 |

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.

HCM Signalized Intersection Capacity Analysis

20: Mountain View Ave & Golden State Blvd

Year 2035 Plus Project-PM

Mitigated

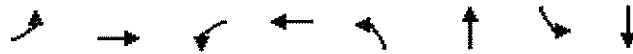
| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 1099 | 1556 | 368 | 77 | 1280 | 437 | 390 | 692 | 27 | 531 | 745 | 1035 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 | 0.97 | 0.91 | 0.88 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 5036 | 2603 | 3433 | 5036 | 2676 | 3433 | 5085 | 2676 | 3433 | 5085 | 2676 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 5036 | 2603 | 3433 | 5036 | 2676 | 3433 | 5085 | 2676 | 3433 | 5085 | 2676 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 1195 | 1691 | 400 | 84 | 1391 | 475 | 424 | 752 | 29 | 577 | 810 | 1125 |
| RTOR Reduction (vph) | 0 | 0 | 139 | 0 | 0 | 201 | 0 | 0 | 23 | 0 | 0 | 675 |
| Lane Group Flow (vph) | 1195 | 1691 | 261 | 84 | 1391 | 274 | 424 | 752 | 6 | 577 | 810 | 450 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 47.0 | 77.6 | 77.6 | 7.7 | 38.3 | 38.3 | 16.0 | 23.8 | 23.8 | 23.0 | 30.8 | 30.8 |
| Effective Green, g (s) | 47.0 | 77.6 | 77.6 | 7.7 | 38.3 | 38.3 | 16.0 | 23.8 | 23.8 | 23.0 | 30.8 | 30.8 |
| Actuated g/C Ratio | 0.31 | 0.52 | 0.52 | 0.05 | 0.26 | 0.26 | 0.11 | 0.16 | 0.16 | 0.15 | 0.21 | 0.21 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 1076 | 2607 | 1348 | 176 | 1287 | 684 | 366 | 807 | 425 | 527 | 1045 | 550 |
| v/s Ratio Prot | c0.35 | 0.34 | | 0.02 | c0.28 | | 0.12 | c0.15 | | c0.17 | 0.16 | |
| v/s Ratio Perm | | | 0.10 | | | 0.10 | | | 0.00 | | | 0.17 |
| v/c Ratio | 1.11 | 0.65 | 0.19 | 0.48 | 1.08 | 0.40 | 1.16 | 0.93 | 0.01 | 1.09 | 0.78 | 0.82 |
| Uniform Delay, d1 | 51.5 | 26.3 | 19.4 | 69.1 | 55.8 | 46.3 | 67.0 | 62.2 | 53.2 | 63.5 | 56.3 | 56.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 63.0 | 0.6 | 0.1 | 2.0 | 50.0 | 0.4 | 97.6 | 17.3 | 0.0 | 67.6 | 3.7 | 9.2 |
| Delay (s) | 114.5 | 26.8 | 19.4 | 71.2 | 105.8 | 46.7 | 164.5 | 79.6 | 53.2 | 131.0 | 59.9 | 66.0 |
| Level of Service | F | C | B | E | F | D | F | E | D | F | E | E |
| Approach Delay (s) | | 57.8 | | | 89.9 | | | 108.8 | | | 79.0 | |
| Approach LOS | | E | | | F | | | F | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 77.6 | | | HCM Level of Service | | | | E | | |
| HCM Volume to Capacity ratio | | | 1.07 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 149.9 | | | Sum of lost time (s) | | | | 17.8 | | |
| Intersection Capacity Utilization | | | 99.4% | | | ICU Level of Service | | | | F | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-PM

21: Mountain View Ave & Bethel Ave.

Mitigated












| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|-------------------------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 196 | 1963 | 76 | 1289 | 80 | 189 | 22 | 221 |
| v/c Ratio | 0.75 | 0.91 | 0.55 | 0.70 | 0.57 | 0.36 | 0.18 | 0.53 |
| Control Delay | 60.2 | 26.6 | 62.0 | 21.5 | 63.4 | 20.9 | 49.6 | 18.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 60.2 | 26.6 | 62.0 | 21.5 | 63.4 | 20.9 | 49.6 | 18.6 |
| Queue Length 50th (ft) | 121 | 580 | 48 | 322 | 50 | 23 | 14 | 19 |
| Queue Length 95th (ft) | #242 | #923 | #113 | 477 | #122 | 61 | 40 | 55 |
| Internal Link Dist (ft) | | 2167 | | 703 | | 1432 | | 1285 |
| Turn Bay Length (ft) | 200 | | 200 | | 200 | | 200 | |
| Base Capacity (vph) | 296 | 2164 | 148 | 1895 | 148 | 668 | 148 | 670 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.66 | 0.91 | 0.51 | 0.68 | 0.54 | 0.28 | 0.15 | 0.33 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 21: Mountain View Ave & Bethel Ave.

Year 2035 Plus Project-PM
Mitigated

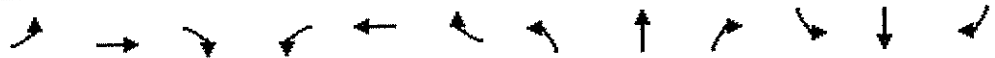
| |  | | | | | | | | | | | |
|-----------------------------------|--|---|------|---|---|------|---|---|------|---|---|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Volume (vph) | 180 | 1707 | 99 | 70 | 1172 | 14 | 74 | 77 | 97 | 20 | 55 | 148 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.92 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3472 | | 1770 | 3498 | | 1770 | 3189 | | 1770 | 3082 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3472 | | 1770 | 3498 | | 1770 | 3189 | | 1770 | 3082 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 196 | 1855 | 108 | 76 | 1274 | 15 | 80 | 84 | 105 | 22 | 60 | 161 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 91 | 0 | 0 | 145 | 0 |
| Lane Group Flow (vph) | 196 | 1960 | 0 | 76 | 1289 | 0 | 80 | 98 | 0 | 22 | 76 | 0 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Heavy Vehicles (%) | 2% | 3% | 2% | 2% | 3% | 2% | 2% | 2% | 2% | 2% | 2% | 2% |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 14.4 | 60.5 | | 6.1 | 52.2 | | 6.1 | 13.4 | | 2.9 | 10.2 | |
| Effective Green, g (s) | 14.4 | 60.5 | | 6.1 | 52.2 | | 6.1 | 13.4 | | 2.9 | 10.2 | |
| Actuated g/C Ratio | 0.14 | 0.60 | | 0.06 | 0.52 | | 0.06 | 0.13 | | 0.03 | 0.10 | |
| Clearance Time (s) | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 253 | 2086 | | 107 | 1813 | | 107 | 424 | | 51 | 312 | |
| v/s Ratio Prot | c0.11 | c0.56 | | 0.04 | 0.37 | | c0.05 | c0.03 | | 0.01 | 0.02 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.77 | 0.94 | | 0.71 | 0.71 | | 0.75 | 0.23 | | 0.43 | 0.24 | |
| Uniform Delay, d1 | 41.6 | 18.4 | | 46.4 | 18.5 | | 46.5 | 39.0 | | 48.1 | 41.7 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 13.7 | 9.0 | | 19.8 | 1.3 | | 24.4 | 0.3 | | 5.8 | 0.4 | |
| Delay (s) | 55.3 | 27.4 | | 66.3 | 19.8 | | 71.0 | 39.3 | | 53.8 | 42.1 | |
| Level of Service | E | C | | E | B | | E | D | | D | D | |
| Approach Delay (s) | | 29.9 | | | 22.4 | | | 48.7 | | | 43.2 | |
| Approach LOS | | C | | | C | | | D | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 29.4 | | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | 0.83 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 100.7 | | | | | Sum of lost time (s) | | | 17.8 | | |
| Intersection Capacity Utilization | | 82.0% | | | | | ICU Level of Service | | | E | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Queues

Year 2035 Plus Project-PM

22: Mountain View Ave & Academy Ave

Mitigated



























| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 225 | 1641 | 122 | 112 | 1087 | 107 | 99 | 335 | 67 | 48 | 122 | 188 |
| v/c Ratio | 0.61 | 0.94 | 0.15 | 0.75 | 0.65 | 0.14 | 0.68 | 0.88 | 0.18 | 0.36 | 0.43 | 0.48 |
| Control Delay | 49.1 | 35.5 | 6.1 | 74.7 | 22.6 | 3.9 | 68.3 | 63.8 | 10.2 | 51.1 | 41.1 | 9.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 49.1 | 35.5 | 6.1 | 74.7 | 22.6 | 3.9 | 68.3 | 63.8 | 10.2 | 51.1 | 41.1 | 9.7 |
| Queue Length 50th (ft) | 71 | 525 | 12 | 71 | 285 | 0 | 63 | 213 | 0 | 29 | 68 | 0 |
| Queue Length 95th (ft) | 110 | #704 | 43 | #164 | 362 | 30 | #142 | #382 | 36 | 66 | 122 | 57 |
| Internal Link Dist (ft) | | 3716 | | | 2312 | | | 899 | | | 1126 | |
| Turn Bay Length (ft) | 200 | | 200 | 200 | | 200 | 200 | | 200 | 200 | | 200 |
| Base Capacity (vph) | 397 | 1753 | 803 | 149 | 1671 | 781 | 149 | 384 | 369 | 149 | 374 | 458 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.57 | 0.94 | 0.15 | 0.75 | 0.65 | 0.14 | 0.66 | 0.87 | 0.18 | 0.32 | 0.33 | 0.41 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 22: Mountain View Ave & Academy Ave

Year 2035 Plus Project-PM
Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 207 | 1510 | 112 | 103 | 1000 | 98 | 91 | 308 | 62 | 44 | 112 | 173 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1536 | 1770 | 3539 | 1536 | 1770 | 1863 | 1536 | 1770 | 1863 | 1536 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1536 | 1770 | 3539 | 1536 | 1770 | 1863 | 1536 | 1770 | 1863 | 1536 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 225 | 1641 | 122 | 112 | 1087 | 107 | 99 | 335 | 67 | 48 | 122 | 188 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 156 |
| Lane Group Flow (vph) | 225 | 1641 | 78 | 112 | 1087 | 50 | 99 | 335 | 13 | 48 | 122 | 32 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 10.2 | 47.3 | 47.3 | 8.0 | 45.1 | 45.1 | 7.8 | 19.5 | 19.5 | 4.6 | 16.3 | 16.3 |
| Effective Green, g (s) | 10.2 | 47.3 | 47.3 | 8.0 | 45.1 | 45.1 | 7.8 | 19.5 | 19.5 | 4.6 | 16.3 | 16.3 |
| Actuated g/C Ratio | 0.10 | 0.49 | 0.49 | 0.08 | 0.46 | 0.46 | 0.08 | 0.20 | 0.20 | 0.05 | 0.17 | 0.17 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 360 | 1722 | 747 | 146 | 1642 | 713 | 142 | 374 | 308 | 84 | 312 | 258 |
| v/s Ratio Prot | 0.07 | c0.46 | | c0.06 | 0.31 | | c0.06 | c0.18 | | 0.03 | 0.07 | |
| v/s Ratio Perm | | | 0.05 | | | 0.03 | | | 0.01 | | | 0.02 |
| v/c Ratio | 0.62 | 0.95 | 0.10 | 0.77 | 0.66 | 0.07 | 0.70 | 0.90 | 0.04 | 0.57 | 0.39 | 0.12 |
| Uniform Delay, d1 | 41.7 | 23.9 | 13.5 | 43.7 | 20.2 | 14.4 | 43.5 | 37.9 | 31.3 | 45.3 | 36.0 | 34.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.4 | 12.3 | 0.1 | 21.1 | 1.0 | 0.0 | 13.9 | 22.9 | 0.1 | 9.1 | 0.8 | 0.2 |
| Delay (s) | 45.0 | 36.2 | 13.6 | 64.8 | 21.2 | 14.5 | 57.4 | 60.8 | 31.4 | 54.4 | 36.8 | 34.6 |
| Level of Service | D | D | B | E | C | B | E | E | C | D | D | C |
| Approach Delay (s) | | 35.8 | | | 24.4 | | | 56.2 | | | 38.0 | |
| Approach LOS | | D | | | C | | | E | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 34.9 | | | | | | | | | C |
| HCM Volume to Capacity ratio | | | 0.87 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 97.2 | | | | | | | 12.9 | | |
| Intersection Capacity Utilization | | | 81.8% | | | | | | | | | D |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 25: Amber Ave & Golden State Blvd

Year 2035 Plus Project-PM
Mitigated



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↗ | | ↕↕ | ↕↗ | |
| Volume (veh/h) | 0 | 410 | 0 | 1105 | 939 | 251 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 0 | 466 | 0 | 1256 | 1067 | 285 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 855 | |
| pX, platoon unblocked | 0.83 | 0.83 | 0.83 | | | |
| vC, conflicting volume | 1858 | 696 | 1362 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1618 | 214 | 1019 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 28 | 100 | | | |
| cM capacity (veh/h) | 77 | 643 | 555 | | | |
| Direction, Lane # | EB 1 | NB 1 | NB 2 | SB 1 | SB 2 | |
| Volume Total | 466 | 628 | 628 | 711 | 641 | |
| Volume Left | 0 | 0 | 0 | 0 | 0 | |
| Volume Right | 466 | 0 | 0 | 0 | 285 | |
| cSH | 643 | 1700 | 1700 | 1700 | 1700 | |
| Volume to Capacity | 0.72 | 0.37 | 0.37 | 0.42 | 0.38 | |
| Queue Length 95th (ft) | 154 | 0 | 0 | 0 | 0 | |
| Control Delay (s) | 23.9 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Lane LOS | C | | | | | |
| Approach Delay (s) | 23.9 | 0.0 | | 0.0 | | |
| Approach LOS | C | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | 3.6 | | | | |
| Intersection Capacity Utilization | | 67.3% | | ICU Level of Service | C | |
| Analysis Period (min) | | 15 | | | | |

Queues

Year 2035 Plus Project-PM

32: Bethel Ave & Golden State Blvd

Mitigated



























| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 420 | 439 | 162 | 156 | 430 | 331 | 108 | 501 | 26 | 318 | 574 | 375 |
| v/c Ratio | 0.74 | 0.42 | 0.28 | 0.53 | 0.41 | 0.48 | 0.57 | 0.72 | 0.08 | 0.65 | 0.64 | 0.59 |
| Control Delay | 44.2 | 28.0 | 6.1 | 36.9 | 25.4 | 6.9 | 49.8 | 39.7 | 11.3 | 43.1 | 33.7 | 9.0 |
| Queue Delay | 0.0 | 0.1 | 0.0 | 44.8 | 3.4 | 1.4 | 0.0 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| Total Delay | 44.2 | 28.2 | 6.1 | 81.7 | 28.8 | 8.4 | 49.8 | 39.7 | 11.3 | 43.7 | 33.7 | 9.0 |
| Queue Length 50th (ft) | 116 | 107 | 0 | 66 | 73 | 19 | 58 | 141 | 0 | 87 | 156 | 17 |
| Queue Length 95th (ft) | 161 | 154 | 44 | m121 | 137 | 62 | 108 | 180 | 20 | 129 | 201 | 86 |
| Internal Link Dist (ft) | | 365 | | | 80 | | | 574 | | | 5552 | |
| Turn Bay Length (ft) | 100 | | 100 | 100 | | | 200 | | | 200 | | 100 |
| Base Capacity (vph) | 611 | 1049 | 570 | 295 | 1054 | 686 | 216 | 849 | 389 | 520 | 956 | 653 |
| Starvation Cap Reductn | 0 | 0 | 0 | 143 | 514 | 191 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 42 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.69 | 0.47 | 0.28 | 1.03 | 0.80 | 0.67 | 0.50 | 0.59 | 0.07 | 0.67 | 0.60 | 0.57 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-PM
Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 370 | 386 | 143 | 137 | 378 | 291 | 95 | 441 | 23 | 280 | 505 | 330 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.95 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1538 | 1770 | 3539 | 1538 | 1770 | 3539 | 1538 | 3433 | 3539 | 1508 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1538 | 1770 | 3539 | 1538 | 1770 | 3539 | 1538 | 3433 | 3539 | 1508 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 420 | 439 | 162 | 156 | 430 | 331 | 108 | 501 | 26 | 318 | 574 | 375 |
| RTOR Reduction (vph) | 0 | 0 | 116 | 0 | 0 | 231 | 0 | 0 | 21 | 0 | 0 | 251 |
| Lane Group Flow (vph) | 420 | 439 | 46 | 156 | 430 | 100 | 108 | 501 | 5 | 318 | 574 | 124 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 14.9 | 25.8 | 25.8 | 15.0 | 25.9 | 25.9 | 8.4 | 17.7 | 17.7 | 13.7 | 23.0 | 23.0 |
| Effective Green, g (s) | 14.9 | 25.8 | 25.8 | 15.0 | 25.9 | 25.9 | 8.4 | 17.7 | 17.7 | 13.7 | 23.0 | 23.0 |
| Actuated g/C Ratio | 0.17 | 0.29 | 0.29 | 0.17 | 0.29 | 0.29 | 0.09 | 0.20 | 0.20 | 0.15 | 0.26 | 0.26 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 568 | 1015 | 441 | 295 | 1018 | 443 | 165 | 696 | 302 | 523 | 904 | 385 |
| v/s Ratio Prot | c0.12 | c0.12 | | c0.09 | 0.12 | | 0.06 | c0.14 | | 0.09 | c0.16 | |
| v/s Ratio Perm | | | 0.03 | | | 0.06 | | | 0.00 | | | 0.08 |
| v/c Ratio | 0.74 | 0.43 | 0.11 | 0.53 | 0.42 | 0.22 | 0.65 | 0.72 | 0.02 | 0.61 | 0.63 | 0.32 |
| Uniform Delay, d1 | 35.7 | 26.1 | 23.6 | 34.3 | 26.0 | 24.4 | 39.4 | 33.8 | 29.1 | 35.6 | 29.8 | 27.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.90 | 0.90 | 1.25 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 5.0 | 1.3 | 0.5 | 1.4 | 1.1 | 1.0 | 9.0 | 3.6 | 0.0 | 2.0 | 1.5 | 0.5 |
| Delay (s) | 40.7 | 27.5 | 24.1 | 32.2 | 24.5 | 31.5 | 48.4 | 37.4 | 29.2 | 37.6 | 31.2 | 27.7 |
| Level of Service | D | C | C | C | C | C | D | D | C | D | C | C |
| Approach Delay (s) | | 32.4 | | | 28.3 | | | 38.9 | | | 31.8 | |
| Approach LOS | | C | | | C | | | D | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 32.3 | | | | HCM Level of Service | | | C | | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 90.0 | | | | Sum of lost time (s) | | 12.9 | | | |
| Intersection Capacity Utilization | | | 59.2% | | | | ICU Level of Service | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Queues
33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-PM
Mitigated



| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|-------------------------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 152 | 632 | 122 | 435 | 481 | 130 |
| v/c Ratio | 0.20 | 0.63 | 0.63 | 0.41 | 0.85 | 0.23 |
| Control Delay | 12.3 | 10.7 | 53.3 | 13.4 | 42.4 | 4.6 |
| Queue Delay | 0.9 | 8.6 | 0.0 | 0.2 | 1.0 | 0.0 |
| Total Delay | 13.2 | 19.3 | 53.3 | 13.6 | 43.4 | 4.6 |
| Queue Length 50th (ft) | 11 | 93 | 66 | 132 | 249 | 0 |
| Queue Length 95th (ft) | 51 | 346 | #131 | 218 | 334 | 33 |
| Internal Link Dist (ft) | 80 | | | 95 | 528 | |
| Turn Bay Length (ft) | | | | | | |
| Base Capacity (vph) | 756 | 999 | 207 | 1062 | 671 | 652 |
| Starvation Cap Reductn | 392 | 328 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 147 | 54 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.42 | 0.94 | 0.59 | 0.48 | 0.78 | 0.20 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-PM
Mitigated

| | → | ↘ | ↙ | ← | ↖ | ↗ |
|-----------------------------------|------|------|-------|-------|----------------------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Volume (vph) | 134 | 556 | 107 | 383 | 423 | 114 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (prot) | 1863 | 1538 | 1770 | 1863 | 1770 | 1508 |
| Flt Permitted | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | 1.00 |
| Satd. Flow (perm) | 1863 | 1538 | 1770 | 1863 | 1770 | 1508 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 152 | 632 | 122 | 435 | 481 | 130 |
| RTOR Reduction (vph) | 0 | 376 | 0 | 0 | 0 | 88 |
| Lane Group Flow (vph) | 152 | 256 | 122 | 435 | 481 | 42 |
| Confl. Peds. (#/hr) | | 10 | 10 | | 10 | 10 |
| Turn Type | | Perm | Prot | | | Perm |
| Protected Phases | 4 | | 3 | 8 | 2 | |
| Permitted Phases | | 4 | | | | 2 |
| Actuated Green, G (s) | 36.5 | 36.5 | 9.9 | 51.3 | 28.9 | 28.9 |
| Effective Green, g (s) | 36.5 | 36.5 | 9.9 | 51.3 | 28.9 | 28.9 |
| Actuated g/C Ratio | 0.41 | 0.41 | 0.11 | 0.57 | 0.32 | 0.32 |
| Clearance Time (s) | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 756 | 624 | 195 | 1062 | 568 | 484 |
| v/s Ratio Prot | 0.08 | | c0.07 | c0.23 | c0.27 | |
| v/s Ratio Perm | | 0.17 | | | | 0.03 |
| v/c Ratio | 0.20 | 0.41 | 0.63 | 0.41 | 0.85 | 0.09 |
| Uniform Delay, d1 | 17.3 | 19.1 | 38.3 | 10.9 | 28.5 | 21.3 |
| Progression Factor | 0.60 | 3.70 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.5 | 1.8 | 6.1 | 1.2 | 11.2 | 0.1 |
| Delay (s) | 10.9 | 72.4 | 44.4 | 12.0 | 39.7 | 21.4 |
| Level of Service | B | E | D | B | D | C |
| Approach Delay (s) | 60.5 | | | 19.1 | 35.8 | |
| Approach LOS | E | | | B | D | |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 40.9 | | HCM Level of Service | D |
| HCM Volume to Capacity ratio | | | 0.58 | | | |
| Actuated Cycle Length (s) | | | 90.0 | | Sum of lost time (s) | 9.8 |
| Intersection Capacity Utilization | | | 54.9% | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 31: Kamm Ave (SR 99 NB On) & Bethel Ave

Year 2035 Plus Project-PM
Mitigated



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | ← | → | ← | ↑ | ↑ | → |
| Volume (veh/h) | 4 | 2 | 117 | 940 | 527 | 391 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 4 | 2 | 127 | 1022 | 573 | 425 |
| Pedestrians | 10 | | | 10 | 10 | |
| Lane Width (ft) | 12.0 | | | 12.0 | 12.0 | |
| Walking Speed (ft/s) | 4.0 | | | 4.0 | 4.0 | |
| Percent Blockage | 1 | | | 1 | 1 | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | 664 | 445 | |
| pX, platoon unblocked | 0.80 | 0.88 | 0.88 | | | |
| vC, conflicting volume | 1869 | 593 | 583 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1616 | 466 | 454 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 94 | 100 | 87 | | | |
| cM capacity (veh/h) | 77 | 515 | 962 | | | |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | NB 2 | SB 1 | SB 2 |
| Volume Total | 4 | 2 | 127 | 1022 | 573 | 425 |
| Volume Left | 4 | 0 | 127 | 0 | 0 | 0 |
| Volume Right | 0 | 2 | 0 | 0 | 0 | 425 |
| cSH | 77 | 515 | 962 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.06 | 0.00 | 0.13 | 0.60 | 0.34 | 0.25 |
| Queue Length 95th (ft) | 4 | 0 | 11 | 0 | 0 | 0 |
| Control Delay (s) | 54.3 | 12.0 | 9.3 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | B | A | | | |
| Approach Delay (s) | 40.2 | | 1.0 | | 0.0 | |
| Approach LOS | E | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.7 | | | |
| Intersection Capacity Utilization | | | 62.3% | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | |

Queues

Year 2035 Plus Project-PM

32: Bethel Ave & Golden State Blvd

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 372 | 426 | 230 | 212 | 477 | 243 | 107 | 751 | 76 | 261 | 692 | 412 |
| v/c Ratio | 0.77 | 0.50 | 0.42 | 0.84 | 0.56 | 0.44 | 0.56 | 0.85 | 0.17 | 0.67 | 0.69 | 0.58 |
| Control Delay | 41.0 | 25.8 | 6.3 | 59.3 | 26.7 | 6.3 | 41.2 | 35.5 | 6.8 | 39.4 | 27.4 | 6.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.0 | 25.8 | 6.3 | 59.3 | 26.7 | 6.3 | 41.2 | 35.5 | 6.8 | 39.4 | 27.4 | 6.9 |
| Queue Length 50th (ft) | 80 | 84 | 0 | 90 | 96 | 0 | 44 | 160 | 0 | 56 | 144 | 6 |
| Queue Length 95th (ft) | #139 | 126 | 50 | #201 | 142 | 52 | #93 | #245 | 29 | #99 | 203 | 74 |
| Internal Link Dist (ft) | | 365 | | | 939 | | | 574 | | | 5552 | |
| Turn Bay Length (ft) | 100 | | 100 | 100 | | 100 | 200 | | | 200 | | 100 |
| Base Capacity (vph) | 490 | 844 | 543 | 253 | 848 | 555 | 202 | 915 | 456 | 392 | 1006 | 713 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.76 | 0.50 | 0.42 | 0.84 | 0.56 | 0.44 | 0.53 | 0.82 | 0.17 | 0.67 | 0.69 | 0.58 |

Intersection Summary

























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

HCM Signalized Intersection Capacity Analysis

32: Bethel Ave & Golden State Blvd

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 342 | 392 | 212 | 195 | 439 | 224 | 98 | 691 | 70 | 240 | 637 | 379 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 3539 | 1544 | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 | 3433 | 3539 | 1518 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 3539 | 1544 | 1770 | 3539 | 1544 | 1770 | 3539 | 1544 | 3433 | 3539 | 1518 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 372 | 426 | 230 | 212 | 477 | 243 | 107 | 751 | 76 | 261 | 692 | 412 |
| RTOR Reduction (vph) | 0 | 0 | 178 | 0 | 0 | 187 | 0 | 0 | 57 | 0 | 0 | 281 |
| Lane Group Flow (vph) | 372 | 426 | 52 | 212 | 477 | 56 | 107 | 751 | 19 | 261 | 692 | 131 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 9.9 | 15.9 | 15.9 | 10.0 | 16.0 | 16.0 | 6.4 | 17.6 | 17.6 | 8.7 | 19.9 | 19.9 |
| Effective Green, g (s) | 9.9 | 15.9 | 15.9 | 10.0 | 16.0 | 16.0 | 6.4 | 17.6 | 17.6 | 8.7 | 19.9 | 19.9 |
| Actuated g/C Ratio | 0.14 | 0.23 | 0.23 | 0.14 | 0.23 | 0.23 | 0.09 | 0.25 | 0.25 | 0.12 | 0.28 | 0.28 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 486 | 804 | 351 | 253 | 809 | 353 | 162 | 890 | 388 | 427 | 1006 | 432 |
| v/s Ratio Prot | c0.11 | 0.12 | | c0.12 | c0.13 | | 0.06 | c0.21 | | 0.08 | c0.20 | |
| v/s Ratio Perm | | | 0.03 | | | 0.04 | | | 0.01 | | | 0.09 |
| v/c Ratio | 0.77 | 0.53 | 0.15 | 0.84 | 0.59 | 0.16 | 0.66 | 0.84 | 0.05 | 0.61 | 0.69 | 0.30 |
| Uniform Delay, d1 | 28.9 | 23.8 | 21.6 | 29.2 | 24.1 | 21.6 | 30.7 | 24.9 | 19.9 | 29.0 | 22.3 | 19.6 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 7.1 | 2.5 | 0.9 | 20.8 | 3.1 | 0.9 | 9.7 | 7.4 | 0.1 | 2.6 | 2.0 | 0.4 |
| Delay (s) | 36.0 | 26.3 | 22.5 | 50.0 | 27.2 | 22.6 | 40.4 | 32.3 | 19.9 | 31.6 | 24.3 | 20.0 |
| Level of Service | D | C | C | D | C | C | D | C | B | C | C | C |
| Approach Delay (s) | | 29.0 | | | 31.2 | | | 32.2 | | | 24.4 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 28.7 | | | | | | | | | C |
| HCM Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 70.0 | | | | | | 17.8 | | | |
| Intersection Capacity Utilization | | | 64.9% | | | | | | | | | C |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Queues

Year 2035 Plus Project-PM

33: Bethel Ave & Kamm Ave

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 98 | 517 | 551 | 116 | 563 | 14 | 403 | 229 | 176 | 84 | 287 | 321 |
| v/c Ratio | 0.49 | 0.45 | 0.65 | 0.54 | 0.48 | 0.03 | 0.64 | 0.25 | 0.33 | 0.44 | 0.51 | 0.65 |
| Control Delay | 39.9 | 24.3 | 8.5 | 41.5 | 24.3 | 12.3 | 32.8 | 22.3 | 5.3 | 38.8 | 31.4 | 12.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 39.9 | 24.3 | 8.5 | 41.5 | 24.3 | 12.3 | 32.8 | 22.3 | 5.3 | 38.8 | 31.4 | 12.3 |
| Queue Length 50th (ft) | 43 | 107 | 15 | 51 | 116 | 0 | 89 | 46 | 0 | 37 | 64 | 15 |
| Queue Length 95th (ft) | #91 | 167 | #126 | #119 | 183 | 14 | 127 | 66 | 40 | 78 | 95 | 83 |
| Internal Link Dist (ft) | | 939 | | | 1312 | | | 473 | | | 1475 | |
| Turn Bay Length (ft) | 150 | | 100 | 150 | | 100 | 150 | | 100 | 150 | | 100 |
| Base Capacity (vph) | 209 | 1149 | 844 | 222 | 1176 | 535 | 774 | 1128 | 612 | 212 | 755 | 561 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.47 | 0.45 | 0.65 | 0.52 | 0.48 | 0.03 | 0.52 | 0.20 | 0.29 | 0.40 | 0.38 | 0.57 |

























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

33: Bethel Ave & Kamm Ave

Year 2035 Plus Project-PM
Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 90 | 476 | 507 | 107 | 518 | 13 | 371 | 211 | 162 | 77 | 264 | 295 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3539 | 1543 | 1770 | 3539 | 1583 | 3433 | 3539 | 1543 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3539 | 1543 | 1770 | 3539 | 1583 | 3433 | 3539 | 1543 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 98 | 517 | 551 | 116 | 563 | 14 | 403 | 229 | 176 | 84 | 287 | 321 |
| RTOR Reduction (vph) | 0 | 0 | 353 | 0 | 0 | 10 | 0 | 0 | 130 | 0 | 0 | 236 |
| Lane Group Flow (vph) | 98 | 517 | 198 | 116 | 563 | 4 | 403 | 229 | 46 | 84 | 287 | 85 |
| Confl. Peds. (#/hr) | | | 10 | 10 | | | 10 | | 10 | | | |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 7.3 | 22.8 | 22.8 | 7.8 | 23.3 | 23.3 | 13.8 | 19.7 | 19.7 | 6.9 | 12.8 | 12.8 |
| Effective Green, g (s) | 7.3 | 22.8 | 22.8 | 7.8 | 23.3 | 23.3 | 13.8 | 19.7 | 19.7 | 6.9 | 12.8 | 12.8 |
| Actuated g/C Ratio | 0.10 | 0.30 | 0.30 | 0.10 | 0.31 | 0.31 | 0.18 | 0.26 | 0.26 | 0.09 | 0.17 | 0.17 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 172 | 1076 | 469 | 184 | 1099 | 492 | 632 | 930 | 405 | 163 | 604 | 270 |
| v/s Ratio Prot | 0.06 | 0.15 | | c0.07 | c0.16 | | c0.12 | 0.06 | | 0.05 | c0.08 | |
| v/s Ratio Perm | | | 0.13 | | | 0.00 | | | 0.03 | | | 0.05 |
| v/c Ratio | 0.57 | 0.48 | 0.42 | 0.63 | 0.51 | 0.01 | 0.64 | 0.25 | 0.11 | 0.52 | 0.48 | 0.32 |
| Uniform Delay, d1 | 32.3 | 21.3 | 20.8 | 32.2 | 21.2 | 17.9 | 28.3 | 21.8 | 21.0 | 32.5 | 28.1 | 27.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.3 | 1.5 | 2.8 | 6.9 | 1.7 | 0.0 | 2.1 | 0.1 | 0.1 | 2.7 | 0.6 | 0.7 |
| Delay (s) | 36.6 | 22.8 | 23.6 | 39.1 | 22.9 | 17.9 | 30.4 | 21.9 | 21.1 | 35.2 | 28.7 | 27.9 |
| Level of Service | D | C | C | D | C | B | C | C | C | D | C | C |
| Approach Delay (s) | | 24.4 | | | 25.5 | | | 26.0 | | | 29.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.0 | | | HCM Level of Service | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.51 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 75.0 | | | Sum of lost time (s) | | | 12.9 | | | |
| Intersection Capacity Utilization | | | 57.2% | | | ICU Level of Service | | | B | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Queues

Year 2035 Plus Project-PM

34: Kamm Ave & Academy Ave

Mitigated



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 97 | 568 | 297 | 196 | 285 | 103 | 229 | 413 | 122 | 145 | 430 | 58 |
| v/c Ratio | 0.45 | 0.71 | 0.51 | 0.79 | 0.29 | 0.21 | 0.83 | 0.49 | 0.27 | 0.68 | 0.60 | 0.16 |
| Control Delay | 34.4 | 29.2 | 6.8 | 54.2 | 21.6 | 6.7 | 56.3 | 23.6 | 6.2 | 47.0 | 27.2 | 7.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 34.4 | 29.2 | 6.8 | 54.2 | 21.6 | 6.7 | 56.3 | 23.6 | 6.2 | 47.0 | 27.2 | 7.8 |
| Queue Length 50th (ft) | 36 | 108 | 0 | 78 | 49 | 0 | 91 | 76 | 0 | 57 | 83 | 0 |
| Queue Length 95th (ft) | 82 | 171 | 57 | #194 | 87 | 35 | #221 | 115 | 35 | #144 | 125 | 26 |
| Internal Link Dist (ft) | 2997 | | | | 2339 | | | | 887 | | 4138 | |
| Turn Bay Length (ft) | 200 | | 150 | | 200 | | 150 | | 200 | | 150 | |
| Base Capacity (vph) | 248 | 879 | 607 | 248 | 978 | 494 | 275 | 1055 | 546 | 220 | 946 | 455 |
| Starvation Cap Reductn | 0 | 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 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.39 | 0.65 | 0.49 | 0.79 | 0.29 | 0.21 | 0.83 | 0.39 | 0.22 | 0.66 | 0.45 | 0.13 |

Intersection Summary

























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

HCM Signalized Intersection Capacity Analysis

34: Kamm Ave & Academy Ave

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 89 | 523 | 273 | 180 | 262 | 95 | 211 | 380 | 112 | 133 | 396 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.96 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3539 | 1545 | 1770 | 3539 | 1520 | 1770 | 3539 | 1545 | 1770 | 3539 | 1545 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3539 | 1545 | 1770 | 3539 | 1520 | 1770 | 3539 | 1545 | 1770 | 3539 | 1545 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 97 | 568 | 297 | 196 | 285 | 103 | 229 | 413 | 122 | 145 | 430 | 58 |
| RTOR Reduction (vph) | 0 | 0 | 227 | 0 | 0 | 75 | 0 | 0 | 93 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 97 | 568 | 70 | 196 | 285 | 28 | 229 | 413 | 29 | 145 | 430 | 12 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | 8 | | | 2 | | | 6 |
| Actuated Green, G (s) | 6.7 | 15.5 | 15.5 | 9.1 | 17.9 | 17.9 | 10.1 | 15.5 | 15.5 | 7.8 | 13.2 | 13.2 |
| Effective Green, g (s) | 6.7 | 15.5 | 15.5 | 9.1 | 17.9 | 17.9 | 10.1 | 15.5 | 15.5 | 7.8 | 13.2 | 13.2 |
| Actuated g/C Ratio | 0.10 | 0.24 | 0.24 | 0.14 | 0.27 | 0.27 | 0.15 | 0.24 | 0.24 | 0.12 | 0.20 | 0.20 |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 | 4.0 | 4.9 | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 181 | 835 | 364 | 245 | 964 | 414 | 272 | 835 | 364 | 210 | 711 | 310 |
| v/s Ratio Prot | 0.05 | c0.16 | | c0.11 | 0.08 | | c0.13 | 0.12 | | 0.08 | c0.12 | |
| v/s Ratio Perm | | | 0.05 | | | 0.02 | | | 0.02 | | | 0.01 |
| v/c Ratio | 0.54 | 0.68 | 0.19 | 0.80 | 0.30 | 0.07 | 0.84 | 0.49 | 0.08 | 0.69 | 0.60 | 0.04 |
| Uniform Delay, d1 | 28.0 | 22.8 | 20.1 | 27.4 | 18.9 | 17.7 | 27.0 | 21.7 | 19.5 | 27.8 | 23.9 | 21.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.0 | 2.3 | 0.3 | 16.8 | 0.2 | 0.1 | 20.4 | 0.5 | 0.1 | 9.4 | 1.5 | 0.0 |
| Delay (s) | 31.1 | 25.1 | 20.3 | 44.3 | 19.1 | 17.8 | 47.4 | 22.2 | 19.6 | 37.2 | 25.3 | 21.2 |
| Level of Service | C | C | C | D | B | B | D | C | B | D | C | C |
| Approach Delay (s) | | 24.3 | | | 27.3 | | | 29.3 | | | 27.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 26.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 65.7 | Sum of lost time (s) | 17.8 |
| Intersection Capacity Utilization | 62.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

Queues

Year 2035 Plus Project-PM

35: SR 99 NB Off & Bethel Ave

Mitigated













| Lane Group | WBL | WBR | NBT | SBT |
|-------------------------|------|------|------|------|
| Lane Group Flow (vph) | 192 | 514 | 636 | 575 |
| v/c Ratio | 0.31 | 0.77 | 0.76 | 0.68 |
| Control Delay | 16.4 | 19.9 | 20.9 | 18.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.4 | 19.9 | 20.9 | 18.4 |
| Queue Length 50th (ft) | 44 | 88 | 162 | 140 |
| Queue Length 95th (ft) | 121 | 274 | 396 | 342 |
| Internal Link Dist (ft) | 341 | | 745 | 584 |
| Turn Bay Length (ft) | | | | |
| Base Capacity (vph) | 1210 | 1111 | 1457 | 1457 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.16 | 0.46 | 0.44 | 0.39 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis 35: SR 99 NB Off & Bethel Ave

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations |  |  |  | | |  |
| Volume (vph) | 177 | 473 | 585 | 0 | 0 | 529 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | 4.9 | | | 4.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Frpb, ped/bikes | 1.00 | 0.98 | 1.00 | | | 1.00 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Frt | 1.00 | 0.85 | 1.00 | | | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | | | 1.00 |
| Satd. Flow (prot) | 1770 | 1548 | 1863 | | | 1863 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | | 1.00 |
| Satd. Flow (perm) | 1770 | 1548 | 1863 | | | 1863 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 192 | 514 | 636 | 0 | 0 | 575 |
| RTOR Reduction (vph) | 0 | 120 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 192 | 394 | 636 | 0 | 0 | 575 |
| Confl. Peds. (#/hr) | 10 | 10 | | 10 | 10 | |
| Turn Type | Perm | | | | | |
| Protected Phases | 8 | | 2 | | | 6 |
| Permitted Phases | | 8 | | | | |
| Actuated Green, G (s) | 20.6 | 20.6 | 26.2 | | | 26.2 |
| Effective Green, g (s) | 20.6 | 20.6 | 26.2 | | | 26.2 |
| Actuated g/C Ratio | 0.36 | 0.36 | 0.46 | | | 0.46 |
| Clearance Time (s) | 4.9 | 4.9 | 4.9 | | | 4.9 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | 3.0 |
| Lane Grp Cap (vph) | 644 | 563 | 862 | | | 862 |
| v/s Ratio Prot | 0.11 | | 0.34 | | | 0.31 |
| v/s Ratio Perm | | 0.25 | | | | |
| v/c Ratio | 0.30 | 0.70 | 0.74 | | | 0.67 |
| Uniform Delay, d1 | 12.8 | 15.4 | 12.4 | | | 11.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Incremental Delay, d2 | 0.3 | 3.8 | 3.3 | | | 2.0 |
| Delay (s) | 13.1 | 19.2 | 15.7 | | | 13.8 |
| Level of Service | B | B | B | | | B |
| Approach Delay (s) | 17.5 | | 15.7 | | | 13.8 |
| Approach LOS | B | | B | | | B |
| Intersection Summary | | | | | | |
| HCM Average Control Delay | | | 15.8 | | HCM Level of Service | B |
| HCM Volume to Capacity ratio | | | 0.72 | | | |
| Actuated Cycle Length (s) | | | 56.6 | | Sum of lost time (s) | 9.8 |
| Intersection Capacity Utilization | | | 69.3% | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | |
| c Critical Lane Group | | | | | | |

Queues

36: Parkway Drive & Bethel Ave

Year 2035 Plus Project-PM

Mitigated























| Lane Group | EBL | EBT | EBR | NBL | NBT | SBL | SBT |
|-------------------------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 317 | 87 | 233 | 58 | 321 | 391 | 374 |
| v/c Ratio | 0.64 | 0.18 | 0.41 | 0.27 | 0.63 | 0.53 | 0.46 |
| Control Delay | 26.7 | 19.6 | 5.7 | 32.4 | 26.3 | 25.7 | 14.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 26.7 | 19.6 | 5.7 | 32.4 | 26.3 | 25.7 | 14.7 |
| Queue Length 50th (ft) | 94 | 23 | 0 | 18 | 95 | 61 | 88 |
| Queue Length 95th (ft) | 219 | 67 | 49 | 65 | 220 | 137 | 197 |
| Internal Link Dist (ft) | | 474 | | | 214 | | 745 |
| Turn Bay Length (ft) | 200 | | 73 | 200 | | 200 | |
| Base Capacity (vph) | 920 | 939 | 875 | 254 | 1004 | 1108 | 1255 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.34 | 0.09 | 0.27 | 0.23 | 0.32 | 0.35 | 0.30 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis 36: Parkway Drive & Bethel Ave

Year 2035 Plus Project-PM

Mitigated

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  | | | |  |  | |  |  |  |
| Volume (vph) | 292 | 80 | 214 | 0 | 0 | 0 | 53 | 293 | 3 | 360 | 219 | 125 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.9 | 4.9 | | | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 0.97 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.96 | | | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | 1.00 | 1.00 | | 1.00 | 0.95 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1522 | | | | 1770 | 1860 | | 3433 | 1736 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | | | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1522 | | | | 1770 | 1860 | | 3433 | 1736 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 317 | 87 | 233 | 0 | 0 | 0 | 58 | 318 | 3 | 391 | 238 | 136 |
| RTOR Reduction (vph) | 0 | 0 | 173 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 23 | 0 |
| Lane Group Flow (vph) | 317 | 87 | 60 | 0 | 0 | 0 | 58 | 320 | 0 | 391 | 351 | 0 |
| Confl. Peds. (#/hr) | 10 | | 10 | 10 | | 10 | 10 | | 10 | 10 | | 10 |
| Turn Type | Prot | | Perm | | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | | | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 16.6 | 15.7 | 15.7 | | | | 4.1 | 18.4 | | 12.7 | 27.0 | |
| Effective Green, g (s) | 16.6 | 15.7 | 15.7 | | | | 4.1 | 18.4 | | 12.7 | 27.0 | |
| Actuated g/C Ratio | 0.27 | 0.26 | 0.26 | | | | 0.07 | 0.30 | | 0.21 | 0.45 | |
| Clearance Time (s) | 4.0 | 4.9 | 4.9 | | | | 4.0 | 4.9 | | 4.0 | 4.9 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 485 | 483 | 394 | | | | 120 | 565 | | 719 | 773 | |
| v/s Ratio Prot | c0.18 | 0.05 | | | | | 0.03 | c0.17 | | c0.11 | 0.20 | |
| v/s Ratio Perm | | | 0.04 | | | | | | | | | |
| v/c Ratio | 0.65 | 0.18 | 0.15 | | | | 0.48 | 0.57 | | 0.54 | 0.45 | |
| Uniform Delay, d1 | 19.5 | 17.4 | 17.3 | | | | 27.2 | 17.7 | | 21.4 | 11.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.2 | 0.2 | 0.2 | | | | 3.0 | 1.3 | | 0.8 | 0.4 | |
| Delay (s) | 22.6 | 17.6 | 17.5 | | | | 30.3 | 19.1 | | 22.2 | 12.1 | |
| Level of Service | C | B | B | | | | C | B | | C | B | |
| Approach Delay (s) | | 20.1 | | | 0.0 | | | 20.8 | | | 17.3 | |
| Approach LOS | | C | | | A | | | C | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 19.0 | | | | HCM Level of Service | | | | B | |
| HCM Volume to Capacity ratio | | | 0.59 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 60.6 | | | | Sum of lost time (s) | | | 12.9 | | |
| Intersection Capacity Utilization | | | 52.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |