
APPENDIX A

AIR QUALITY CONSISTENCY DETERMINATION

row **MBUAPCD CONSISTENCY DETERMINATION PROCEDURE Ver. 4.0**

Data entry 10/8/2013 Data entered by user.

Consistency Finding

NO

YES

6	Jurisdiction:	Hollister	Lead Agency selects from pull down
7	Project Name:	Gonzales Borelli PreZone	Lead Agency enters
8	Base Year for this determination:	2010	Project Buildout/ Occupancy Year 2025 Lead Agency enters
9		Proposed Project Occupied DU 336	Total buildout of Project. Sum of all years, row 26.

JURISDICTION DATA FROM AQMP & DOF (no data entry)

		Base Year	Period ending January 1st of:					
		2010	2015	2020	2025	2030	2035	Notes
14	DOF Population	37,301	From Calif. Dept of Finance. Est. for Jan 1 -- released in June of each year.					
15	AMBAG DU Forecast for Jurisdiction	11,544	12,816	14,085	15,605	17,108	18,221	DUs from AMBAG Travel Model, current version.
16	AMBAG Pop Forecast for Jurisdiction	40,415	44,613	49,064	54,143	59,259	62,756	Latest AMBAG Pop. & Employment forecasts.
17	AMBAG Forecast Population/ DU	3.50	3.48	3.48	3.47	3.46	3.44	Row 16/ row 15
18	Estimated Built DUs	10,610	Entry for 2010 is the DOF 1/2010 Housing Unit Estimate. Lead agency may overwrite if they have better data.					

JURISDICTION DUs w/o PROJECT

JURISDICTION DUs w/o PROJECT		2010	2015	2020	2025	2030	2035	
21	Housing Stock (Built DUs, Total)	10,610	10,855	11,855	12,855	0	0	2010 Housing Stock is baseline across the project life
22	Approved but not Built DUs		2,250	1,250	250	0	0	Lead Agency estimates value at period end.
23	Total Built & Approved DUs	10,610	13,105	13,105	13,105	0	0	Sum of Row 21 + 22

PROPOSED NEW PROJECT DUs

PROPOSED NEW PROJECT DUS		2015	2020	2025	2030	2035	
26	Proposed New Project DUS	0	0	336	0	0	Data entry by Lead Agency.
27	TOTAL, New Project + Built & Approved DUS	13,105	13,105	13,441	0	0	Sum of Row 23 + 26

NEW PROJECT CONSISTENCY DETERMINATION

29	Over (Under) AQMP DUs	289	(980)	(2,164)	(17,108)	(18,221)	Row 27 - Row 15
30	Is the project consistent in this Period?	NO	YES	YES	YES	YES	If Row 30 is (negative) = YES, if positive = NO.

OPTIONS IF INCONSISTENT (Choose one):

Year:	2015	2020	2025	2030	2035	
38	A. Consult CEQA Statute and Guidelines for appropriate mitigation options	289				
	B. Lead Agency preparation of consistency determination via an alternative method	289				
40	C. Regional offset of significant cumulative air quality impact; For EIRs, declare Statement of Overriding Consideration					

APPENDIX B

GREENHOUSE GAS MEMO



EMC PLANNING GROUP INC.
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To: Teri Wissler Adam, Project Manager
From: Stefanie Krantz
Cc: File
Date: April 16, 2015

Re: Borelli Prezone Initial Study: GHG/AQ Emissions Quantification - Methodology and Assumptions

Background and Scope of Assessment

Project-related air and greenhouse gas (GHG) emissions for the proposed project were estimated using California Emissions Estimator Model (CalEEMod) Version 2013.2.2 software. The use of CalEEMod is recommended by the California Air Resources Board (CARB) and accepted by the Monterey Bay Unified Air Quality Management District (MBUAPCD). Criteria air pollutant emissions are reported in pounds per day; GHG emissions are reported in metric tons of carbon dioxide equivalents (MT CO₂e) per year. An initial study is being prepared to analyze the environmental impacts of the anticipated emissions from future development of the 37.28-acre project site with residential uses. The number of units was derived by taking 75 percent of the gross project site acreage to determine the net acreage and multiply by 12 units, the maximum number of units allowed per net acre by the City's R3 M/PZ zone district regulations. This assessment quantifies construction and operational air and GHG emissions that would result from development of the site with 336 residential units and related infrastructure improvements.

Emissions Model

The CalEEMod platform allows calculations of both construction emissions and operational emissions from land use projects. It calculates the daily maximum and annual average for criteria pollutants as well as total or annual GHG emissions. The CalEEMod software utilizes emissions models USEPA AP-42 emission factors, CARB vehicle emission models studies and studies

MEMORANDUM

commissioned by other California agencies such as the California Energy Commission and CalRecycle. The MBUAPCD has not yet adopted thresholds for GHG emissions and recommends referring to the San Luis Obispo Air Pollution Control District (SLOAPCD) for guidance on emissions analyses. MBUAPCD and the SLOAPCD recommend using the model's default parameters to calculate estimated construction emissions when specific construction details are not available (Clymo 2013; Guise 2013). Both air districts recommend amortizing construction GHG emissions over a 30-year period and include the results in the amount of annual GHG emissions attributable to a project.

Project Background

The project site is generally located north of the City of Hollister (City), and is within the City's 20 year Planning Area and Sphere of Influence but not within the city limits. Most of the site appears to be recently plowed and is being used for agricultural production with the exception of four single-family homes located along Buena Vista Road at the southern extent of the site (Google Maps 2014). Single-family homes and an orchard are located to the south. Areas to the north, east, and west (unincorporated San Benito County) are primarily in agricultural production (row crops and orchard).

The City has received an application for annexation and prezone for the site. The proposed project does not include specific development details and would not change the existing land use designations for the site as identified in the general plan. This assessment addresses only the requested entitlements and future development consistent with general plan land use designations that would result from them.

Methodology

This assessment quantifies operational criteria air pollutant and GHG emissions for existing conditions and construction and operational criteria air pollutant and GHG emissions for the proposed project. Per MBUAPCD and SLOAPCD guidance, construction emissions of criteria air pollutants are quantified based on CalEEMod construction defaults. Because development plans are not yet available in detail sufficient to analyze site-specific future development of individual lots, this assessment includes a number of assumptions based on aggregate proposed land uses and anticipated improvements. Unless otherwise noted, data inputs for the model are based on observed existing conditions and anticipated future development consistent with the project description (City of Hollister 2014) and aerial photography. All other model defaults were used.

For modeling purposes, data inputs to the model take into account the type and size of existing and proposed uses utilizing CalEEMod default land uses, size metrics, and related default emissions factors. For ease of reference, existing and proposed land uses and their respective CalEEMod land use categories used in this assessment are shown in Table 1, Land Use Categories.

Table 1 Land Use Categories

Existing and Proposed Land Use Types	CalEEMod Land Use Default Categories ¹
Very Low Density Residential	Single-family Housing ²
Low Density Residential	Single-family Housing ²
Medium Density Residential	Single-family Housing ²
Agriculture	Cropland

Source: Google Earth 2015; Project Description from City of Hollister 2014; EMC Planning Group 2015

Notes: 1. Descriptions of the model's default land use categories are found in the CalEEMod User Guide (ENVIRON 2013) available online at: <http://www.aqmd.gov/caleemod/guide.htm>
2. The model default for Single-family Housing includes all densities assuming one dwelling unit per lot

It is assumed that full buildout of the project site would not occur earlier than 2025, which represents the limits of the data sets and assumptions that underlie the CalEEMod default emissions factors. Therefore, the operational date of the proposed project is assumed to be 2025.

Operational Emissions Data Inputs

For operational emissions, the model calculates indirect criteria pollutant and GHG emissions from processes “downstream” of the project under evaluation such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. In addition to the data inputs listed in Table 1, estimates of the project's energy use, water and wastewater demand, and solid waste generation are generated by model default emissions factors.

Construction Emissions Data Inputs

The CalEEMod program models construction emissions associated with land use development projects and allows for the input of project-specific construction information including phasing (demolition, site preparation, grading, paving, architectural, and finishing) and equipment information, if known. CalEEMod default construction parameters allow estimates of construction emissions based upon empirical data collected and analyzed by CARB. Both MBUAPCD and the SLOAPCD recommend using the model's default parameters to calculate estimated construction

emissions when specific construction details are not available (Clymo 2013; Guise 2013). Detailed information regarding the construction (phasing, number and type of equipment by phase, etc) is not yet available for future development consistent with the project concept plan; therefore, construction emissions estimates are based on CalEEMod default construction factors.

Carbon Offsets and Sequestration Inputs

CalEEMod also estimates a one-time only change in sequestration potential resulting from converting plant communities to development. Project-specific data inputs to determine the one-time only loss of sequestration potential are derived from a comparison of existing and proposed conditions on a project site, based upon changes in land use and vegetation. An estimate of the loss of sequestration potential resulting from the conversion of cropland to urban development is included in this assessment.

The model can also calculate a carbon “offset” based upon the number of net new trees proposed as part of a development, averaged over a 20-year growth cycle. However, only new tree plantings in an amount greater than a 1:1 replacement planting ratio would yield a measureable carbon offset. Project information of the number of trees that would be removed and planted as part of future development is not yet available to enable determination of the carbon sequestration savings that would be yielded by new tree plantings greater than a 1:1 replacement planting ratio. Therefore, estimates of emissions from potential future carbon offsets are not included in this assessment.

Model Baseline

The baseline for criteria air pollutant emissions are already quantified in air quality management plans. CalEEMod default values for baseline conditions assume new development on a vacant site. For development that replaces existing improvements on specific sites, project-specific contributions to regional GHG emissions can be derived by comparing project-specific GHG emissions to the baseline GHG emissions under existing conditions. The difference between the two (net emissions) would be the project’s contribution to operational GHG emissions.

Model Scenarios

Existing Conditions

Existing uses within the site include agriculture, rural residences, and farm buildings. A majority of the site, approximately 34.7 acres, consists of active agricultural land. Active agriculture is not included as a source of significant emissions according to CalEEMod. However, the model does

consider cropland as a habitat classification for determining project-related losses to sequestration potential. The remainder of the site consists of rural residences and outbuildings (2.62 acres). These uses are presented in Table 2, Existing Conditions.

Table 2 Existing Conditions

Land Use	Acres	Existing Development
		Residential ¹ (units)
Single-family Housing	2.62	4
Cropland	34.66	-
Total ³ :	37.28	4

Source: Google Earth 2015; Project Description from City of Hollister 2014; EMC Planning Group 2015

Proposed Land Uses

Operational emissions are quantified for 336 single-family residential units on the 37.28 acre site.

Results

Operational GHG emissions model results are reported on an annual basis in metric tons of carbon dioxide equivalent (CO₂e). Operational and Construction criteria air pollutant emissions are expressed in pounds per day. Project-related Construction GHG emissions are short term emissions amortized over 30 years and thus captured in the total annual GHG emissions. Detailed model results for winter and summer criteria pollutant, and annual GHG emissions are included as attachments to this assessment.

Operational Criteria Air Pollutant Emissions

Estimated operational criteria air pollutant emissions are presented in Table 3, Operational Criteria Air Pollutant Emissions.

Table 3 Operational Criteria Air Pollutant Emissions

	ROG	NO _x	PM ₁₀	PM ₂₅
Summer (Unmitigated)	544.50	36.36	117.00	97.10
Summer (Mitigated)	30.87	29.38	28.41	8.51
Winter (Unmitigated)	545.08	39.83	117.00	97.10
Winter (Mitigated)	31.46	32.86	28.41	8.51

Source: EMC Planning Group Inc. 2015.

Estimated unmitigated construction criteria air pollutant emissions are presented in Table 4, Construction Criteria Air Pollutant Emissions.

Table 4 Construction Criteria Pollutant Emissions

	ROG	NO _x	PM ₁₀	PM ₂₅
Summer (Unmitigated)	358.66	156.21	31.24	18.55
Winter (Unmitigated)	358.94	157.33	31.24	18.55

Source: EMC Planning Group Inc. 2015.

Greenhouse Gas Emissions

A comparison of model results and net emissions are presented in Table 5, Operational GHG Emissions.

Table 5 Operational GHG Emissions (metric tons per year)

GHG Emissions (CO ₂ e)		
Existing	Proposed	Net Emissions
90.66 ¹	6,541.52 ²	6,450.86

Source: CalEEMod Results EMC Planning Group 2015

Note: 1. Unmitigated

2. Mitigated, includes compliance with MBUAPCD rules prohibiting woodburning fireplaces/stoves

According to the model results, during construction the proposed project would generate 2,081.52 metric tons of CO₂e (carbon dioxide equivalents, or GHGs). Amortized over a 30-year period, the proposed project would result in equivalent annual construction emissions of 69.32 metric tons CO₂e per year.

The conversion of cropland to urban uses would result in a one-time loss of 214.89 metric tons CO₂e, which, when amortized over a 30-year period, results in an additional 7.16 metric tons CO₂e per year. Total GHG emissions attributable to the proposed project are presented in Table 6, Total Project GHG Emissions (metric tons per year).

Table 6 Total Project GHG Emissions (metric tons per year)

Amortized Construction	Operational	Amortized Loss of Sequestration Potential	Total Annual Emissions
69.32	6,450.86	7.16	6,527.34

Source: EMC Planning Group Inc. 2015.

Sources

1. Clymo, Amy, Air Pollution Control Officer, Monterey Bay Unified Air Pollution Control District (MBUAPCD). Telephone Conversation with Consultant, August 26, 2013.
2. EMC Planning Group Inc. Results of CalEEMod modeling for Borelli Prezone Initial Study. March, 2015. Included as an attachment.
3. Environ International Corporation. *California Emission Estimator Model User's Guide Version 2013.2. July 2013*. Available online at: <http://www.aqmd.gov/calcemod/guide.htm>.
4. Environ International Corporation. *CalEEMod User's Tips (Version 2013.2.2)* October 2013. Available online at: <http://www.aqmd.gov/calcemod/guide.htm>.
5. Guise, Melissa, San Luis Obispo Air Pollution Control District (SLOAPCD). Telephone Conversation with Consultant, December 2, 2013.
6. MBUAPCD. CEQA Air Quality Guidelines. 2008.
http://www.mbuapcd.org/mbuapcd/pdf/mbuapcd/pdf/CEQA_full.pdf

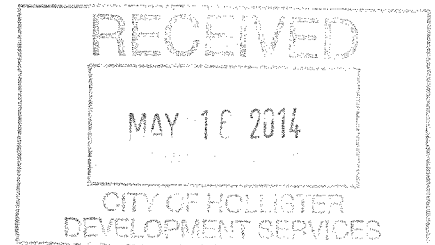
7. San Benito Engineering and Surveying, Inc. Buena Vista Road Rezoning Map. May 14, 2014.
8. SLOAPCD CEQA Air Quality Handbook, a Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review. April 2012.

APPENDIX C

PLAN FOR SERVICES

PLAN FOR SERVICES

Property Owner Name: Fernando Gonzalez and Frank Borelli
Applicant Name: Gonzalez Annexation
Assessor Parcel Numbers: 19-11-31, 19-12-38



This Plan for Services accompanies the application of pre-zoning for property by the City of Hollister for purposes of annexation. The property to be annexed comprises 36.69 acres. The intent of the application is to allow for annexation only – no development is proposed as part of this application. The annexation site is located on the northwest corner of Buena Vista Road and Miller Road – see attached map. The owner is requesting a pre-zoning of Medium Density Residential (MDR), which is consistent with the City of Hollister General Plan.

Pursuant to Section 56653 of the Cortese/Knox Act, the City of Hollister must file a plan for providing services for the affected area of the annexation as part of the submission of the Resolution of Application. Section 56653 requires that the plan for providing services include the following information:

1. An enumeration and description of the services to be extended to the affected (annexed) property.
2. The level and range of those services.
3. An indication of when those services can feasibly be extended to the affected property.
4. An indication of any improvements or upgrading of structures, roads, sewer or water facilities, or other conditions the local agency would impose or require within the affected territory if the change or organization (annexation) is completed.
5. Information with respect to how those services will be financed.

In addition, San Benito County LAFCO policy also requires a clear quantifiable mechanism to provide adequate services.

Below is an analysis of the services that will be required for the annexation of the affective property pursuant to the requirements set forth by Section 56653 of the Act.

The Gonzalez Annexation consists of 36.69 acres located at the northwest corner of the intersection of Buena Vista Road and Miller Road. The applicant is requesting pre-zoning and annexation under the City's Planning and Development Policies contained in their General Plan.

The following is a list of services that would be provided to the Gonzalez Annexation. They will be provided by the City of Hollister unless otherwise noted:

- General Government
- Police Service
- Fire Service
- Water Service
- Sewer Service
- Storm Drainage
- Road Construction
- Street and Utility Maintenance
- Parks and Recreation

General Government

General Government Services include the City Council, City Administration (City Manager, City Attorney), City Finance (Payment of Utility Bills), Building, Planning, Engineering and Animal Control. These services are currently being provided to the City populous at large. Annexation of the affected area in its current condition will not cause any increase in City General Government services. Development of the site, if annexed, will cause a minor increase in General Government Service for the City Council, City Administration, City Finance and Animal Control. These will be financed through an incremental increase in General Fund Revenues, such as property and sales taxes. The City is also requiring that all projects requesting annexation enter into an agreement to be fiscally neutral (project will provide all revenues necessary to provide public service). The incremental increase in services for Building, Planning and Engineering will be financed through permit fees.

Police Service

Police service to the affected area will be provided by the Hollister Police Department upon annexation. The Police Department provides this service throughout the city based on staffing levels set by the City Council. The proposed annexation is contiguous to the current City limits (current service area). The annexation will extend the boundary of police service currently in effect.

Upon annexation and development, the project will include roadways that would affect traffic enforcement/collision investigation responsibilities, and an incremental increase in staffing levels and capital equipment due to the increase in population. The increase in police service will be financed by the imposition of a Mello-Roos Community Facilities public safety tax. The increase in capital equipment

will be financed through the imposition of police impact fees collected at the time of building permit issuance or prior to occupancy of the site. The annexation of the area will not create the need for any police related structures or improvements.

Fire Service

Fire service to the affected area will be provided by the Hollister Fire Department upon annexation. The Fire Department provides this service throughout the city and adjoining County areas, via a mutual aide agreement, based on staffing levels set by the City Council. The Fire Department houses its personnel at its stations located at the northwest corner of Fifth Street & Sally Street and Union Road & Valley View Road. The proposed annexation is contiguous to the current City limits (current service area), and will extend the boundary of fire service currently in effect. The area is within the five minute first response of the city Fire Station 1. Upon annexation and development, the project will require an incremental increase in staffing levels and capital equipment due to the increase in population. The increase in fire service will be financed by the imposition of a Mello-Roos Community Facilities public safety tax. The increase in capital equipment will be financed through the imposition of fire impact fees collected at the time of building permit issuance or prior to occupancy of the site. The annexation of the area will not create the need for any fire related structures or improvements.

Water Service

Once annexed the property will be within the City of Hollister's service area. The annexation would have no effect on the provision of the service by the City of Hollister. All plans for water service will need to be approved by Hollister's Engineering Department. No specific development is proposed at this time, so no increased water demand is specifically calculated. A conservative estimate would be to assume full medium density residential on 36.69 acres. With a 25% loss to roads and infrastructure, and at City of Hollister standards of 12 dwelling units per acres (DU/acre), it would result in a potential 330 medium density residential dwelling units. The Hollister Urban Area Water and Wastewater Master Plan determined a usage value of 312 gallons per day per dwelling unit (gpd/DU) for single family residential homes. Using these numbers, demand would be 102,960 gallons of water per day. An existing 12" water main is located in Buena Vista Road along the full frontage. A developer will be required to fund the installation of the water lines to all City of Hollister standards.

Sewer Service

Four residential structures currently occupy the site, all four are served by existing septic tanks. Development of the site after annexation will require City of Hollister sewer service. The City of Hollister currently provides sewer service to and with the Hollister Domestic Wastewater Treatment Plant (DWTP), which serves within the city limits and portions of unincorporated San Bento County. No specific development is proposed at this time, so no specific sewer service demand is calculated. For a conservative estimate, using the 330 MDRU explained above and the city Q Average Coefficient of 160

gpd/MFDU, the development would generate an anticipated flow of 52,800 gallons per day of wastewater.

Sewage or wastewater flows are transported to the treatment plant via a series of transmission lines. The project would be served by an existing 8" sanitary sewer line in Buena Vista Road which currently overlaps the annexation areas' south-eastern border with Buena Vista road for 373 linear feet west of the intersection with Miller Drive. In the event that property to the north, east and/or west is developed in the future, gravity flow through those developments can be reconsidered at that time. Any development would be required to provide access from Buena Vista Road with a connection to the 8" sanitary sewer line. This sanitary sewer line flows under gravity to the DWTP with no required lift stations. Per the City of Hollister Sanitary Sewer Collection System Master Plan adopted in August, 2010, this entire property is included in the study area. The collection system for this area was found adequate under anticipated future flows with the exception of a 971 LF section of existing 21" and 36" VCP on San Juan Hollister Road from Graf Road to Valona Way and a 370 LF section of existing 8" VCP on Miller Road from San Juan Hollister Road towards Central Ave. These portions are planned upgrades as Long Term Project No. 6: Miller Road Sewer Pipe Upgrade and the Near Term Project No. 1 Bridge Road Interconnect, respectively. However, since these upgrades location are approximately 1,500 LF from the subject property, there is a large number of potential developments contributory to that upgrade. To offset the use of the capacity for the transmission lines, any development will be assessed an impact fee at the time of building permit issuance. A sewer treatment impact fee will also be assessed to provide funding for additional capacity at the sewer plant.

Storm Drainage

The City of Hollister maintains a series of transmission lines that convey storm flows within the city and some adjoining areas of unincorporated San Benito County to either the San Benito River or the Santa Ana Creek. This property is within the San Benito River drainage area. In accordance with the Low Impact Development requirements of the City of Hollister Grading and Best Management Practices Control Ordinance (Ord. #1053) more water will be retained on site than in traditional development methods, but some will still be sent to the city storm system. The system will be accessed through the existing 18" storm drain line in Gonzales Dr 250 LF to the south, which connects to the San Benito River, by way of an existing box culvert in Miller Road. In the event that property to the north, east and/or west is developed in the future, gravity flow through those developments can be reconsidered at that time. A developer will be required to fund the installation of the storm drain system to all COH standards.

Road Construction

The City of Hollister requires that there be adequate roadways to serve the transportation needs of the City residents. The City, private developers or a combination of both, funds roadways. The property frontage is on Buena Vista Road. Upon development, it will require the widening improvement of the property frontage to City of Hollister standards. The development proponent will be required to fund these improvements. The development may also require, on an incremental basis, the need for expanded roadway facilities in the City and the County. To offset these incremental costs, any development will be assessed a traffic impact fee at the time of final occupancy for a building permit.

Street and Utility Maintenance

Annexation of the property in its current state will not require an increase in the funding for the street or utility maintenance. Development of the site will require maintenance of city streets, landscaping and utility facilities that will serve the site, as well as streets and utility systems within the development. The area street maintenance is funded by the City of Hollister state-collected taxes. City utility systems are currently funded by City user fees, however as a part of any development agreement, the property will be required to annex to a new lighting and landscaping district for the maintenance of lighting, landscaping and utility services that will serve the site.

Parks and Recreation

Annexation of the property in its current state will not require any additional park facilities or recreational programs. Development of projects generally requires an increase in park facilities to serve the new residents. The degree to which an increase in park facilities will be required will be determined at the time of review of the development application. The City of Hollister requires residential projects either dedicate land and/or pay park-in-lieu impact fees for the incremental need to expand park facilities. At the time of review of the development application, the projects financial contribution for park lands or facilities will be determined.

The city of Hollister generally funds a number of recreation programs to serve the needs of city residents. These programs are funded at a level of 75 percent by user's fees. The remaining costs are funded by the City of Hollister General Fund. The City will enter into an annexation agreement with the owner of the property to ensure that development of the site is fiscally neutral, which would include the City portion of the funding required for recreational programs.

APPENDIX D

TRAFFIC IMPACT ANALYSIS

**GONZALES – BORELLI
PRE ZONE
TRAFFIC IMPACT ANALYSIS**

HOLLISTER, CALIFORNIA

Final Report

Prepared For

**EMC Planning Group
Monterey, CA**

March 27, 2015
Revised December 7, 2015

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1 INTRODUCTION

This traffic study analyzes the potential traffic impacts associated with the proposed annexation of property located on Buena Vista Road in Hollister, California. The property is approximately 37 acres, which, under the proposed City of Hollister residential zoning, would allow up to 336 homes. The site is located at the northwestern corner of Miller Road and Buena Vista Road, and will potentially have access to both roadways. The project is also located approximately three blocks west of Calaveras Elementary School, which is also located on Buena Vista Road. The surrounding neighborhood features both residential neighborhoods and agricultural parcels. **Exhibit 1** depicts the location of the proposed annexation and study area. **Exhibit 2** shows the proposed annexation area itself, as no formal site plan has been proposed as this time.

1.1 Scope of Work

The project would add new trips to the road network. Weekday AM and PM peak hour traffic conditions were analyzed at the following five study intersections:

1. State Route 156 (SR 156) / Buena Vista Road;
2. Miller Road / Buena Vista Road;
3. Westside Boulevard – Westside Road / Buena Vista Road;
4. Live Oak Drive – Miller Road / San Juan Road; and
5. Westside Boulevard / San Juan Road – Fourth Street.

In addition, potential access to the surrounding street network (one on Miller Road and one on Buena Vista Road) were also analyzed.

Exhibit 1 depicts the location of the study intersections.

Traffic operations for the following development scenarios were analyzed:

- Existing Conditions
- Existing Plus Project Conditions
- Background Conditions
- Background Plus Project Conditions
- Cumulative Without Project Conditions
- Cumulative Plus Project Conditions

Improvements recommended for existing traffic conditions as well as mitigations for impacts created by the proposed project are recommended where warranted.

One of the study intersections is an intersection with a state highway – SR 156. This analysis is also compliant with the requirements in *Guidelines for the Preparation of Traffic Impact Studies*, California Department of Transportation (Caltrans), December 2002.

1.2 Traffic Operation Evaluation Methodologies and Level of Service Standards

Intersection traffic operations were evaluated based on the level of service (LOS) concept. LOS is a qualitative description of an intersection's operation, ranging from LOS A to LOS F. Level of Service A represents free flow uncongested traffic conditions. Level of service F represents highly congested traffic conditions with unacceptable delay to vehicles at intersections. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes. LOS descriptions for unsignalized intersections are included as **Appendix A**.

At signalized intersections, such as Intersections #4 and #5 – Live Oak Drive – Miller Road / San Juan Road and Westside Boulevard / San Juan Road, respectively – Fourth Street – the traffic signal essentially allocates time among conflicting traffic movements that seek to use the same space. The way in which time is allocated significantly affects the operation and the capacity of the intersection and its approaches. For this reason, delay can vary depending upon the demand on each approach and the direction of travel for each vehicle at the intersection. The overall delay (and corresponding level of service) is therefore the criteria used to evaluate signalized intersections.

At two-way stop-controlled (TWSC) intersections, such as Intersections #1, #2 and #3 – SR 156 / Buena Vista Road, Miller Road / Buena Vista Road and Westside Boulevard – Westside Road / Buena Vista Road, respectively – only the side street approaches must stop before entering the intersection; traffic on the major street is allowed to pass freely through the intersection. The side-street delay (and corresponding level of service) is therefore the criteria used to evaluate TWSC intersections, although the overall intersection delay (and corresponding level of service) is also reported to provide overall context to the side-street operations.

Caltrans, which has jurisdiction over Intersection #1 – SR 156 / Buena Vista Road – has established a level of service (LOS) standard of the transition from LOS C to LOS D (hereby referred to as "LOS C/D"). The City of Hollister, which has jurisdiction over the remaining study intersections, has established a LOS of "C" for the accepted minimum standard of operation for intersections. Therefore, LOS C was considered the minimum acceptable level of service for overall intersection operations. The Synchro software program (Version 8.0) was utilized to calculate the LOS values for the study intersections, based on technical procedures documented in the *2010 Highway Capacity Manual*.

Both the Caltrans signal and all-way stop warrants were evaluated for the study intersections where appropriate.

1.3 Significance Criteria

Two of the study intersections are signalized. For signalized intersections, the project would create a significant adverse impact on traffic conditions if either of the following criteria are met:

Signal (#4 – Live Oak – Miller / San Juan and #5 – Westside / San Juan - Fourth):

1. The average overall peak hour level of service at the intersection is LOS C or better without the project: The project traffic causes the peak hour level of service to degrade from an acceptable LOS C or better under no project conditions to an unacceptable LOS D or worse under project conditions.
2. The average overall peak hour level of service is already at an unacceptable LOS D or worse without the project: The addition of project traffic causes the average overall delay to increase five (5) or more seconds.

The remaining three study intersections are unsignalized one- or two-way stop controlled intersections. For these unsignalized intersections, the project would create a significant adverse impact on traffic conditions if either of the following criteria is met:

One-or two-way stop (#1 – SR 156 / Buena Vista, #2 – Miller / Buena Vista and #3 – Westside / Buena Vista):

1. The peak hour delay on the worst approach at a one- or two-way stop-controlled intersection is LOS C or better without the project: The peak hour delay on the worst approach at a one- or two-way stop-controlled intersection degrades from an acceptable LOS C or better under no project conditions to an unacceptable LOS D or worse under project conditions and the traffic volumes at the intersection under project conditions are high enough to satisfy the peak-hour volume traffic signal warrant adopted by Caltrans.
2. The peak hour delay on the worst approach at a one- or two-way stop-controlled intersection is already at an unacceptable LOS D or worse without the project: The traffic volumes at the intersection under project conditions are high enough to satisfy the peak-hour volume traffic signal warrant adopted by Caltrans, and the addition of project traffic causes the delay on the worst stop-controlled approach to increase beyond what it was without the project.

2. EXISTING CONDITIONS

This section of the report evaluates existing conditions and includes a description of the project setting.

2.1 Existing Road Network

Regional access to the project area is provided by Highways 25 and 156. Direct access to the project area is provided by project-constructed connections to Buena Vista Road and Miller Road.

State Route 25 (SR 25) is a major north-south highway through Monterey, San Benito, and Santa Clara Counties. SR 25 provides primary access between San Benito and Santa Clara Counties via its connection to US 101 south of Gilroy. SR 25 is also a major arterial through the City of Hollister. It also provides primary north-south access through San Benito County south of Hollister as Airline Highway.

State Route 156 (SR 156) is a major east-west highway connecting northern Monterey County and the Central Valley over two distinct segments. The easternmost segment extends from US 101 west of San Juan Bautista to State Route 152 north of Hollister, and is a major freight and commuter route.

Buena Vista Road is a two-lane, east-west collector in western Hollister. It connects SR 156 with the neighborhoods west of San Benito Street and north of Fourth Street and San Juan Road.

Miller Road is a two-lane, north-south collector in western Hollister. It connects San Juan Road with Buena Vista Road. A shopping center is located at the corner of Miller Road and San Juan Road.

San Juan Road - Fourth Street is a two-lane, east-west major thoroughfare in western and central Hollister. To the west, San Juan Road connects to SR 156, and is a major commute corridor into and out of the Hollister area. Further east, Fourth Street provides access to downtown Hollister and various San Benito County government buildings, such as the County Administration Building and the county courthouse.

Westside Boulevard is a two-lane, north-south collector in western Hollister that extends between Nash Road and Buena Vista Road. North of Buena Vista Road, Westside Boulevard changes designation to Westside Road.

Live Oak Drive is a local residential street that provides access to a mobile home park.

2.2 Existing Pedestrian Network

While sidewalks are continuous along both directions of Miller Road between Buena Vista Road and San Juan Road, they are not present along Miller Road north of Buena Vista Road. Sidewalks are also not present along the north side of Buena Vista Road, and are discontinuous along the south side of that roadway. This includes the approximately three blocks west of Calaveras Elementary School, although they are present along the school frontage and between the school and Westside Boulevard.

2.3 Existing Bicycle Network

Within the study area and the area surrounding the project site, formal bike lanes are only provided along both sides of Westside Boulevard, south of Buena Vista Road. Bicycle paths are not provided, and no routes are designated as bike routes.

2.4 Existing Transit Network

San Benito County Express, operated and administered by the San Benito County Local Transportation Authority (LTA), operates three fixed-route transit routes – Green Line, Blue Line and Red Line. **Exhibit 3** depicts their routes. The Green and Blue Lines traverse the central, western, eastern, and southern portions of Hollister, with the Green Line traveling in a clockwise direction and the Blue Line traveling in a counter-clockwise direction. The Red Line travels in a primarily north-south orientation, from the southern portions of Hollister, through downtown, to the northern business parks.

LTA also offers two other transit services. It offers two “Intercounty” transit routes – Gilroy Caltrain and Gilroy Gavilan College – which provide limited service between the cities of Hollister (in San Benito County) and Gilroy (in Santa Clara County). LTA also offers a dial-a-ride service that provides point-to-point service within and between Hollister, San Juan Bautista, and Tres Pinos.

Both the Green and Blue Lines stop at the same bus stop along Central Street at Miller Road, roughly one block south of the project site. The Red Line does not stop in the project vicinity.

2.5 Existing Conditions Traffic Volumes

To ascertain the existing weekday AM and PM peak hour traffic conditions, weekday turning movement counts were collected at the study intersections. Traffic counts at the study intersections were conducted on Tuesday, March 10, 2015 from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. The existing weekday AM and PM peak hour traffic volumes at the study intersections are shown on **Exhibit 4**. The peak hour traffic volume counts are contained within **Appendix B**.

2.6 Existing Conditions Intersection Operations

Weekday AM and PM peak hour intersection levels of service are summarized in **Exhibit 5A**. Level of service calculation worksheets are included as **Appendix C**.

Most of the five existing study intersections operate at acceptable levels of service under Existing traffic conditions during the weekday AM and PM peak hour. However, the Westside / San Juan –Fourth intersection operates at an acceptable LOS C (AM) and unacceptable LOS D (PM).

3 EXISTING PLUS PROJECT CONDITIONS

This section of the report describes the analyses of the study road network under Existing Plus Project traffic conditions. The section includes the analysis of project trip generation, distribution and assignment.

3.1 Project Description

The proposed project involves the annexation of 37 acres of property for future residential development in the City of Hollister. Per the proposed city zoning of the property, a maximum of 336 homes are allowed on this parcel. To be conservative, this report documents traffic operations and impacts for the maximum 336 homes.

3.2 Project Trip Generation

The estimated trip generation for the project is shown on **Exhibit 6**. Based upon trip generation rates published by the Institute of Transportation Engineers in *Trip Generation Manual*, 9th Edition, 2012, the project is estimated to generate 3,199 trips per day, with 252 trips generated during the AM peak hour (63 in, 189 out) and 336 trips generated during the PM peak hour (212 in, 124 out).

3.3 Project Trip Distribution and Assignment

The project trip distribution was estimated based upon existing traffic patterns and the locations of complementary land uses. The project trip distribution is summarized in the following table and on **Exhibit 7A**:

To / From	Percentage
East via Fourth Street	30%
South via Westside Boulevard	30%
West via Buena Vista Road	25%
West via San Juan Road	10%
Miller / San Juan Shopping Center	5%
Total	100%

The project AM and PM peak hour trips were assigned to the local road network based on the preceding trip distribution percentages. The project AM and PM peak hour trip assignment is shown on **Exhibit 7B**.

The project is anticipated to have vehicle access off of both Miller and Buena Vista Roads. For the purposes of this analysis, it is assumed that the project will have a single vehicular access off of both roadways. **Exhibit 7B** also depicts the project trips at both vehicle access points.

3.5 Existing Plus Project Traffic Volumes

Trips generated by the project were combined with existing traffic volumes to obtain Existing Plus Project traffic volumes, which are shown on **Exhibit 8**.

3.6 Existing Plus Project Conditions Intersection Operations

Weekday AM and PM peak hour intersection levels of service are summarized on **Exhibit 5A**, while recommended improvements are indicated on **Exhibit 5B**. Level of service calculation worksheets are included in **Appendix D**.

Most of the study intersections are projected to continue to operate at acceptable levels of service under Existing Plus Project conditions. However, two intersections would experience unacceptable operations – Intersections #1 (SR 156 / Buena Vista) and #5 (Westside / San Juan – Fourth). Each is described below.

Intersection #1 – SR 156 / Buena Vista:

Although the intersection would operate at acceptable overall operations of LOS A and acceptable side-street operations during the AM peak hour, the westbound Buena Vista Road approach to the intersection would operate at LOS D during the PM peak hour, a change from LOS C under Existing conditions. The Caltrans Peak Hour signal warrant (see **Appendix K**) was found to be met at this intersection under Existing Plus Project conditions.

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Signalization of this intersection is recommended. The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee (SBCTIMF). Although payment of a fee alone would not guarantee the timely construction of the identified improvement to immediately mitigate the project impact by the time the project is fully occupied, improvements to the State Highway are outside of local control; therefore, the payment of local fees toward future improvements is the only feasible mitigation available for this project. As such, payment of the SBCTIMF would reduce the project's impact to a less-than-significant level.

Intersection #5 – Westside Boulevard / San Juan Road – Fourth Street:

This intersection would operate at an overall LOS D during both the AM and PM peak hours. This would be a change from LOS C operations during the Existing AM peak hour, and would represent an overall delay increase of 6.1 seconds during the PM peak hour.

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Optimization of the signal timing on various phases of this signal is recommended. The project would be responsible for the cost of this improvement, to be implemented by the City of Hollister. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.

The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee. As noted earlier, the project's payment of this fee will also reduce its impact at Intersection #1 – SR 156 / Buena Vista Road – to a less-than-significant level.

4 BACKGROUND CONDITIONS

This section of the report describes the analyses of the study road network under background traffic conditions. Background conditions models traffic conditions with traffic from approved but not yet constructed developments added to the study intersections.

4.1 Background Conditions Traffic Volumes

A listing of approved but not yet constructed or occupied projects within San Benito County and the City of Hollister are included in **Appendix E**. The list of approved projects was referenced from *Gonzales Property Residential Transportation Impact Analysis*, Hexagon Transportation Consultants, October 30, 2014.

Weekday AM and PM peak hour traffic generated by approved projects were estimated and assigned to the local road network and combined with existing peak hour traffic volumes to obtain background condition AM and PM peak hour traffic volumes, which are shown on **Exhibit 9**. The analysis of Background Conditions assumes full development of the approved projects.

4.2 Background Conditions Intersection Operations

Intersection levels of service for the Background Condition are summarized on **Exhibit 5A**. Level of service calculation worksheets are included in **Appendix F**.

Most of the study intersections would continue to operate at acceptable levels of service under Background Conditions during the AM and PM peak hours. However, two intersections would operate at unacceptable levels of service. The SR 156 / Buena Vista intersection (Intersection #1) would have its westbound approach operate at LOS D during the PM peak hour, while and the Westside / San Juan – Fourth intersection (Intersection #5) would operate at LOS D (AM) and LOS E (PM).

5 BACKGROUND PLUS PROJECT CONDITIONS

This section of the report describes the analysis of the study road network under Background Plus Project traffic conditions. Background Plus Project conditions includes traffic from approved but not yet constructed developments and project traffic added to the existing traffic volumes at the study intersections.

5.1 Background Plus Project Conditions Traffic Volumes

The aforementioned project trip assignment (**Exhibit 7B**) were combined with the Background peak hour volumes to obtain Background Plus Project Buildout conditions traffic volumes, which are shown in **Exhibit 10**.

5.2 Background Plus Project Conditions Intersection Operations

Intersection levels of service for the Background Plus Project Conditions are summarized on **Exhibit 5A**, while recommended improvements are indicated on **Exhibit 5B**. LOS calculation worksheets are included in **Appendix G**.

Some of the study intersections are projected to continue to operate at acceptable levels of service under Background Plus Project conditions. However, three intersections would experience unacceptable operations – Intersections #1 (SR 156 / Buena Vista), #3 (Westside / Buena Vista) and #5 (Westside / San Juan – Fourth). Each is described below.

Intersection #1 – SR 156 / Buena Vista Road:

Although the intersection would continue to operate at acceptable overall operations of LOS A and acceptable side-street operations during the AM peak hour, the westbound Buena Vista Road approach to the intersection would again operate at LOS D during the PM peak hour, at a delay higher than under Background conditions. The Caltrans Peak Hour signal warrant (see **Appendix K**) was found to be met at this intersection under Background Plus Project conditions.

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Signalization of this intersection is again recommended. The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee (SBCTIMF). Although payment of a fee alone would not guarantee the timely construction of the identified improvement to immediately mitigate the project impact by the time the project is fully occupied, improvements to the State Highway are outside of local control; therefore, the payment of local fees toward future improvements is the only feasible mitigation available for this project. As such, payment of the SBCTIMF would reduce the project's impact to a less-than-significant level.

Intersection #3 – Westside Boulevard – Westside Road / Buena Vista Road:

Although the intersection would continue to operate at acceptable overall operations of LOS A and acceptable side-street operations during the AM peak hour, the northbound Westside Boulevard approach to the intersection would operate at LOS D during the PM peak hour, a change from LOS C under Background conditions. However, the Caltrans Peak Hour signal warrant (see **Appendix K**) was not found to be met at this intersection under Background Plus Project conditions.

Based upon the significance criteria identified in Section 1.3 of this report, the project would not represent a significant impact upon the operations of this intersection. No mitigation would be required.

Intersection #5 – Westside Boulevard / San Juan Road – Fourth Street:

This intersection would operate at an overall LOS D (AM) and LOS E (PM) under Background Plus Project conditions. The increase in delay over Background conditions would be 7.0 seconds (AM) and 9.3 seconds (PM).

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Optimization of the signal timing on various phases of this signal is again recommended. The project would be responsible for the cost of this improvement, with implementation by the City of Hollister. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.

6 CUMULATIVE WITHOUT PROJECT CONDITIONS

This section of the report describes the analyses of the study road network under Cumulative Without Project traffic conditions. The cumulative conditions analysis is primarily based off of forecasts included within *Gonzales Property Residential Transportation Impact Analysis*, Hexagon Transportation Consultants, October 30, 2014, plus other proposed projects in the region.

6.1 Cumulative Without Project Conditions Traffic Volumes

Future growth was quantified at the study intersections, based primarily off of forecasts included within *Gonzales Property Residential Transportation Impact Analysis*, Hexagon Transportation Consultants (“Hexagon”), October 30, 2014. Trips from other proposed projects in the regional were also added, including the Homestead Avenue (Sywak) subdivision and the Gonzales property on Buena Vista Road (which was the study project within the aforementioned Hexagon traffic impact analysis). A listing of the cumulative projects within San Benito County and the City of Hollister that were used to derive the Cumulative forecasts are included in **Appendix H**. Cumulative Without Project conditions traffic volumes without the proposed project are shown on **Exhibit 11**.

Note that trips from the study project were not included under this scenario. Please see Chapter 7, Cumulative Plus Project Conditions, for information as to how the project may impact Cumulative condition operations.

Also note that these forecasts include completion of the proposed North Street extension, which would connect Buena Vista Road with North Street and Santa Ana Road. Although this street network improvement was not identified in the aforementioned Hexagon report, a review of growth patterns along the Buena Vista Road and San Juan Road-Fourth Street corridors indicated its presence in the future traffic forecasts. The City of Hollister Capital Improvement Projects Program (CIPP) does not fully fund this extension, but the County of San Benito Transportation Impact Mitigation Fee does fund the extension.

6.2 Cumulative Without Project Conditions Intersection Operations

Intersection levels of service under Cumulative Without Project conditions are summarized in **Exhibit 5A**. LOS calculation worksheets are included in **Appendix I**.

Some of the study intersections would continue to operate at acceptable levels of service under Cumulative Without Project Conditions during the AM and PM peak hours. However, three intersections would operate at unacceptable levels of service. The SR 156 / Buena Vista intersection (Intersection #1) would have its westbound approach operate at LOS F during the PM peak hour. The Westside / Buena Vista intersection (Intersection #3) would have its northbound approach operate at LOS F during the AM peak hour. Finally, the Westside / San Juan – Fourth intersection (Intersection #5) would operate at LOS D (AM) and LOS E (PM).

7 CUMULATIVE PLUS PROJECT CONDITIONS

This section of the report describes the analyses of the study road network under Cumulative Plus Project traffic conditions, which add trips from the study project to the Cumulative Without Project condition volumes.

7.1 Cumulative Plus Project Conditions Traffic Volumes

Cumulative Plus Project volumes were created by adding the study project trips to projected growth under Cumulative Without Project conditions (see Chapter 6).

Under Cumulative Plus Project conditions, the project trip distribution was modified slightly to account for the opening of the North Street extension to Buena Vista Road. The revised project trip distribution is summarized in the following table, with the modifications indicated in *italics*:

To / From	Percentage
<i>East via Fourth Street</i>	<i>20%</i>
South via Westside Boulevard	30%
West via Buena Vista Road	25%
West via San Juan Road	10%
<i>East via Buena Vista Road – North Street</i>	<i>10%</i>
Miller / San Juan Shopping Center	5%
Total	100%

The revised trip distribution under Cumulative Plus Project conditions is also shown on **Exhibit 12A**. This was used to derive the revised trip assignment under Cumulative Plus Project conditions, which is shown on **Exhibit 12B**. This revised trip assignment was added to the Cumulative Without Project volumes to create the Cumulative Plus Project volumes shown on **Exhibit 13**.

7.2 Cumulative Plus Project Conditions Intersection Operations

Intersection levels of service under Cumulative Plus Project conditions are summarized in **Exhibit 5A**, while recommended improvements are indicated on **Exhibit 5B**. LOS calculation worksheets are included in **Appendix J**.

Only the Live Oak – Miller / San Juan intersection (Intersection #4) is projected to continue to operate at acceptable levels of service under Cumulative Plus Project conditions. The remaining four study intersections would experience unacceptable operations – Intersections #1 (SR 156 / Buena Vista), #2 (Miller / Buena Vista), #3 (Westside / Buena Vista) and #5 (Westside / San Juan – Fourth). Each is described on the following pages.

Intersection #1 – SR 156 / Buena Vista Road:

Although the intersection would continue to operate at acceptable overall operations of LOS A (AM) and LOS C (PM) and acceptable side-street operations during the AM peak hour, the westbound Buena Vista Road approach to the intersection would operate at an unacceptable LOS F during the PM peak hour, at a delay higher than under Cumulative Without Project conditions. The Caltrans Peak Hour signal warrant (see **Appendix K**) was found to be met at this intersection under Cumulative Plus Project conditions.

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Signalization of this intersection is again recommended. The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee (SBCTIMF). Although payment of a fee alone would not guarantee the timely construction of the identified improvement to immediately mitigate the project impact by the time the project is fully occupied, improvements to the State Highway are outside of local control; therefore, the payment of local fees toward future improvements is the only feasible mitigation available for this project. As such, payment of the SBCTIMF would reduce the project's impact to a less-than-significant level.

Intersection #2 – Miller Road / Buena Vista Road:

Although the intersection would continue to operate at acceptable overall operations of LOS B (AM) and LOS A (PM), the northbound and southbound Miller Road approaches to the intersection would both operate at LOS E during the AM peak hour, a change from LOS C under Background conditions. The northbound Miller Road approach would also operate at LOS D during the PM peak hour. However, the Caltrans Peak Hour signal warrant (see **Appendix K**) was not found to be met at this intersection under Cumulative Plus Project conditions.

Based upon the significance criteria identified in Section 1.3 of this report, the project would not represent a significant impact upon the operations of this intersection. No mitigation would be required.

Intersection #3 – Westside Boulevard – Westside Road / Buena Vista Road:

Overall operations of the intersection would operate at an unacceptable LOS F during the AM peak hour, and the northbound Westside Boulevard approach would also operate at an unacceptable LOS F. The northbound Westside Boulevard approach would operate at an unacceptable LOS D during the PM peak hour. The overall level of service is a change from LOS C, the side-street operations during the AM peak hour are an increase in delay, and the side-street operations in the PM are a change from LOS C, all compared with Cumulative Without Project conditions. The Caltrans Peak Hour signal warrant (see **Appendix K**) was found to be met during the AM peak hour but not found to be met during the PM peak hour.

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection, but only during the AM peak hour. For this reason, signalization of this intersection is not recommended. Instead, the all-way stop control warrant was partially evaluated at this intersection. Based on just the AM and PM peak hour volumes (i.e. two out of eight hours of an average day), the all-way stop

warrant would be met at this intersection. The fact that both roadways are designated as collector streets would also bolster the need for all-way stop control. It is thus recommended that the Westside / Buena Vista be converted to all-way stop control, and that an eastbound right turn lane be striped on Buena Vista Road. Implementation of these improvements is not included with the City of Hollister Capital Improvement Projects Program (CIPP). The project would be responsible for a fair-share of these improvements. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.

Intersection #5 – Westside Boulevard / San Juan Road – Fourth Street:

This intersection would operate at an overall LOS D (AM) and LOS F (PM) under Cumulative Plus Project conditions. The increase in delay over Cumulative conditions would be 6.8 seconds (AM) and 11.4 seconds (PM).

Based upon the significance criteria identified in Section 1.3 of this report, the project would represent a significant impact upon the operations of this intersection. Optimization of the signal timing on various phases of this signal is again recommended. The project would be responsible for funding this improvement, to be implemented by the City of Hollister. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.

8 SAFE ROUTES TO SCHOOL IMPROVEMENTS

In February 2014, a Safe Routes to School needs assessment was prepared for nearby Calaveras Elementary School on Buena Vista Road, about three blocks east of the project site. **Exhibit 14** identifies the opportunities and recommended improvements from this report that would be applicable to the study project (i.e. would be directly affected by students from the project traversing to the school).

The improvements included on **Exhibit 14** include curb extensions, pavement striping, and sidewalk improvements on Buena Vista Road between the project site and Calaveras Elementary. The project should contribute a fair-share towards these improvements.

In addition to the improvements identified on **Exhibit 14**, it is also recommended that the project construct a curb extension at the northwest corner of the Miller / Buena Vista intersection, as well as stripe a high visibility yellow crosswalk across the west leg of the intersection. These would be additional improvements that would connect the project site to the school for future students that would live within the project site. The project would be responsible for the implementation of these additional improvements.

9 CONCLUSIONS

This traffic impact analysis evaluated the potential impacts from the traffic that would be generated by development of the proposed residential annexation project on Buena Vista Road upon the surrounding road network.

Development of the project would create significant traffic impacts to the intersections that were studied. Specific mitigations at the study intersections are:

1. Signalization of the SR 156 / Buena Vista Road intersection (Intersection #1). The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee (SBCTIMF). Although payment of a fee alone would not guarantee the timely construction of the identified improvement to immediately mitigate the project impact by the time the project is fully occupied, improvements to the State Highway are outside of local control; therefore, the payment of local fees toward future improvements is the only feasible mitigation available for this project. As such, payment of the SBCTIMF would reduce the project's impact to a less-than-significant level. The project's payment of the San Benito County Transportation Impact Mitigation Fee would reduce the project's impact to a less-than-significant level.
2. Convert the Westside / Buena Vista intersection (Intersection #3) to all-way stop control. Stripe an eastbound Buena Vista Road right turn lane. The project would be responsible for a fair-share of this improvement. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.
3. Optimize of the signal timing on various phases at the Westside / San Juan – Fourth intersection (Intersection #5). The project would be responsible for funding this improvement, with implementation by the City of Hollister. With implementation of this mitigation, the project's impact would reduce to a less-than-significant level.

The project would be responsible for payment of the San Benito County Transportation Impact Mitigation Fee. As noted earlier, the project's payment of this fee will also reduce its impact at Intersection #1 – SR 156 / Buena Vista Road – to a less-than-significant level.

The project should also contribute a fair-share towards proposed Safe Route to School improvements near Calaveras Elementary School, specifically curb extensions, pavement striping, and sidewalk improvements on Buena Vista Road between the project site and Calaveras Elementary. The project would be fully responsible for construction of an additional curb extension at the northwest corner of the Miller / Buena Vista intersection and the additional striping of a high visibility yellow crosswalk across the west leg of the intersection.

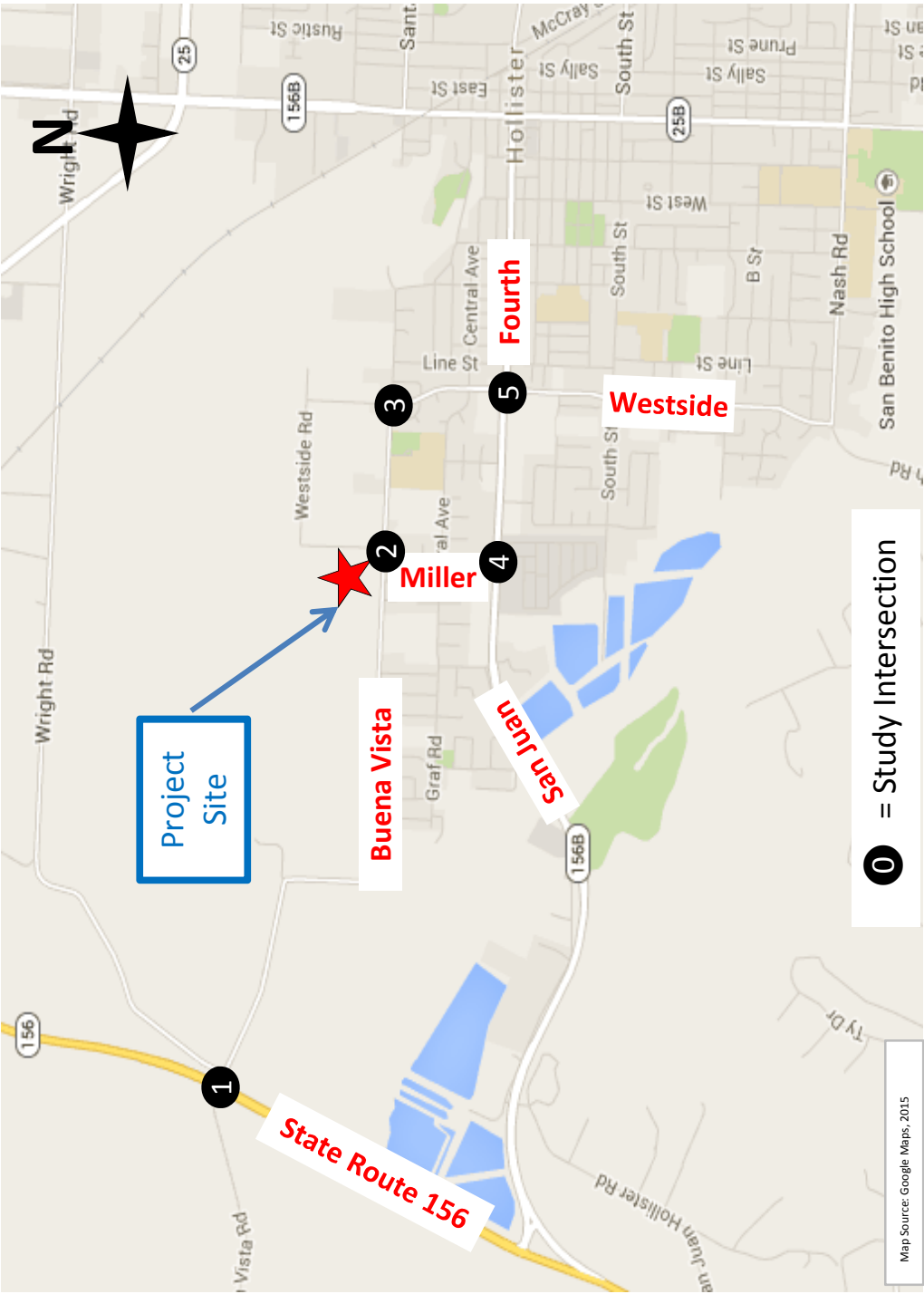
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3. *City of Hollister General Plan*, Moore Iacofano Goltsman, December 2005.
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7. *Safe Routes to School Need Assessment and Preliminary Recommendations – Calaveras Elementary & R. O. Hardin Elementary*, Alta Planning and Design, February 2014.

10.2 List of Contacts

1. Polaris Kinison Brown, EMC Planning Group, Monterey, California.
2. Teri Wissler Adam, EMC Planning Group, Monterey, California.



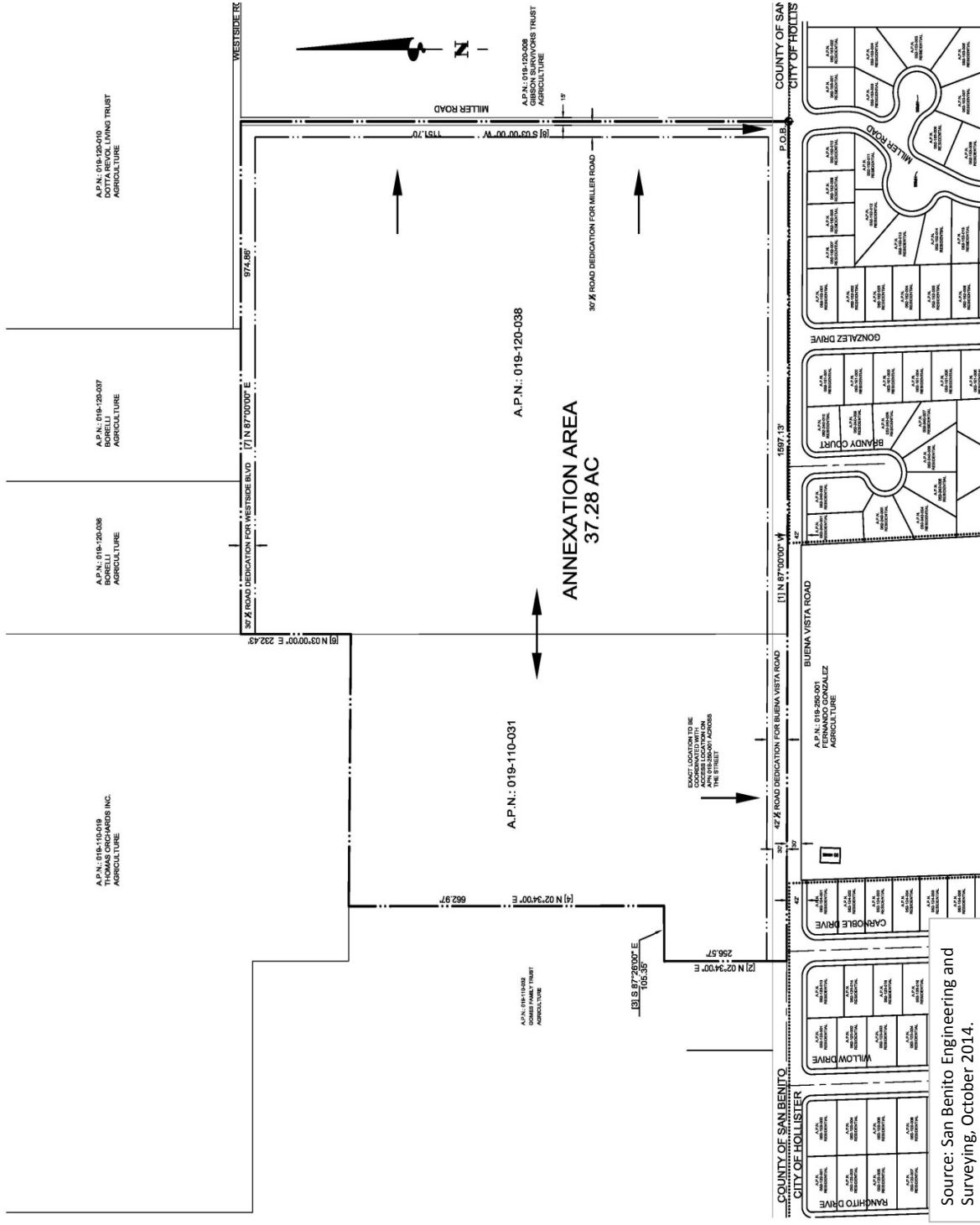
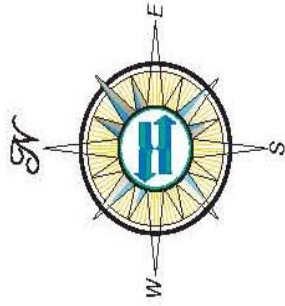
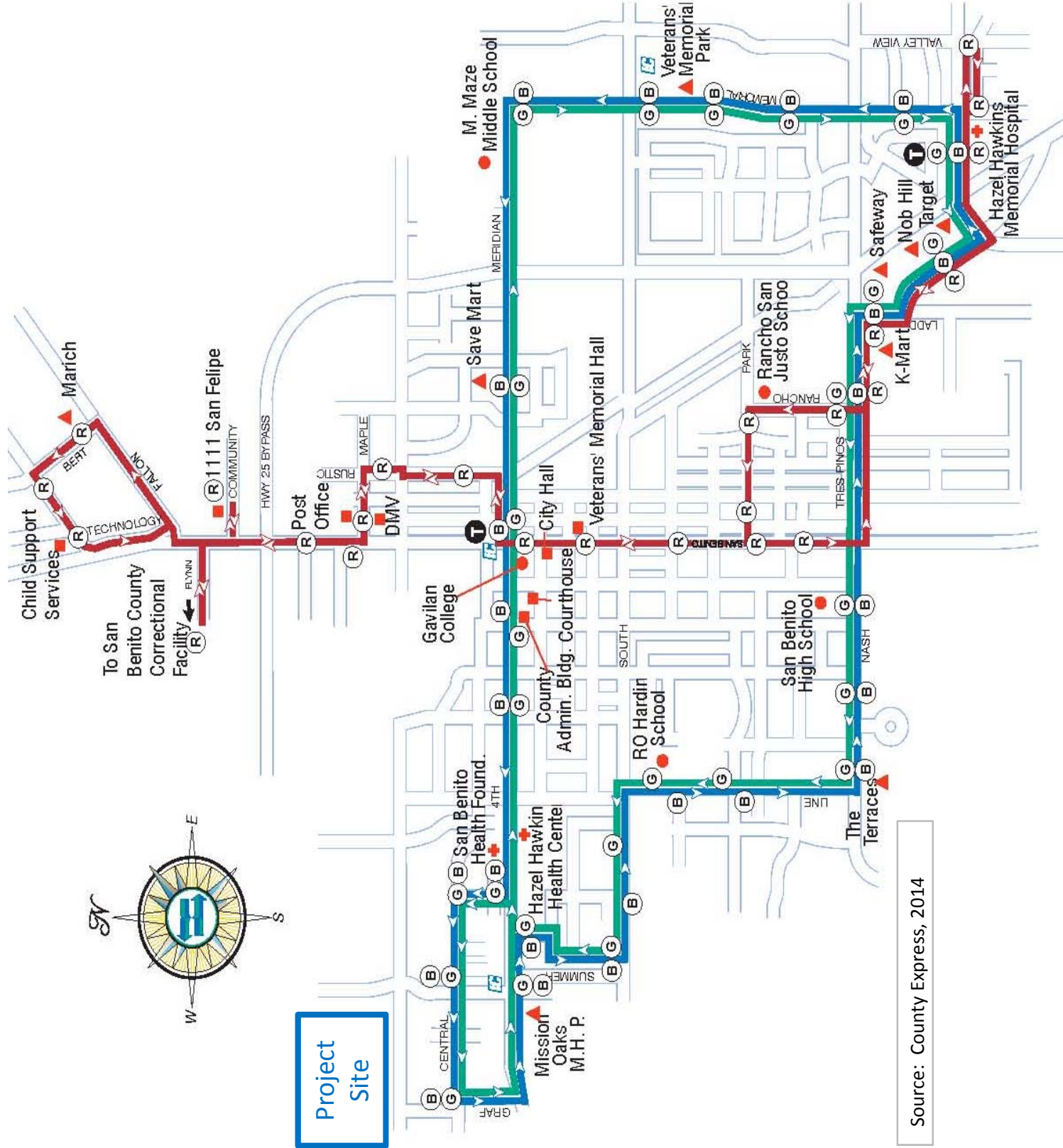


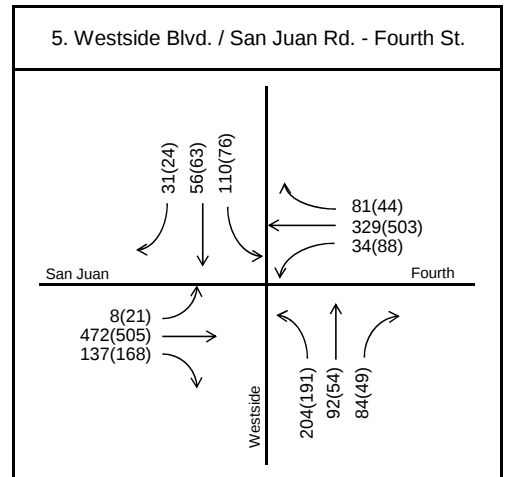
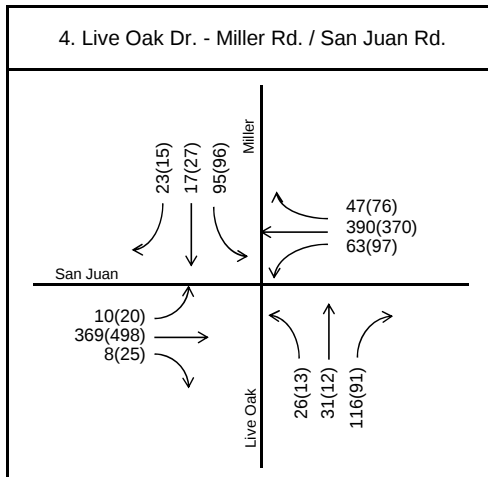
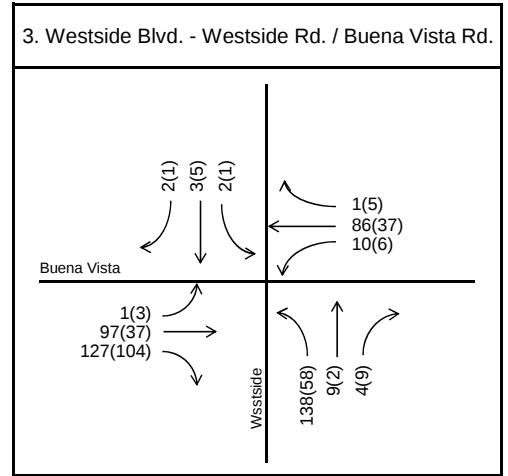
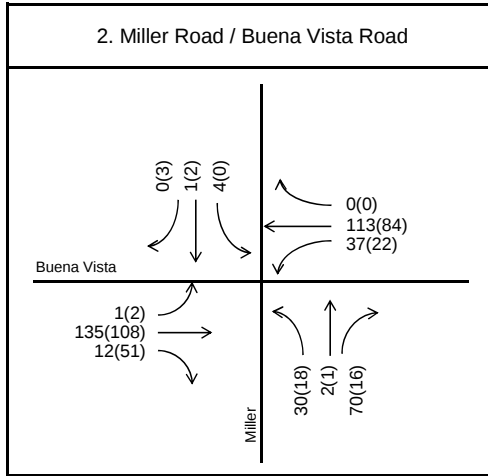
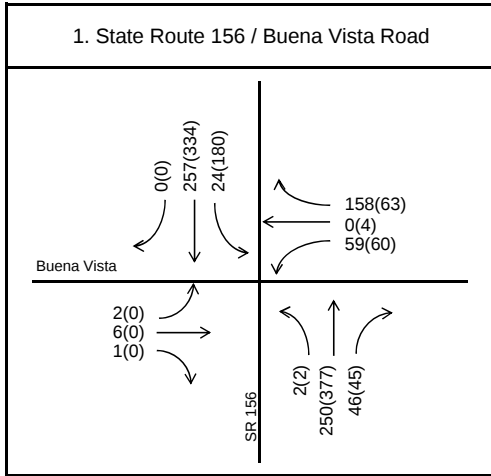
EXHIBIT 2 Project Annexation Area



Project Site



Source: County Express, 2014



XX (YY) = AM (PM)

	N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	LOS Standard	Existing Conditions				Existing Plus Project Conditions				Background Conditions				Background Plus Project Conditions				Cumulative Without Project Conditions				Cumulative Plus Project Conditions			
						AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS	AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS	AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS	AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS	AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS	AM Peak Hr. Delay (sec)	LOS	PM Peak Hr. Delay (sec)	LOS
1	Slate Route	Buena Vista Road	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (EB/WB) Eastbound Approach Westbound Approach	C/D	3.7 14.1 12.2	A B B	4.4 0.0 24.0	A A C	4.4 14.8 12.5	A B B	5.5 0.0 26.5	A A D	4.8 15.7 12.9	A C B	5.1 0.0 25.1	A A D	4.8 15.7 12.9	A C B	6.5 0.0 29.0	A A D	5.6 17.0 14.5	A C B	12.2 0.0 60.4	B A F	6.3 18.3 15.3	A C C	19.0 0.0 97.1	C A F
2	Miller Road	Buena Vista Road	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (NB/SB) Northbound Approach Southbound Approach	C (C) (C)	3.9 11.9 14.2	A B B	2.0 10.4 9.9	A B A	7.2 16.9 19.9	A C C	5.5 15.4 13.8	A C B	7.4 18.5 22.2	A C C	1.7 10.9 10.3	A B B	7.4 18.5 22.2	A C C	5.4 17.2 14.9	A C B	3.6 17.8 22.1	A C C	1.4 14.2 12.2	A B B	12.5 44.5 46.5	B D E	6.9 32.0 21.8	A D C
3	Westside Boulevard - Westside Road	Buena Vista Road	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (NB/SB) Northbound Approach Southbound Approach	C (C) (C)	5.9 17.6 12.0	A C B	3.2 10.3 10.3	A B B	6.7 20.9 12.6	A C B	4.5 11.4 10.6	A B B	8.6 25.1 12.7	A D B	3.6 10.9 10.6	A B B	8.6 25.1 12.7	A D B	4.8 12.1 10.9	A B B	24.8 150.6 21.2	C F C	5.0 19.9 15.9	A C C	55.3 246.5 23.3	F F C	8.2 31.4 17.0	A D C
4	Live Oak Drive - Miller Road	San Juan Road	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Signal	C	15.5	B	18.3	B	15.5	B	18.4	B	17.0	B	23.4	C	17.1	B	23.0	C	17.7	B	27.3	C	17.8	B	27.0	C
5	Westside Boulevard	San Juan Road - Fourth Street	NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Signal	C	32.8	C	38.1	D	37.9	D	44.2	D	45.4	D	65.0	E	52.4	D	74.3	E	47.4	D	70.8	E	54.2	D	82.2	F
6	Project Driveway #1	Buena Vista Road	N/A	N/A	C					2.8 11.1	A B	2.3 11.3	A B	2.7 11.6	A B	N/A		34.4	C	40.1	D					2.2 14.3	A B	1.7 14.8	A B
7	Miller Road	Project Driveway #2	N/A	N/A	C					8.2 8.6	A A	7.8 8.5	A A	8.2 8.6	A A	N/A		8.2 8.6	A A	7.8 8.5	A A					8.2 8.6	A A	7.8 8.5	A A

Notes:

- L, T, R = Left, Through, Right
- NB, SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
- N/A = Not Applicable. Intersection does not exist under this conditions.
- Analysis performed using 2010 Highway Capacity Manual methodologies.
- Level of service standard for the City of Hollister is LOS C.
- Items highlighted in pink operate below the level of service standard for the City of Hollister (i.e. LOS C).
- Items in bold indicate a significant impact.

EXHIBIT 5A

Intersection

Levels of Service

N-S Street	E-W Street	Existing Lane Configuration	Existing Intersection Control	Existing Plus Project Conditions	Background Plus Project Conditions	Cumulative Plus Project Conditions
1	State Route 156	Buena Vista Road NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (EB/WB) Eastbound Approach Westbound Approach	Signalize Intersection	Signalize Intersection	Signalize Intersection
2	Miller Road	Buena Vista Road NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (NB/SB) Northbound Approach Southbound Approach	None Required	None Required	None Required
3	Westside Boulevard - Westside Road	Buena Vista Road NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Two-Way Stop (NB/SB) Northbound Approach Southbound Approach	None Required	None Required	a. Convert to All-Way Stop Control b. Add an EB R
4	Miller Road - Live Oak Drive	San Juan Road NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Signal	None Required	None Required	None Required
5	Westside Boulevard	San Juan Road - Fourth Street NB 1-L/T/R SB 1-L/T/R EB 1-L/T/R WB 1-L/T/R	Signal	Optimize Signal Timing	Optimize Signal Timing	Optimize Signal Timing
6	Project Driveway #1	Buena Vista Road N/A	N/A	None Required	None Required	None Required
7	Miller Road	Project Driveway #2 N/A	N/A	None Required	None Required	None Required

Notes:

1. L, T, R = Left, Through, Right
2. NB; SB, EB, WB = Northbound, Southbound, Eastbound, Westbound
3. N/A = Not Applicable. Intersection does not exist under this condition.



Hatch Mott
MacDonald

353309 LOS1.xlsx

EXHIBIT 5B Recommended Intersection Improvements

Project Trip Generation											
<u>TRIP GENERATION RATES</u>	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR				PM PEAK HOUR				
			PEAK HOUR RATE	% OF ADT	% IN	% OUT	PEAK HOUR RATE	% OF ADT	% IN	% OUT	%
Single-Family Detached Housing (per dwelling unit)	210	9.52	0.75	8%	25%	75%	1.00	11%	63%	37%	
<u>GENERATED TRIPS</u>	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR				PM PEAK HOUR				
			PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	
Single-Family Detached Housing	336 units	3,199	252	8%	63	189	336	11%	212	124	
Total Project Trip Generation:		3,199	252	63	189		336	212	124		

Notes:

1. Trip generation rates from Institute of Transportation Engineers, "Trip Generation Manual," 9th Edition, 2012, unless otherwise noted.

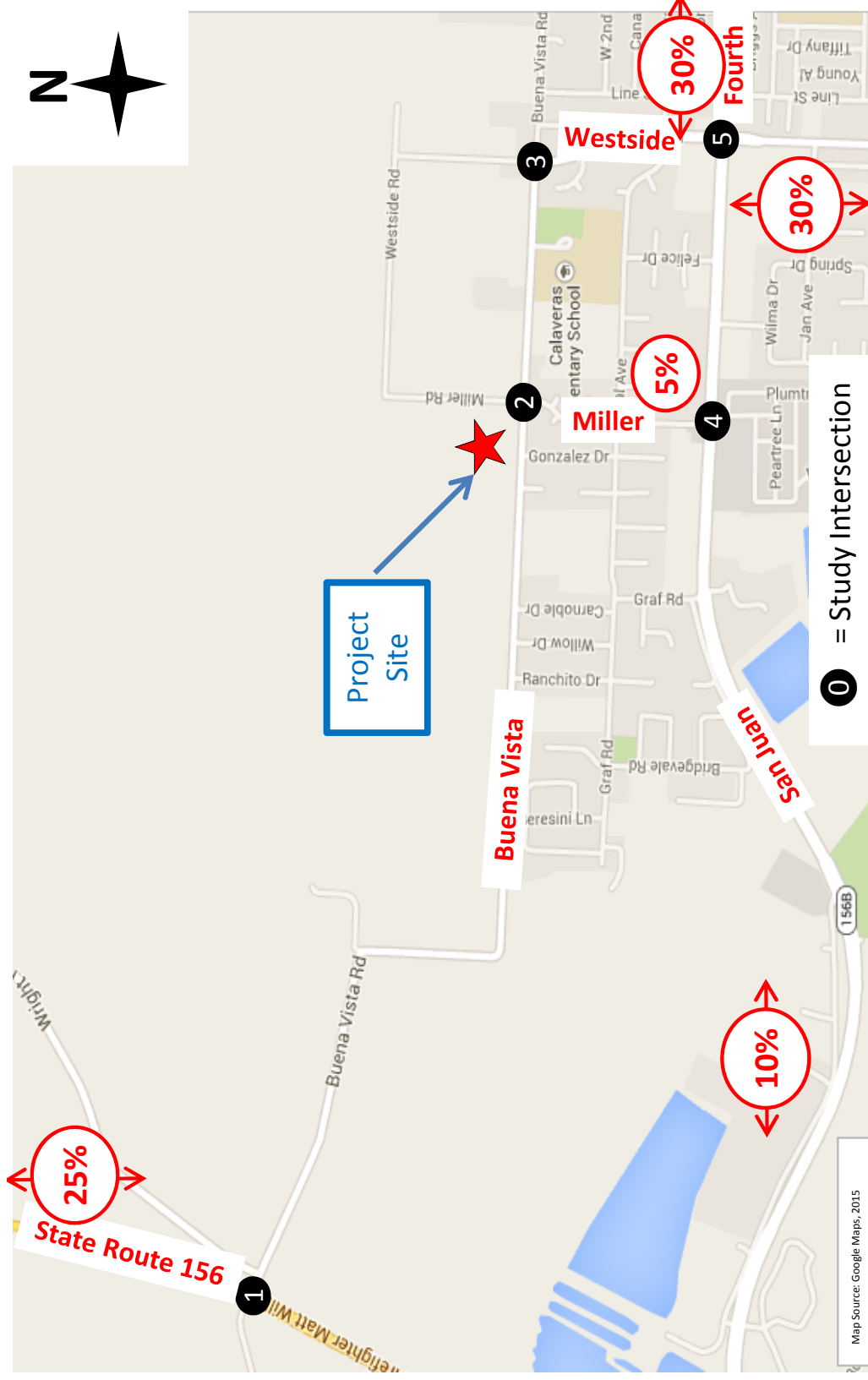
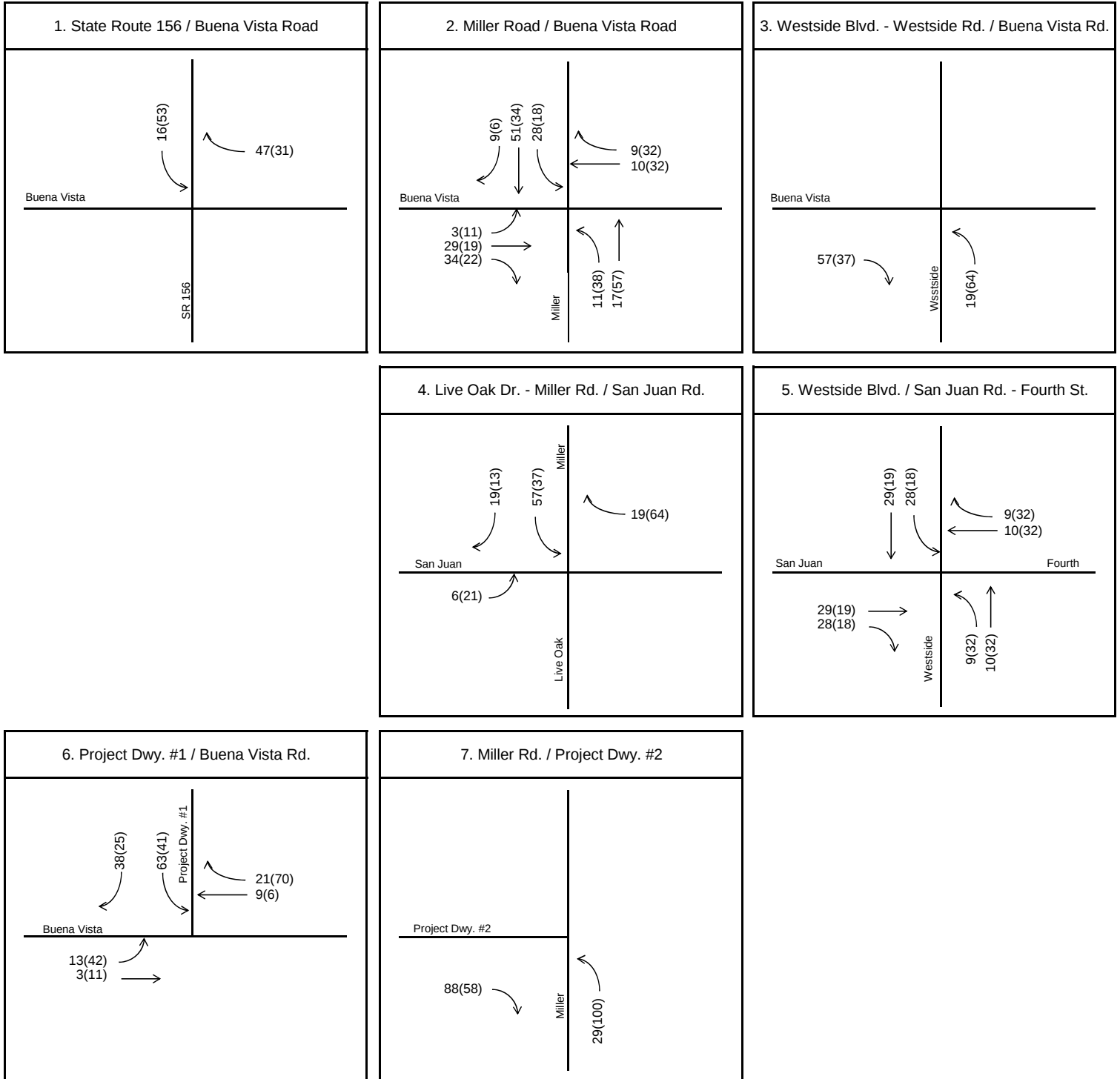


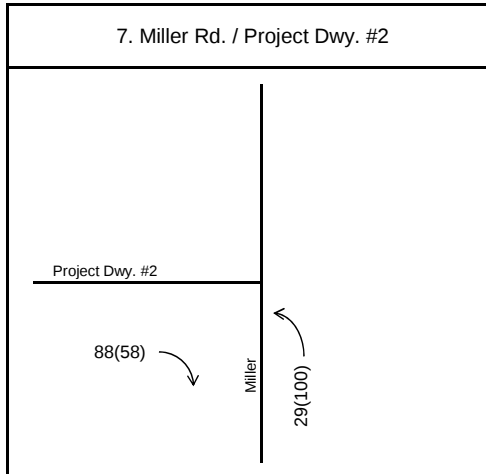
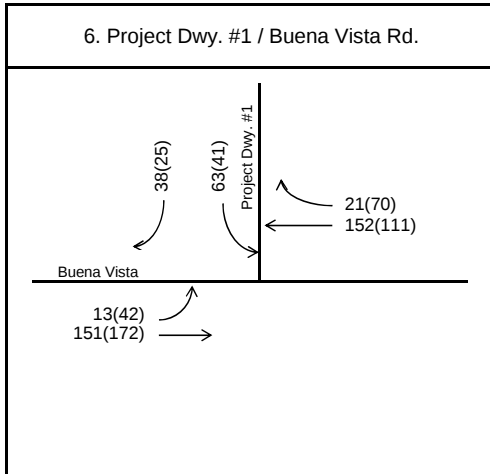
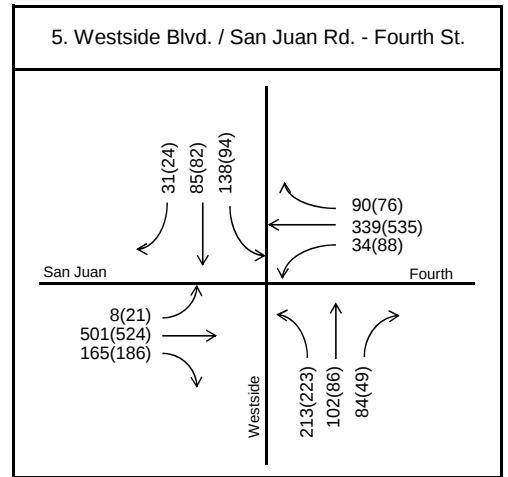
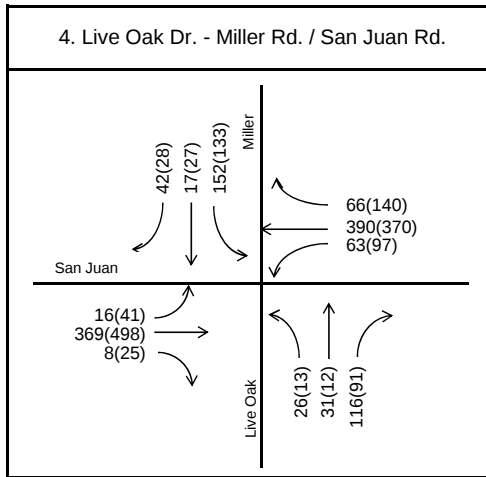
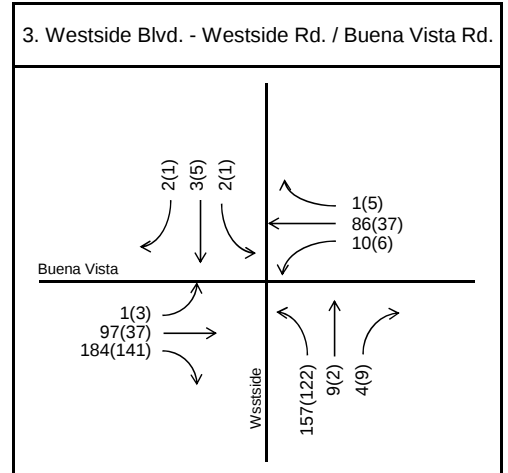
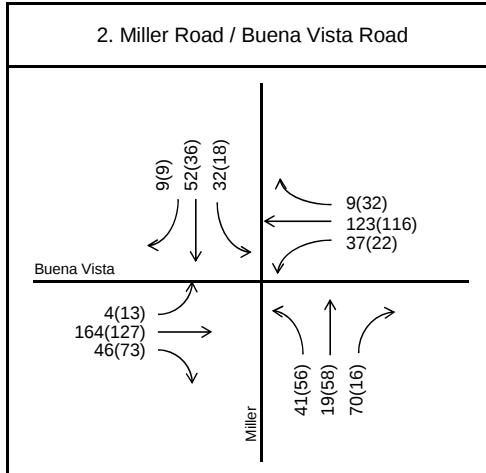
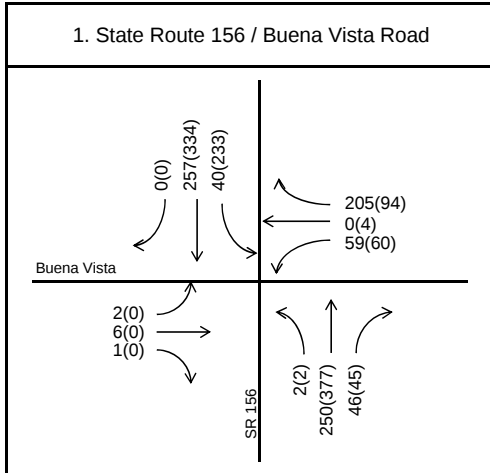
EXHIBIT 7A

Project

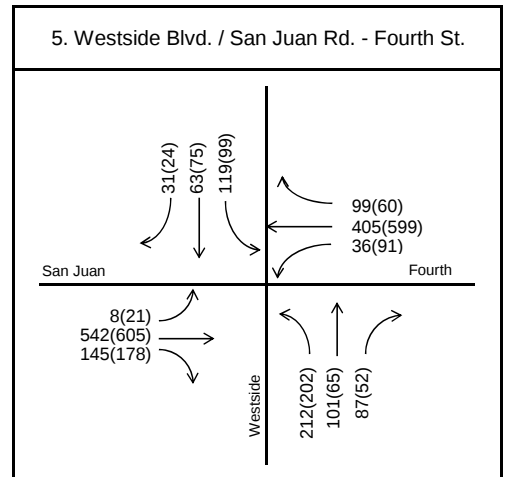
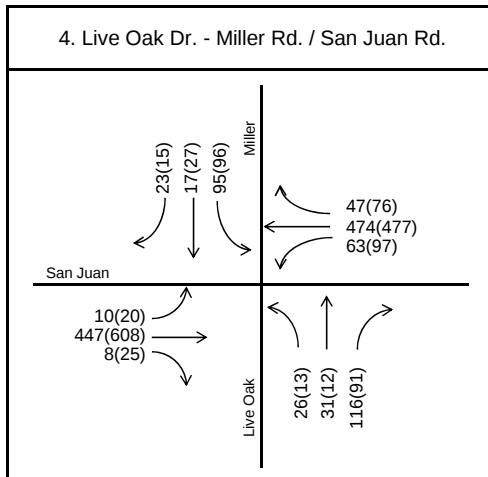
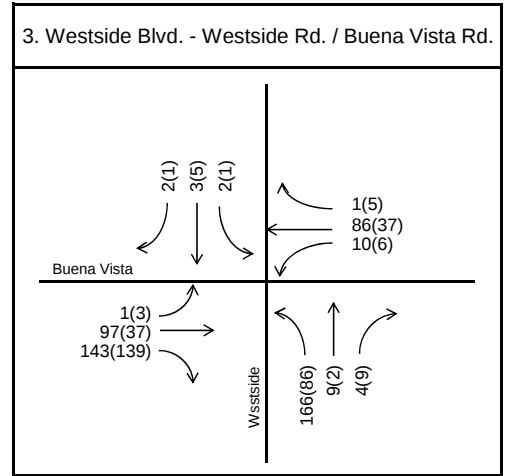
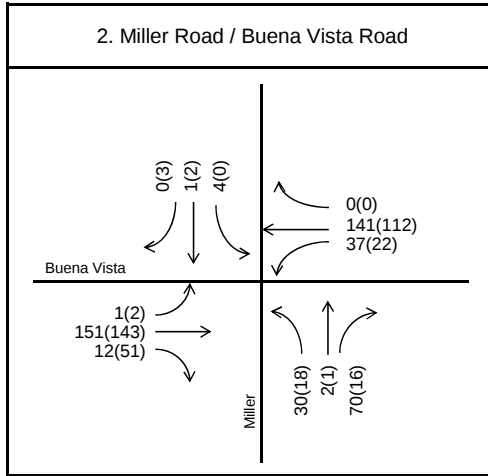
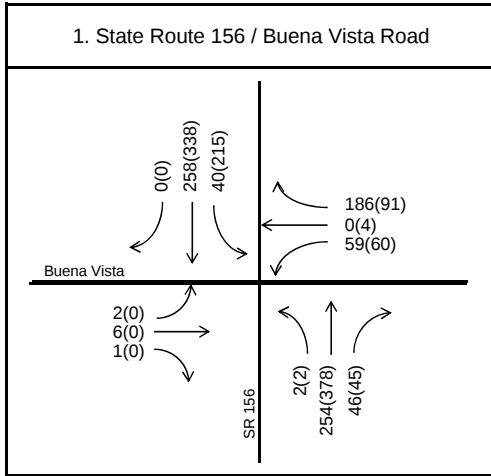
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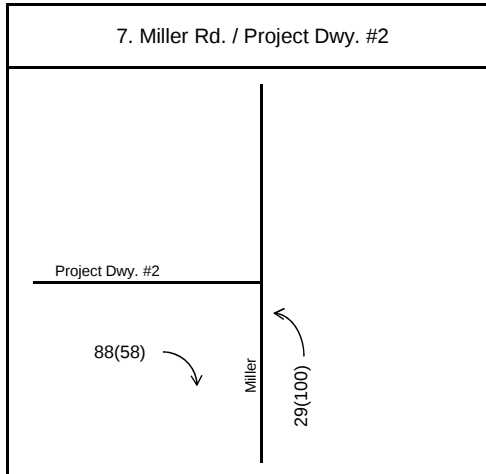
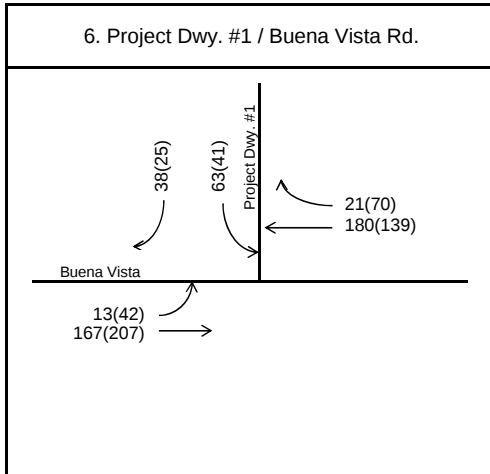
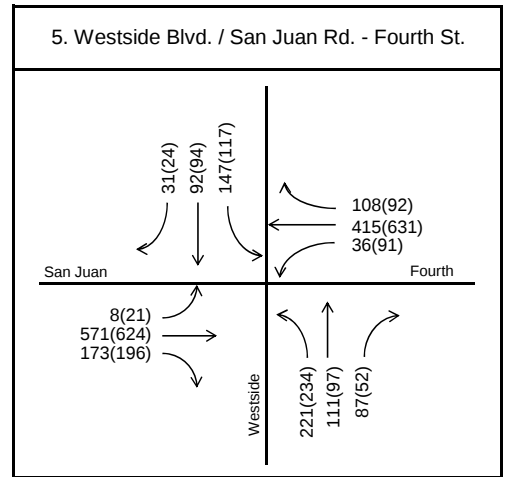
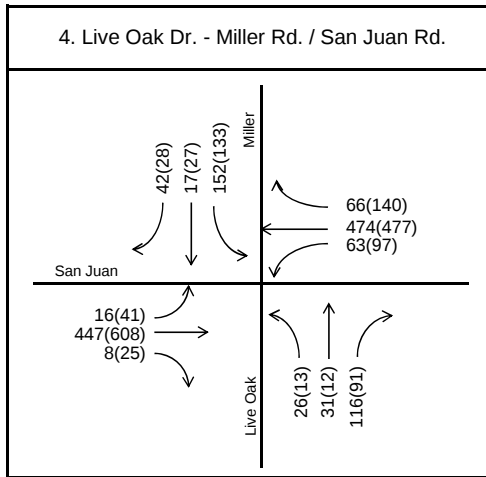
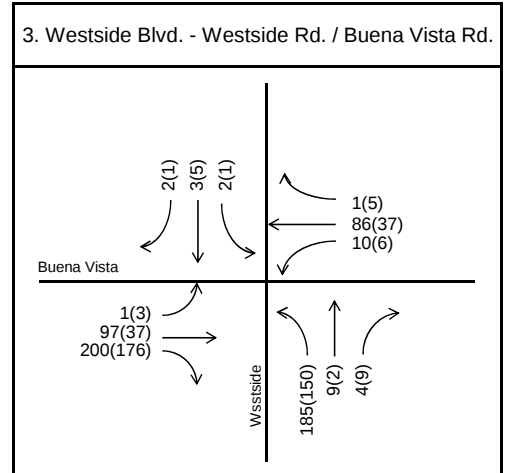
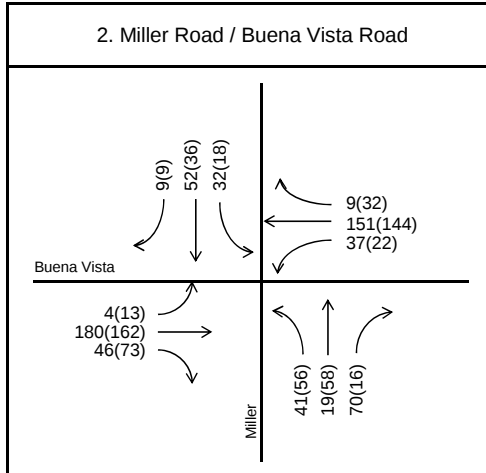
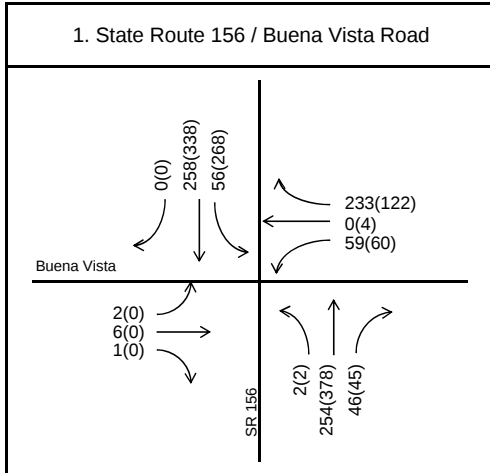
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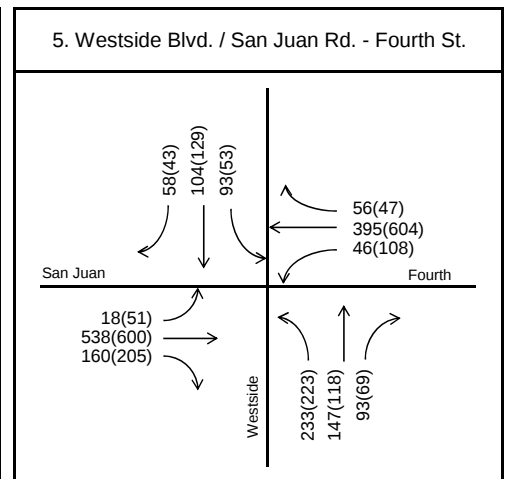
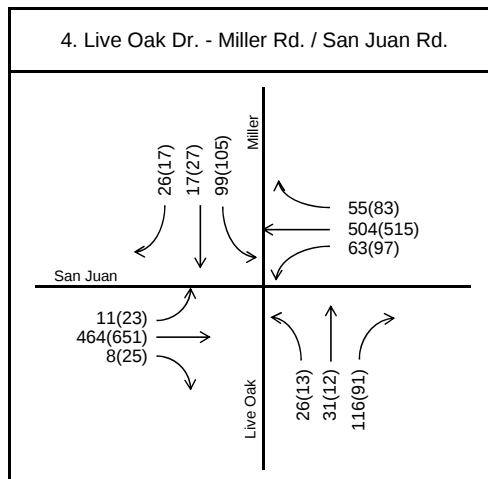
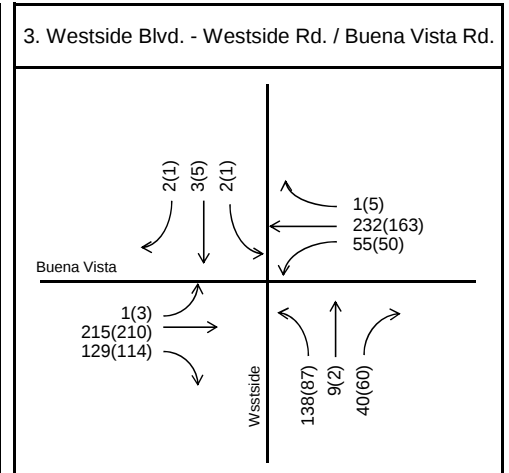
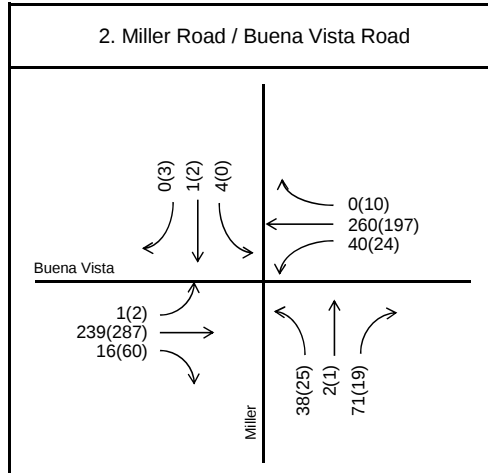
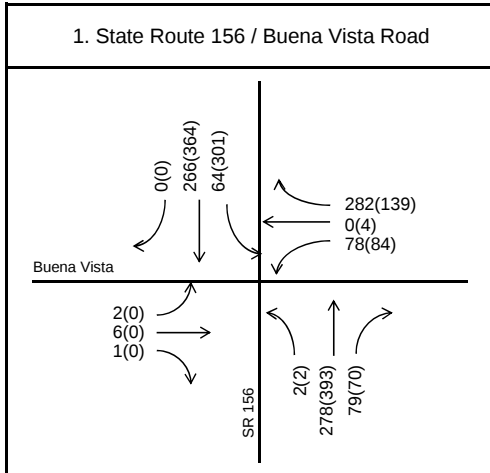
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XX (YY) = AM (PM)



XX (YY) = AM (PM)



XX (YY) = AM (PM)

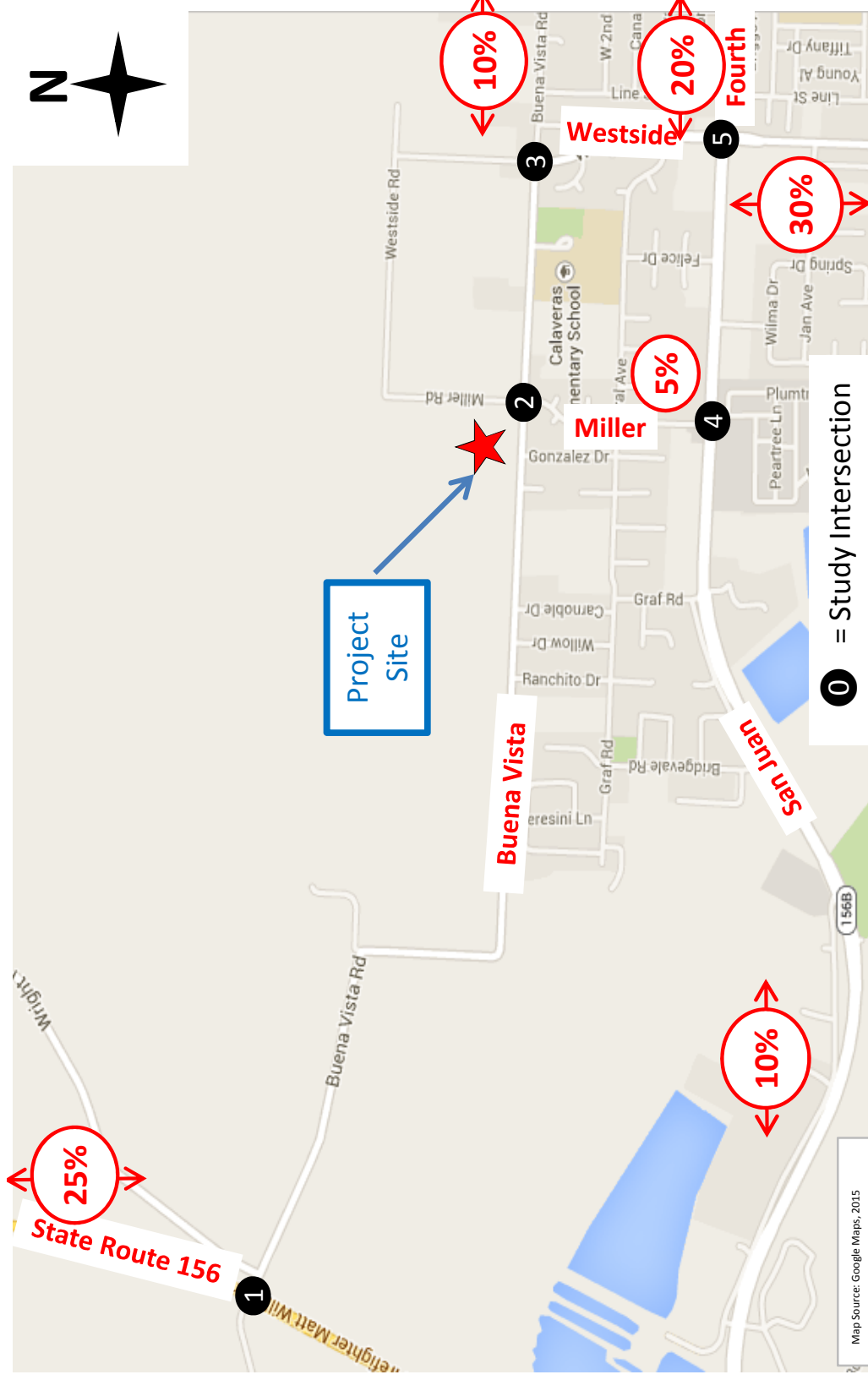
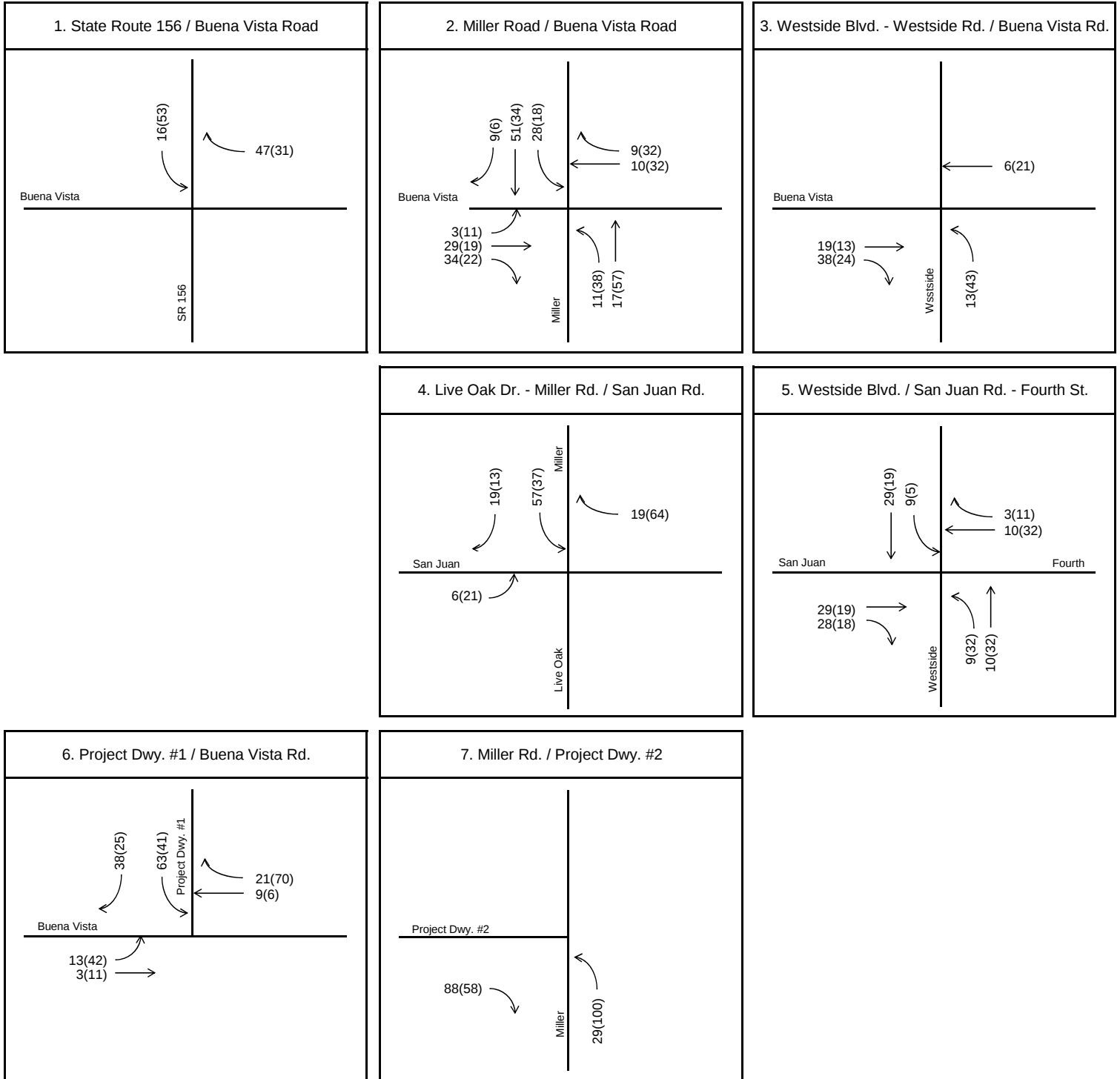


EXHIBIT 12A

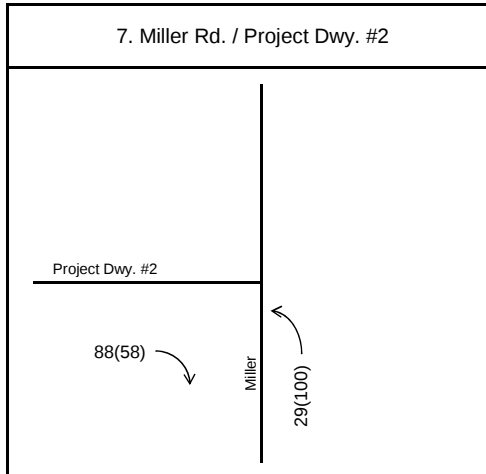
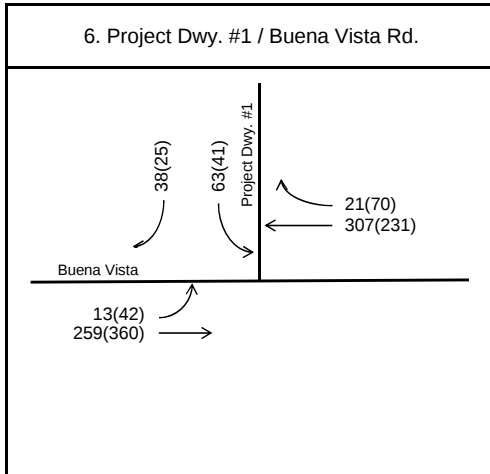
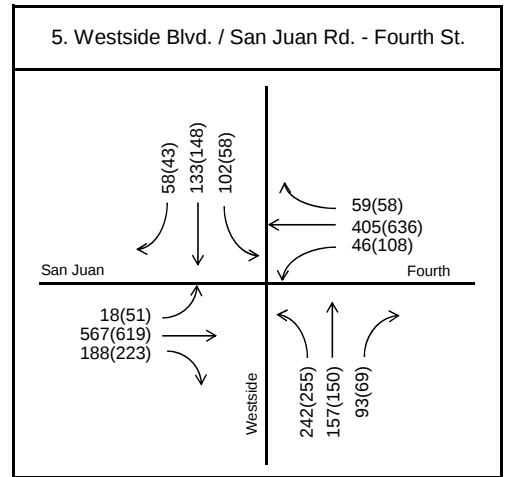
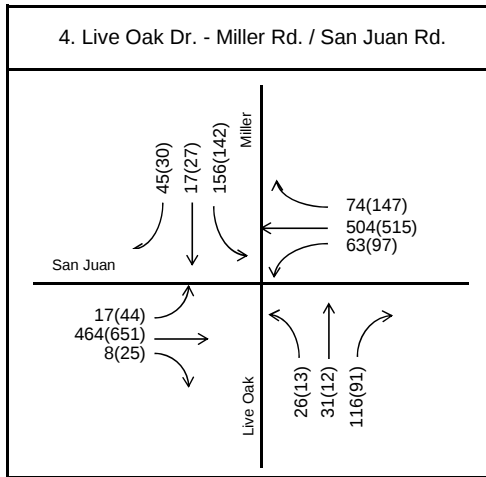
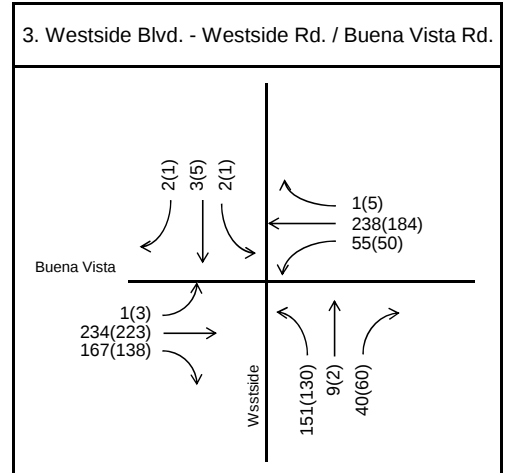
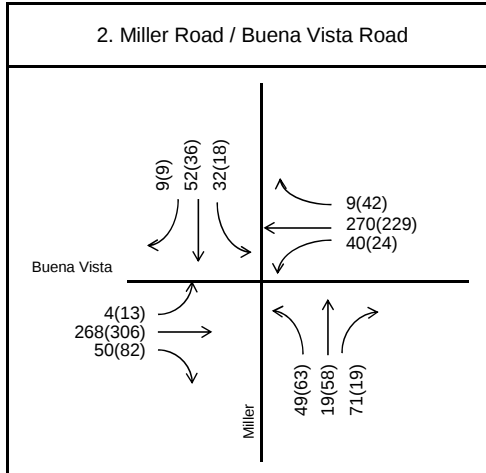
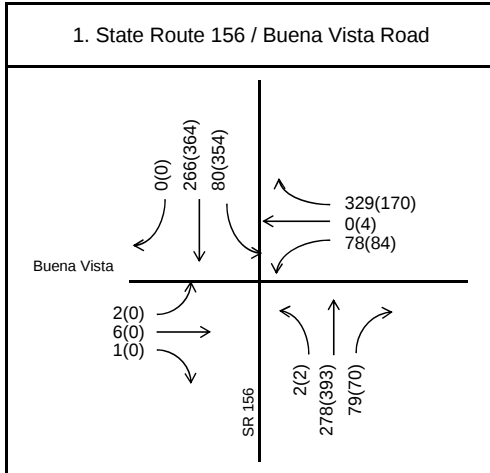
Project

Trip Distribution

(Cumulative Condition)



XX (YY) = AM (PM)



XX (YY) = AM (PM)

Location	Reported or Observed Challenge	Recommended Improvement	Lead Agency
3. Buena Vista Road and Miller Road	Cars routinely stop well past northbound limit line at this intersection because it is difficult to see traffic on Buena Vista Road.	a. Construct curb extensions at southeast and southwest corners. b. Stripe high visibility yellow crosswalk on south leg. c. Stripe advance top line on south leg.	City of Hollister
6. Buena Vista Road (west of school, south side)	No sidewalk, children walk in roadway.	Construct sidewalk along frontage of undeveloped property.	City of Hollister

Source: *Safe Routes to School Needs Assessment and Preliminary Recommendations - Calaveras Elementary and R. O. Hardin Elementary*, Alta Planning and Design and Harris & Associates, February 2014.

EXHIBIT 14
Opportunities and
Recommended Improvements
near Calaveras Elementary

Hatch Mott MacDonald

Appendix A

Level of Service (LOS) Description

A1. Signalized Intersections

A2. Unsignalized Intersections with All-Way Stop Control (AWSC)

A3. Unsignalized Intersections with Two-Way Stop Control (TWSC)

APPENDIX A1

LEVEL OF SERVICE (LOS) DESCRIPTION SIGNALIZED INTERSECTIONS

The capacity of an urban street is related primarily to the signal timing and the geometric characteristics of the facility as well as to the composition of traffic on the facility. Geometrics are a fixed characteristic of a facility. Thus, while traffic composition may vary somewhat over time, the capacity of a facility is generally a stable value that can be significantly improved only by initiating geometric improvements. A traffic signal essentially allocates time among conflicting traffic movements that seek to use the same space. The way in which time is allocated significantly affects the operation and the capacity of the intersection and its approaches.

The methodology for signalized intersection is designed to consider individual intersection approaches and individual lane groups within approaches. A lane group consists of one or more lanes on an intersection approach. The outputs from application of the method described in the HCM 2010 are reported on the basis of each lane. For a given lane group at a signalized intersection, three indications are displayed: green, yellow and red. The red indication may include a short period during which all indications are red, referred to as an all-red interval and the yellow indication forms the change and clearance interval between two green phases.

The methodology for analyzing the capacity and level of service must consider a wide variety of prevailing conditions, including the amount and distribution of traffic movements, traffic composition, geometric characteristics, and details of intersection signalization. The methodology addresses the capacity, LOS, and other performance measures for lane groups and the intersection approaches and the LOS for the intersection as a whole.

Capacity is evaluated in terms of the ratio of demand flow rate to capacity (v/c ratio), whereas LOS is evaluated on the basis of control delay per vehicle (in seconds per vehicle). The methodology does not take into account the potential impact of downstream congestion on intersection operation, nor does the methodology detect and adjust for the impacts of turn-pocket overflows on through traffic and intersection operation.

LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS

(Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	<10
B	>10 - 20
C	>20 - 35
D	>35 - 55
E	>55 - 80
F	>80

APPENDIX A2

LEVEL OF SERVICE (LOS) DESCRIPTION UNSIGNALIZED INTERSECTIONS WITH ALL-WAY STOP CONTROL (AWSC)

AWSC intersections require every vehicle to stop at the intersection before proceeding. Since each driver must stop, the judgement as to whether to proceed into the intersection is a function of traffic conditions on the other approaches. While giving priority to the driver on the right is a recognized rule in some areas, it is not a good descriptor of actual intersection operations. What happens is the development of a consensus of right-of-way that alternates between the drivers on the intersection approaches, a consensus that depends primarily on the intersection geometry and the arrival patterns at the stop line.

If no traffic is present on the other approaches, a driver can proceed immediately after the stop is made. If there is traffic on one or more of the other approaches, a driver proceeds only after determining that there are no vehicles currently in the intersection and that it is the driver's turn to proceed. Since no traffic signal controls the stream movement or allocates the right-of-way to each conflicting stream, the rate of departure is controlled by the interaction between the traffic streams themselves.

For AWSC intersections, the average control delay (in seconds per vehicle) is used as the primary measure of performance. Control delay is the increased time of travel for a vehicle approaching and passing through an AWSC intersection, compared with a free-flow vehicle if it were not required to slow down or stop at the intersection.

The criteria for AWSC intersections have different threshold values than do those for signalized intersections, primarily because drivers expect different levels of performance from different kinds of traffic control devices (i.e. traffic signals, two way stop or all way stop, etc.). The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection and a higher level of control delay is acceptable at a signalized intersection for the same LOS.

For AWSC analysis using the HCM 2010 method, the LOS shown reflects the weighted average of the delay on each of the approaches.

LEVEL OF SERVICE (LOS) CRITERIA FOR AWSC INTERSECTIONS (Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

APPENDIX A3

LEVEL OF SERVICE (LOS) DESCRIPTION UNSIGNALIZED INTERSECTIONS WITH TWO-WAY STOP CONTROL (TWSC)

TWSC intersections are widely used and stop signs are used to control vehicle movements at such intersections. At TWSC intersections, the stop-controlled approaches are referred to as the minor street approaches; they can be either public streets or private driveways. The intersection approaches that are not controlled by stop signs are referred to as the major street approaches. A three-leg intersection is considered to be a standard type of TWSC intersection if the single minor street approach (i.e. the stem of the T configuration) is controlled by a stop sign. Three-leg intersections where two of the three approaches are controlled by stop signs are a special form of unsignalized intersection control.

At TWSC intersections, drivers on the controlled approaches are required to select gaps in the major street flow through which to execute crossing or turning maneuvers on the basis of judgment. In the presence of a queue, each driver on the controlled approach must use some time to move into the front-of-queue position and prepare to evaluate gaps in the major street flow. Capacity analysis at TWSC intersections depends on a clear description and understanding of the interaction of drivers on the minor or stop-controlled approach with drivers on the major street. Both gap acceptance and empirical models have been developed to describe this interaction.

Thus, the capacity of the controlled legs is based on three factors:

- the distribution of gaps in the major street traffic stream;
- driver judgment in selecting gaps through which to execute the desired maneuvers; and
- the follow-up time required by each driver in a queue.

The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incident, control, traffic or geometric delay. Average control delay for any particular minor movement is a function of the capacity of the approach and the degree of saturation and referred to as level of service.

LEVEL OF SERVICE (LOS) CRITERIA FOR TWSC INTERSECTIONS (Reference 2010 Highway Capacity Manual)

Level of Service	Control Delay (seconds / vehicle)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Appendix B

Traffic Counts

Traffic Data Service

Campbell, CA
(408) 377-2988
tdsbay@cs.com

File Name : 1AM FINAL
Site Code : 00000001
Start Date : 3/10/2015
Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	SR-156 Southbound					BUENA VISTA RD Westbound					SR-156 Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	61	4	0	65	36	0	8	0	44	6	70	0	0	76	0	0	1	0	1	186
07:15 AM	0	68	7	0	75	42	0	20	0	62	11	63	0	0	74	0	0	0	0	0	211
07:30 AM	0	48	7	0	55	65	0	13	0	78	11	60	0	0	71	0	1	2	0	3	207
07:45 AM	0	70	5	0	75	28	0	13	0	41	17	58	1	0	76	0	2	0	0	2	194
Total	0	247	23	0	270	171	0	54	0	225	45	251	1	0	297	0	3	3	0	6	798
08:00 AM	0	71	5	0	76	23	0	13	0	36	7	69	1	0	77	1	3	0	0	4	193
08:15 AM	0	69	8	0	77	19	1	12	0	32	12	70	0	0	82	0	1	0	0	1	192
08:30 AM	0	66	10	0	76	16	1	10	0	27	18	55	2	0	75	0	0	0	0	0	178
08:45 AM	1	62	4	0	67	18	0	10	0	28	10	71	0	0	81	0	0	0	0	0	176
Total	1	268	27	0	296	76	2	45	0	123	47	265	3	0	315	1	4	0	0	5	739
Grand Total	1	515	50	0	566	247	2	99	0	348	92	516	4	0	612	1	7	3	0	11	1537
Apprch %	0.2	91	8.8	0		71	0.6	28.4	0		15	84.3	0.7	0		9.1	63.6	27.3	0		
Total %	0.1	33.5	3.3	0	36.8	16.1	0.1	6.4	0	22.6	6	33.6	0.3	0	39.8	0.1	0.5	0.2	0	0.7	
Vehicles	1	384	48	0	433	242	2	92	0	336	91	421	4	0	516	1	7	3	0	11	1296
% Vehicles	100	74.6	96	0	76.5	98	100	92.9	0	96.6	98.9	81.6	100	0	84.3	100	100	100	0	100	84.3
Buses	0	0	2	0	2	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	6
% Buses	0	0	4	0	0.4	0.4	0	0	0	0.3	1.1	0.4	0	0	0.5	0	0	0	0	0	0.4
Trucks	0	131	0	0	131	4	0	7	0	11	0	93	0	0	93	0	0	0	0	0	235
% Trucks	0	25.4	0	0	23.1	1.6	0	7.1	0	3.2	0	18	0	0	15.2	0	0	0	0	0	15.3

	SR-156 Southbound				BUENA VISTA RD Westbound				SR-156 Northbound				BUENA VISTA RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	68	7	75	42	0	20	62	11	63	0	74	0	0	0	0	211
07:30 AM	0	48	7	55	65	0	13	78	11	60	0	71	0	1	2	3	207
07:45 AM	0	70	5	75	28	0	13	41	17	58	1	76	0	2	0	2	194
08:00 AM	0	71	5	76	23	0	13	36	7	69	1	77	1	3	0	4	193
Total Volume	0	257	24	281	158	0	59	217	46	250	2	298	1	6	2	9	805
% App. Total	0	91.5	8.5		72.8	0	27.2		15.4	83.9	0.7		11.1	66.7	22.2		
PHF	.000	.905	.857	.924	.608	.000	.738	.696	.676	.906	.500	.968	.250	.500	.250	.563	.954

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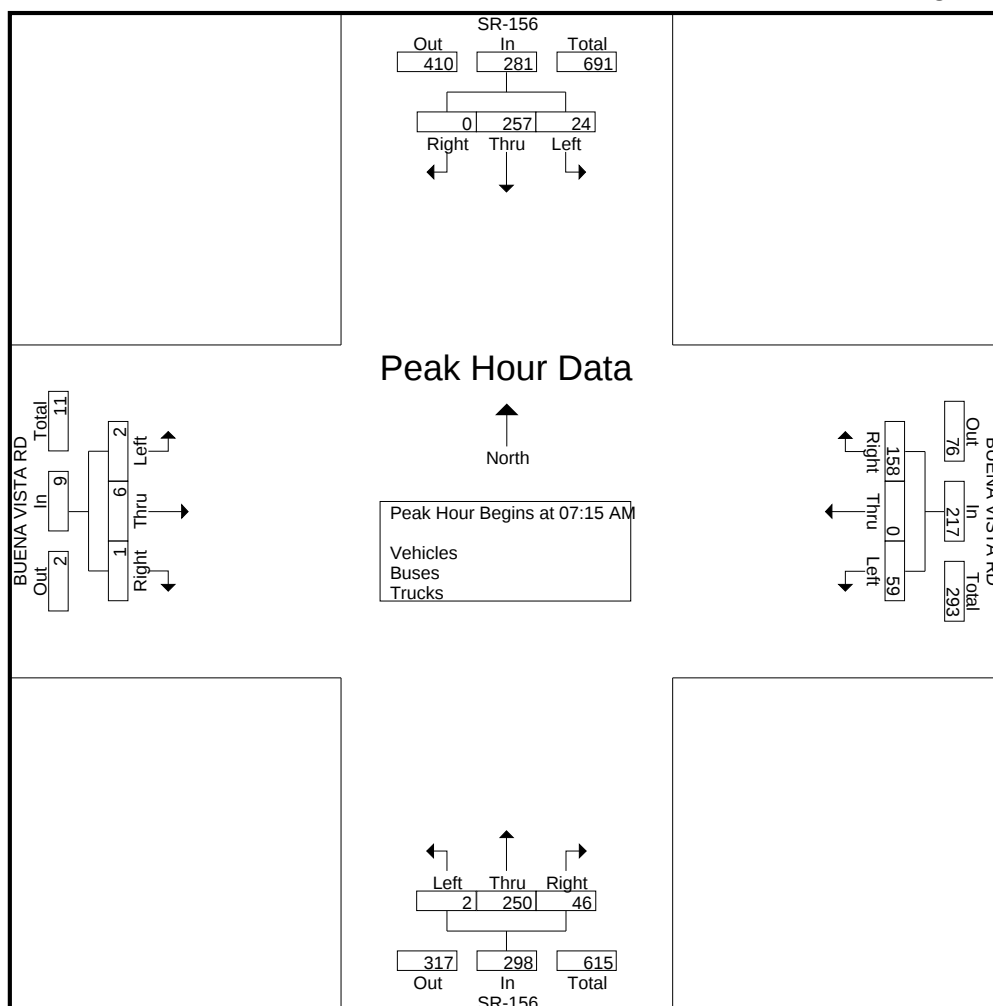
tdsbay@cs.com

File Name : 1AM FINAL

Site Code : 00000001

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File Name : 2AM FINAL

Site Code : 00000002

Start Date : 3/10/2015

Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	MILLER RD Southbound					BUENA VISTA RD Westbound					MILLER RD Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	12	2	0	14	1	0	9	0	10	2	8	0	0	10	34
07:15 AM	0	0	0	0	0	0	24	1	0	25	1	0	8	1	10	1	13	0	1	15	50
07:30 AM	0	0	0	0	0	0	22	2	1	25	11	0	12	0	23	3	12	0	0	15	63
07:45 AM	0	0	1	0	1	0	33	9	0	42	21	0	11	6	38	4	51	0	0	55	136
Total	0	0	1	0	1	0	91	14	1	106	34	0	40	7	81	10	84	0	1	95	283
08:00 AM	0	1	3	0	4	0	37	16	0	53	31	0	4	1	36	1	49	1	0	51	144
08:15 AM	0	0	0	0	0	0	21	10	0	31	7	2	3	2	14	4	23	0	0	27	72
08:30 AM	0	1	0	0	1	0	14	2	0	16	2	0	4	0	6	4	12	0	0	16	39
08:45 AM	0	0	2	0	2	0	15	0	0	15	2	1	10	0	13	1	8	0	0	9	39
Total	0	2	5	0	7	0	87	28	0	115	42	3	21	3	69	10	92	1	0	103	294
Grand Total	0	2	6	0	8	0	178	42	1	221	76	3	61	10	150	20	176	1	1	198	577
Apprch %	0	25	75	0		0	80.5	19	0.5		50.7	2	40.7	6.7		10.1	88.9	0.5	0.5		
Total %	0	0.3	1	0	1.4	0	30.8	7.3	0.2	38.3	13.2	0.5	10.6	1.7	26	3.5	30.5	0.2	0.2	34.3	
Vehicles	0	2	6	0	8	0	178	41	1	220	76	3	59	10	148	20	173	1	1	195	571
% Vehicles	0	100	100	0	100	0	100	97.6	100	99.5	100	100	96.7	100	98.7	100	98.3	100	100	98.5	99
Buses	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	3	0	0	3	5
% Buses	0	0	0	0	0	0	0	2.4	0	0.5	0	0	1.6	0	0.7	0	1.7	0	0	1.5	0.9
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1.6	0	0.7	0	0	0	0	0	0.2

	MILLER RD Southbound				BUENA VISTA RD Westbound				MILLER RD Northbound				BUENA VISTA RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	22	2	24	11	0	12	23	3	12	0	15	62
07:45 AM	0	0	1	1	0	33	9	42	21	0	11	32	4	51	0	55	130
08:00 AM	0	1	3	4	0	37	16	53	31	0	4	35	1	49	1	51	143
08:15 AM	0	0	0	0	0	21	10	31	7	2	3	12	4	23	0	27	70
Total Volume	0	1	4	5	0	113	37	150	70	2	30	102	12	135	1	148	405
% App. Total	0	20	80		0	75.3	24.7		68.6	2	29.4		8.1	91.2	0.7		
PHF	.000	.250	.333	.313	.000	.764	.578	.708	.565	.250	.625	.729	.750	.662	.250	.673	.708

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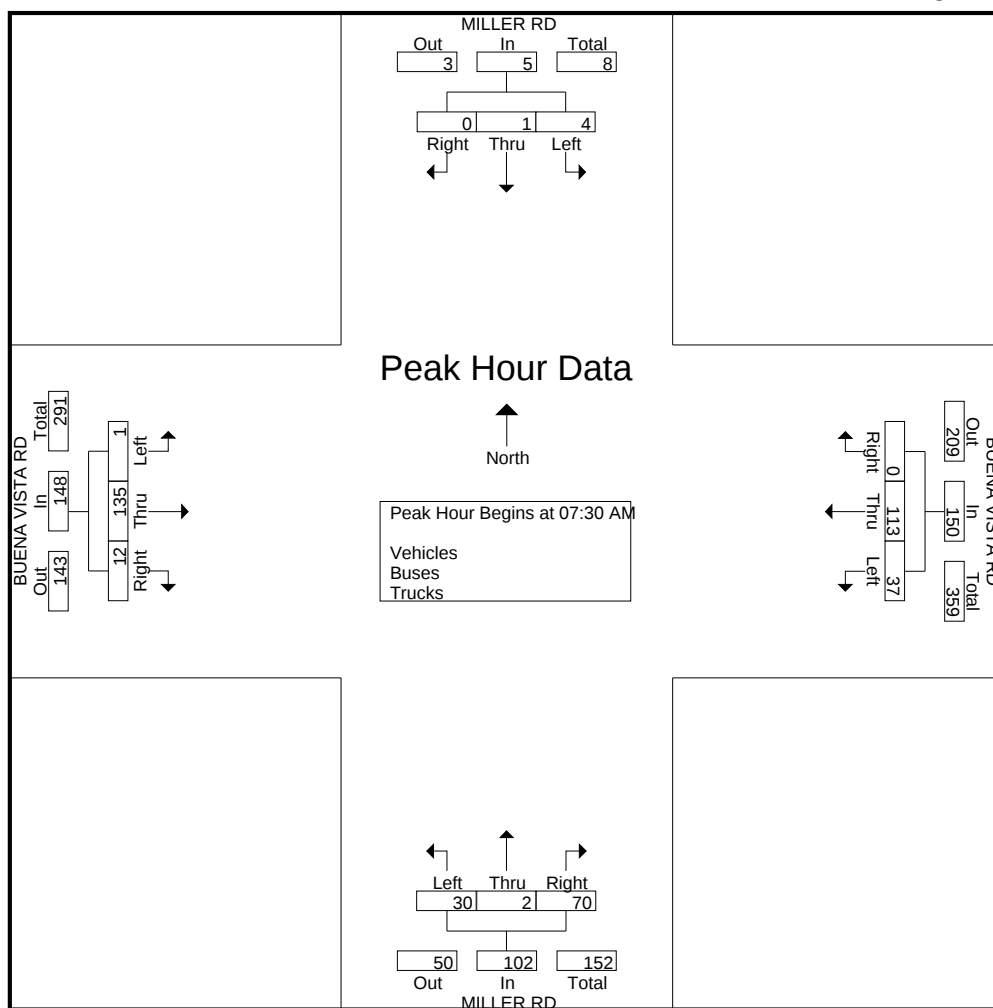
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File Name : 3AM FINAL

Site Code : 00000003

Start Date : 3/10/2015

Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	WESTSIDE RD Southbound					BUENA VISTA RD Westbound					WESTSIDE BLVD Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	1	0	0	1	0	3	1	0	4	0	0	12	3	15	8	5	0	0	13	33
07:15 AM	1	0	0	0	1	0	8	1	0	9	1	0	23	1	25	9	4	0	0	13	48
07:30 AM	1	0	0	0	1	0	15	1	0	16	0	1	33	4	38	12	10	0	0	22	77
07:45 AM	1	0	1	0	2	0	34	3	0	37	0	1	51	10	62	34	28	1	0	63	164
Total	3	1	1	0	5	0	60	6	0	66	1	2	119	18	140	63	47	1	0	111	322
08:00 AM	0	2	1	0	3	0	27	5	0	32	3	6	36	5	50	57	43	0	0	100	185
08:15 AM	0	1	0	0	1	1	10	1	0	12	1	1	18	0	20	24	16	0	0	40	73
08:30 AM	0	1	0	0	1	1	11	2	0	14	3	0	11	1	15	10	6	0	0	16	46
08:45 AM	0	0	0	0	0	0	7	1	0	8	1	2	9	0	12	9	5	0	0	14	34
Total	0	4	1	0	5	2	55	9	0	66	8	9	74	6	97	100	70	0	0	170	338
Grand Total	3	5	2	0	10	2	115	15	0	132	9	11	193	24	237	163	117	1	0	281	660
Apprch %	30	50	20	0		1.5	87.1	11.4	0		3.8	4.6	81.4	10.1		58	41.6	0.4	0		
Total %	0.5	0.8	0.3	0	1.5	0.3	17.4	2.3	0	20	1.4	1.7	29.2	3.6	35.9	24.7	17.7	0.2	0	42.6	
Vehicles	3	5	2	0	10	2	113	14	0	129	8	11	191	24	234	159	115	1	0	275	648
% Vehicles	100	100	100	0	100	100	98.3	93.3	0	97.7	88.9	100	99	100	98.7	97.5	98.3	100	0	97.9	98.2
Buses	0	0	0	0	0	0	1	1	0	2	1	0	1	0	2	3	1	0	0	4	8
% Buses	0	0	0	0	0	0	0.9	6.7	0	1.5	11.1	0	0.5	0	0.8	1.8	0.9	0	0	1.4	1.2
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	4
% Trucks	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0.5	0	0.4	0.6	0.9	0	0	0.7	0.6

	WESTSIDE RD Southbound				BUENA VISTA RD Westbound				WESTSIDE BLVD Northbound				BUENA VISTA RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	0	0	1	0	15	1	16	0	1	33	34	12	10	0	22	73
07:45 AM	1	0	1	2	0	34	3	37	0	1	51	52	34	28	1	63	154
08:00 AM	0	2	1	3	0	27	5	32	3	6	36	45	57	43	0	100	180
08:15 AM	0	1	0	1	1	10	1	12	1	1	18	20	24	16	0	40	73
Total Volume	2	3	2	7	1	86	10	97	4	9	138	151	127	97	1	225	480
% App. Total	28.6	42.9	28.6		1	88.7	10.3		2.6	6	91.4		56.4	43.1	0.4		
PHF	.500	.375	.500	.583	.250	.632	.500	.655	.333	.375	.676	.726	.557	.564	.250	.563	.667

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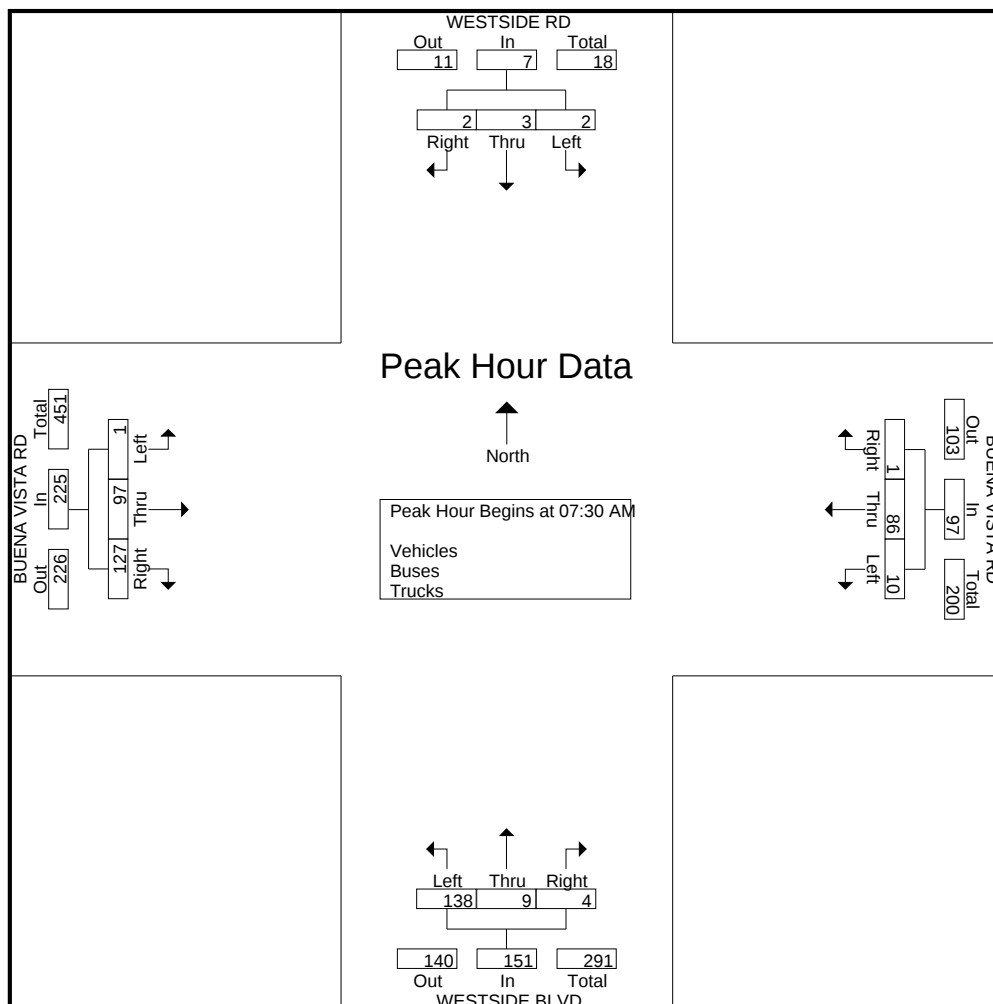
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File Name : 4AM FINAL

Site Code : 00000004

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Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	MILLER RD Southbound					SAN JUAN RD Westbound					LIVE OAK DR Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	6	1	11	0	18	6	118	3	2	129	13	4	8	0	25	2	64	0	0	66	238
07:15 AM	2	0	18	1	21	10	134	9	3	156	14	1	3	0	18	3	43	2	0	48	243
07:30 AM	3	2	20	0	25	9	102	11	5	127	19	7	8	0	34	3	87	4	0	94	280
07:45 AM	10	4	24	0	38	15	91	10	11	127	39	10	7	0	56	2	112	3	0	117	338
Total	21	7	73	1	102	40	445	33	21	539	85	22	26	0	133	10	306	9	0	325	1099
08:00 AM	6	10	24	0	40	15	93	26	2	136	36	11	6	0	53	0	77	2	0	79	308
08:15 AM	4	1	27	0	32	8	104	16	3	131	22	3	5	4	34	3	93	1	0	97	294
08:30 AM	5	4	18	3	30	16	87	11	0	114	20	4	4	2	30	0	57	0	0	57	231
08:45 AM	3	2	14	0	19	19	75	15	2	111	11	1	3	0	15	1	88	3	0	92	237
Total	18	17	83	3	121	58	359	68	7	492	89	19	18	6	132	4	315	6	0	325	1070
Grand Total	39	24	156	4	223	98	804	101	28	1031	174	41	44	6	265	14	621	15	0	650	2169
Apprch %	17.5	10.8	70	1.8		9.5	78	9.8	2.7		65.7	15.5	16.6	2.3		2.2	95.5	2.3	0		
Total %	1.8	1.1	7.2	0.2	10.3	4.5	37.1	4.7	1.3	47.5	8	1.9	2	0.3	12.2	0.6	28.6	0.7	0	30	
Vehicles	39	24	153	4	220	94	776	99	28	997	173	41	41	6	261	13	596	15	0	624	2102
% Vehicles	100	100	98.1	100	98.7	95.9	96.5	98	100	96.7	99.4	100	93.2	100	98.5	92.9	96	100	0	96	96.9
Buses	0	0	3	0	3	3	6	2	0	11	1	0	2	0	3	1	9	0	0	10	27
% Buses	0	0	1.9	0	1.3	3.1	0.7	2	0	1.1	0.6	0	4.5	0	1.1	7.1	1.4	0	0	1.5	1.2
Trucks	0	0	0	0	0	1	22	0	0	23	0	0	1	0	1	0	16	0	0	16	40
% Trucks	0	0	0	0	0	1	2.7	0	0	2.2	0	0	2.3	0	0.4	0	2.6	0	0	2.5	1.8

	MILLER RD Southbound					SAN JUAN RD Westbound					LIVE OAK DR Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	3	2	20	25		9	102	11	122		19	7	8	34		3	87	4	94		275
07:45 AM	10	4	24	38		15	91	10	116		39	10	7	56		2	112	3	117		327
08:00 AM	6	10	24	40		15	93	26	134		36	11	6	53		0	77	2	79		306
08:15 AM	4	1	27	32		8	104	16	128		22	3	5	30		3	93	1	97		287
Total Volume	23	17	95	135		47	390	63	500		116	31	26	173		8	369	10	387		1195
% App. Total	17	12.6	70.4			9.4	78	12.6			67.1	17.9	15			2.1	95.3	2.6			
PHF	.575	.425	.880	.844		.783	.938	.606	.933		.744	.705	.813	.772		.667	.824	.625	.827		.914

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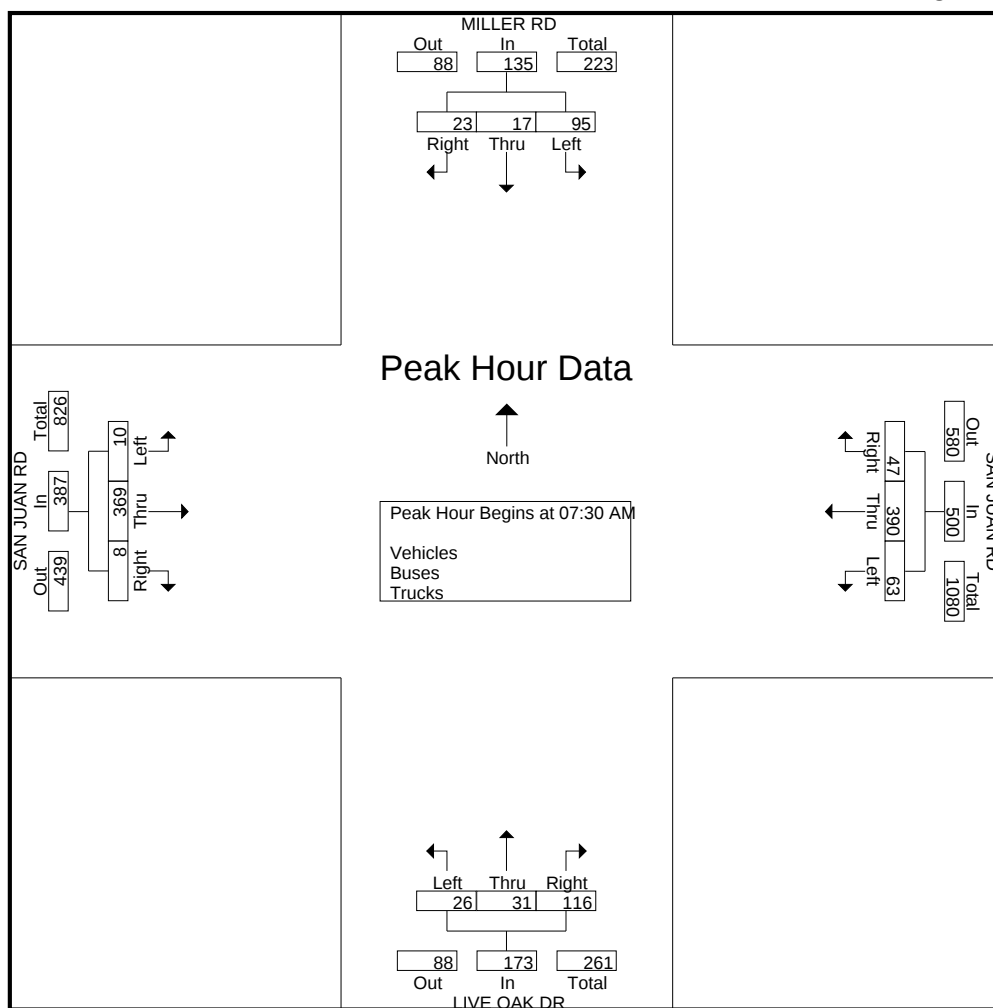
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File Name : 5AM FINAL
Site Code : 00000005
Start Date : 3/10/2015
Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	WESTSIDE BLVD Southbound					SAN JUAN RD Westbound					WESTSIDE BLVD Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	7	10	8	0	25	4	71	7	0	82	17	7	34	1	59	12	67	0	2	81	247
07:15 AM	4	11	8	3	26	7	84	6	3	100	13	14	40	1	68	29	63	0	0	92	286
07:30 AM	4	6	15	0	25	22	77	4	1	104	20	22	55	1	98	29	101	1	0	131	358
07:45 AM	8	14	29	5	56	28	68	9	1	106	20	29	50	2	101	50	124	0	0	174	437
Total	23	41	60	8	132	61	300	26	5	392	70	72	179	5	326	120	355	1	2	478	1328
08:00 AM	13	26	40	2	81	20	86	7	0	113	24	34	50	0	108	34	110	6	0	150	452
08:15 AM	6	10	26	3	45	11	98	14	0	123	20	7	49	1	77	24	137	1	0	162	407
08:30 AM	5	12	12	1	30	11	93	8	1	113	16	13	33	1	63	32	73	1	0	106	312
08:45 AM	3	6	14	2	25	5	80	9	4	98	8	9	45	1	63	25	110	0	1	136	322
Total	27	54	92	8	181	47	357	38	5	447	68	63	177	3	311	115	430	8	1	554	1493
Grand Total	50	95	152	16	313	108	657	64	10	839	138	135	356	8	637	235	785	9	3	1032	2821
Apprch %	16	30.4	48.6	5.1		12.9	78.3	7.6	1.2		21.7	21.2	55.9	1.3		22.8	76.1	0.9	0.3		
Total %	1.8	3.4	5.4	0.6	11.1	3.8	23.3	2.3	0.4	29.7	4.9	4.8	12.6	0.3	22.6	8.3	27.8	0.3	0.1	36.6	
Vehicles	48	94	147	16	305	107	629	63	10	809	132	132	352	8	624	230	758	9	3	1000	2738
% Vehicles	96	98.9	96.7	100	97.4	99.1	95.7	98.4	100	96.4	95.7	97.8	98.9	100	98	97.9	96.6	100	100	96.9	97.1
Buses	2	1	3	0	6	1	9	0	0	10	1	1	1	0	3	3	5	0	0	8	27
% Buses	4	1.1	2	0	1.9	0.9	1.4	0	0	1.2	0.7	0.7	0.3	0	0.5	1.3	0.6	0	0	0.8	1
Trucks	0	0	2	0	2	0	19	1	0	20	5	2	3	0	10	2	22	0	0	24	56
% Trucks	0	0	1.3	0	0.6	0	2.9	1.6	0	2.4	3.6	1.5	0.8	0	1.6	0.9	2.8	0	0	2.3	2

	WESTSIDE BLVD Southbound				SAN JUAN RD Westbound				WESTSIDE BLVD Northbound				SAN JUAN RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	4	6	15	25	22	77	4	103	20	22	55	97	29	101	1	131	356
07:45 AM	8	14	29	51	28	68	9	105	20	29	50	99	50	124	0	174	429
08:00 AM	13	26	40	79	20	86	7	113	24	34	50	108	34	110	6	150	450
08:15 AM	6	10	26	42	11	98	14	123	20	7	49	76	24	137	1	162	403
Total Volume	31	56	110	197	81	329	34	444	84	92	204	380	137	472	8	617	1638
% App. Total	15.7	28.4	55.8		18.2	74.1	7.7		22.1	24.2	53.7		22.2	76.5	1.3		
PHF	.596	.538	.688	.623	.723	.839	.607	.902	.875	.676	.927	.880	.685	.861	.333	.886	.910

Traffic Data Service

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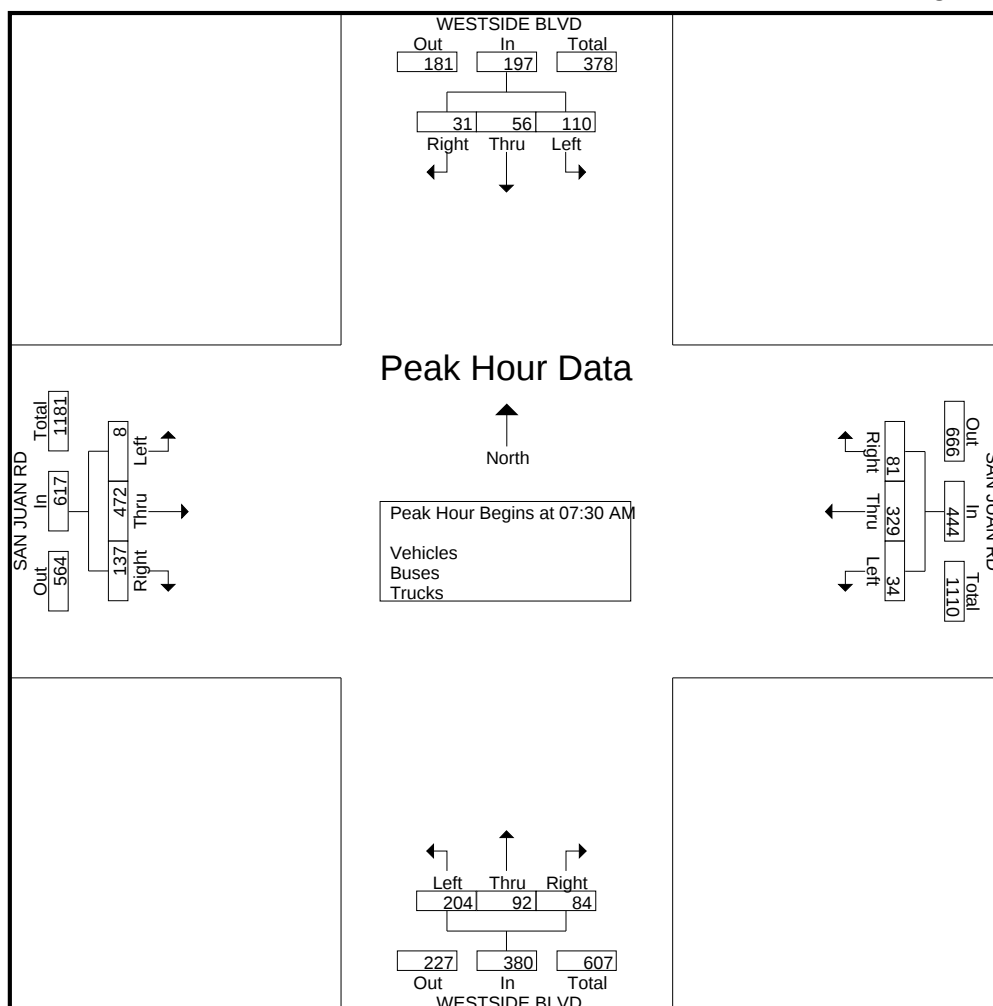
tdsbay@cs.com

File Name : 5AM FINAL

Site Code : 00000005

Start Date : 3/10/2015

Page No : 2



Traffic Data Service

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(408) 377-2988
tdsbay@cs.com

File Name : 1PM FINAL
Site Code : 00000001
Start Date : 3/10/2015
Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	SR-156 Southbound					BUENA VISTA RD Westbound					SR-156 Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	81	36	0	117	14	0	24	0	38	5	96	0	0	101	0	0	0	0	0	256
04:15 PM	0	93	29	0	122	19	0	12	0	31	11	93	0	0	104	0	0	0	0	0	257
04:30 PM	0	81	47	0	128	19	2	16	0	37	14	85	1	0	100	0	0	0	0	0	265
04:45 PM	0	90	43	0	133	12	1	14	0	27	14	93	0	0	107	0	0	0	0	0	267
Total	0	345	155	0	500	64	3	66	0	133	44	367	1	0	412	0	0	0	0	0	1045
05:00 PM	0	80	40	0	120	12	0	16	0	28	7	110	0	0	117	0	0	0	0	0	265
05:15 PM	0	83	50	0	133	20	1	14	0	35	10	89	1	0	100	0	0	0	0	0	268
05:30 PM	1	89	44	0	134	12	0	8	0	20	10	58	1	0	69	0	3	0	0	3	226
05:45 PM	1	53	45	0	99	5	1	10	0	16	6	76	0	0	82	0	0	0	0	0	197
Total	2	305	179	0	486	49	2	48	0	99	33	333	2	0	368	0	3	0	0	3	956
Grand Total	2	650	334	0	986	113	5	114	0	232	77	700	3	0	780	0	3	0	0	3	2001
Apprch %	0.2	65.9	33.9	0		48.7	2.2	49.1	0		9.9	89.7	0.4	0		0	100	0	0		
Total %	0.1	32.5	16.7	0	49.3	5.6	0.2	5.7	0	11.6	3.8	35	0.1	0	39	0	0.1	0	0	0.1	
Vehicles	2	548	332	0	882	112	5	110	0	227	71	599	3	0	673	0	3	0	0	3	1785
% Vehicles	100	84.3	99.4	0	89.5	99.1	100	96.5	0	97.8	92.2	85.6	100	0	86.3	0	100	0	0	100	89.2
Buses	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	2
% Buses	0	0	0	0	0	0	0	0.9	0	0.4	1.3	0	0	0	0.1	0	0	0	0	0	0.1
Trucks	0	102	2	0	104	1	0	3	0	4	5	101	0	0	106	0	0	0	0	0	214
% Trucks	0	15.7	0.6	0	10.5	0.9	0	2.6	0	1.7	6.5	14.4	0	0	13.6	0	0	0	0	0	10.7

	SR-156 Southbound				BUENA VISTA RD Westbound				SR-156 Northbound				BUENA VISTA RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	81	47	128	19	2	16	37	14	85	1	100	0	0	0	0	265
04:45 PM	0	90	43	133	12	1	14	27	14	93	0	107	0	0	0	0	267
05:00 PM	0	80	40	120	12	0	16	28	7	110	0	117	0	0	0	0	265
05:15 PM	0	83	50	133	20	1	14	35	10	89	1	100	0	0	0	0	268
Total Volume	0	334	180	514	63	4	60	127	45	377	2	424	0	0	0	0	1065
% App. Total	0	65	35		49.6	3.1	47.2		10.6	88.9	0.5		0	0	0		
PHF	.000	.928	.900	.966	.788	.500	.938	.858	.804	.857	.500	.906	.000	.000	.000	.000	.993

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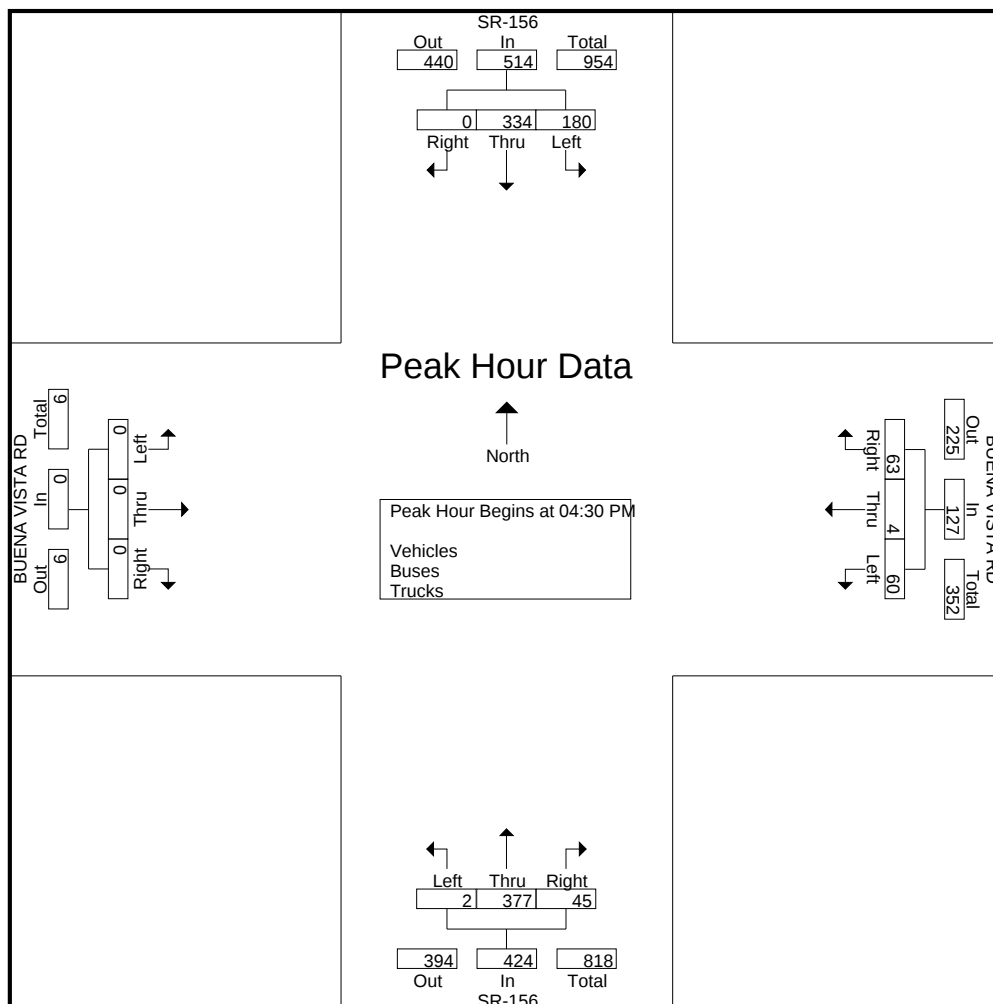
tdsbay@cs.com

File Name : 1PM FINAL

Site Code : 00000001

Start Date : 3/10/2015

Page No : 2



Traffic Data Service

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tdsbay@cs.com

File Name : 2PM FINAL

Site Code : 00000002

Start Date : 3/10/2015

Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	MILLER RD Southbound					BUENA VISTA RD Westbound					MILLER RD Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	17	2	0	19	3	1	4	0	8	6	22	2	0	30	57
04:15 PM	0	1	0	1	2	0	22	2	1	25	1	0	9	0	10	14	24	1	0	39	76
04:30 PM	0	0	0	0	0	0	24	3	0	27	2	0	4	0	6	9	23	0	0	32	65
04:45 PM	0	0	0	0	0	0	11	3	0	14	4	0	1	0	5	17	24	0	0	41	60
Total	0	1	0	1	2	0	74	10	1	85	10	1	18	0	29	46	93	3	0	142	258
05:00 PM	1	0	0	0	1	0	19	2	0	21	2	1	6	0	9	11	27	1	0	39	70
05:15 PM	1	0	0	0	1	0	16	2	0	18	3	0	6	0	9	16	25	1	0	42	70
05:30 PM	0	0	0	0	0	0	30	6	0	36	7	0	5	1	13	15	30	0	0	45	94
05:45 PM	1	2	0	0	3	0	19	12	0	31	4	0	1	4	9	9	26	0	0	35	78
Total	3	2	0	0	5	0	84	22	0	106	16	1	18	5	40	51	108	2	0	161	312
Grand Total	3	3	0	1	7	0	158	32	1	191	26	2	36	5	69	97	201	5	0	303	570
Apprch %	42.9	42.9	0	14.3		0	82.7	16.8	0.5		37.7	2.9	52.2	7.2		32	66.3	1.7	0		
Total %	0.5	0.5	0	0.2	1.2	0	27.7	5.6	0.2	33.5	4.6	0.4	6.3	0.9	12.1	17	35.3	0.9	0	53.2	
Vehicles	3	3	0	1	7	0	157	32	1	190	26	2	36	5	69	96	198	5	0	299	565
% Vehicles	100	100	0	100	100	0	99.4	100	100	99.5	100	100	100	100	100	99	98.5	100	0	98.7	99.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0.3	0.2
Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	4
% Trucks	0	0	0	0	0	0	0.6	0	0	0.5	0	0	0	0	0	1	1	0	0	1	0.7

	MILLER RD Southbound					BUENA VISTA RD Westbound					MILLER RD Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	0	0	1	0	19	2	21	2	1	6	9	11	27	1	39					70
05:15 PM	1	0	0	1	0	16	2	18	3	0	6	9	16	25	1	42					70
05:30 PM	0	0	0	0	0	30	6	36	7	0	5	12	15	30	0	45					93
05:45 PM	1	2	0	3	0	19	12	31	4	0	1	5	9	26	0	35					74
Total Volume	3	2	0	5	0	84	22	106	16	1	18	35	51	108	2	161					307
% App. Total	60	40	0		0	79.2	20.8		45.7	2.9	51.4		31.7	67.1	1.2						
PHF	.750	.250	.000	.417	.000	.700	.458	.736	.571	.250	.750	.729	.797	.900	.500	.894					.825

Traffic Data Service

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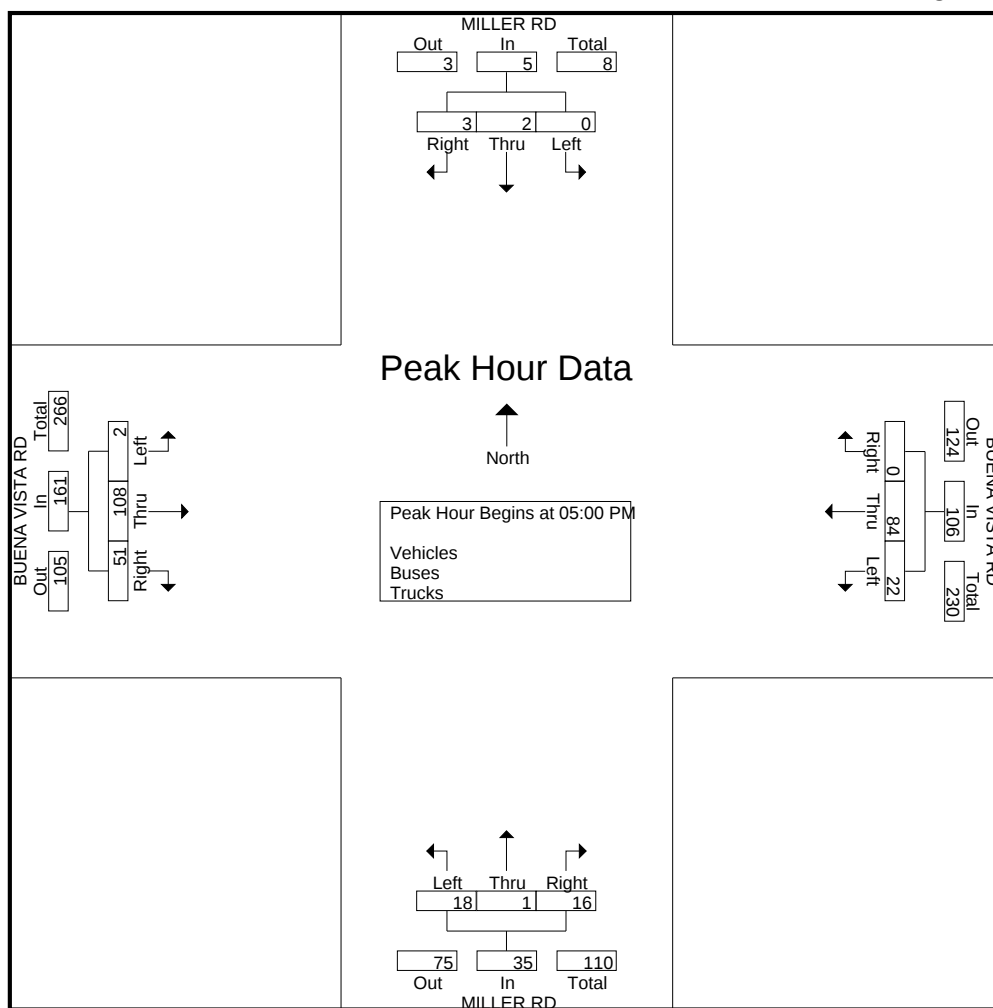
tdsbay@cs.com

File Name : 2PM FINAL

Site Code : 00000002

Start Date : 3/10/2015

Page No : 2



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File Name : 3PM FINAL

Site Code : 00000003

Start Date : 3/10/2015

Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	WESTSIDE RD Southbound					BUENA VISTA RD Westbound					WESTSIDE BLVD Northbound					BUENA VISTA RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	2	1	0	3	3	6	1	0	10	1	0	14	1	16	16	10	0	0	26	55
04:15 PM	1	2	1	0	4	1	11	3	0	15	2	1	20	1	24	28	14	0	0	42	85
04:30 PM	0	1	0	0	1	1	8	0	0	9	4	0	17	1	22	33	8	2	0	43	75
04:45 PM	0	1	0	0	1	2	7	2	0	11	2	1	9	3	15	21	6	0	0	27	54
Total	1	6	2	0	9	7	32	6	0	45	9	2	60	6	77	98	38	2	0	138	269
05:00 PM	0	1	0	0	1	1	11	1	0	13	1	0	12	0	13	22	9	1	0	32	59
05:15 PM	0	2	0	0	2	3	11	2	0	16	2	3	9	0	14	14	11	2	0	27	59
05:30 PM	0	0	2	0	2	0	21	2	0	23	1	0	12	5	18	23	14	0	0	37	80
05:45 PM	0	0	1	0	1	0	11	5	0	16	0	2	16	1	19	20	14	0	0	34	70
Total	0	3	3	0	6	4	54	10	0	68	4	5	49	6	64	79	48	3	0	130	268
Grand Total	1	9	5	0	15	11	86	16	0	113	13	7	109	12	141	177	86	5	0	268	537
Apprch %	6.7	60	33.3	0		9.7	76.1	14.2	0		9.2	5	77.3	8.5		66	32.1	1.9	0		
Total %	0.2	1.7	0.9	0	2.8	2	16	3	0	21	2.4	1.3	20.3	2.2	26.3	33	16	0.9	0	49.9	
Vehicles	1	9	5	0	15	11	85	16	0	112	13	6	109	12	140	174	86	5	0	265	532
% Vehicles	100	100	100	0	100	100	98.8	100	0	99.1	100	85.7	100	100	99.3	98.3	100	100	0	98.9	99.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0	0.4	0.2
Trucks	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2	0	0	0	2	4
% Trucks	0	0	0	0	0	0	1.2	0	0	0.9	0	14.3	0	0	0.7	1.1	0	0	0	0.7	0.7

	WESTSIDE RD Southbound				BUENA VISTA RD Westbound				WESTSIDE BLVD Northbound				BUENA VISTA RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	1	2	1	4	1	11	3	15	2	1	20	23	28	14	0	42	84
04:30 PM	0	1	0	1	1	8	0	9	4	0	17	21	33	8	2	43	74
04:45 PM	0	1	0	1	2	7	2	11	2	1	9	12	21	6	0	27	51
05:00 PM	0	1	0	1	1	11	1	13	1	0	12	13	22	9	1	32	59
Total Volume	1	5	1	7	5	37	6	48	9	2	58	69	104	37	3	144	268
% App. Total	14.3	71.4	14.3		10.4	77.1	12.5		13	2.9	84.1		72.2	25.7	2.1		
PHF	.250	.625	.250	.438	.625	.841	.500	.800	.563	.500	.725	.750	.788	.661	.375	.837	.798

Traffic Data Service

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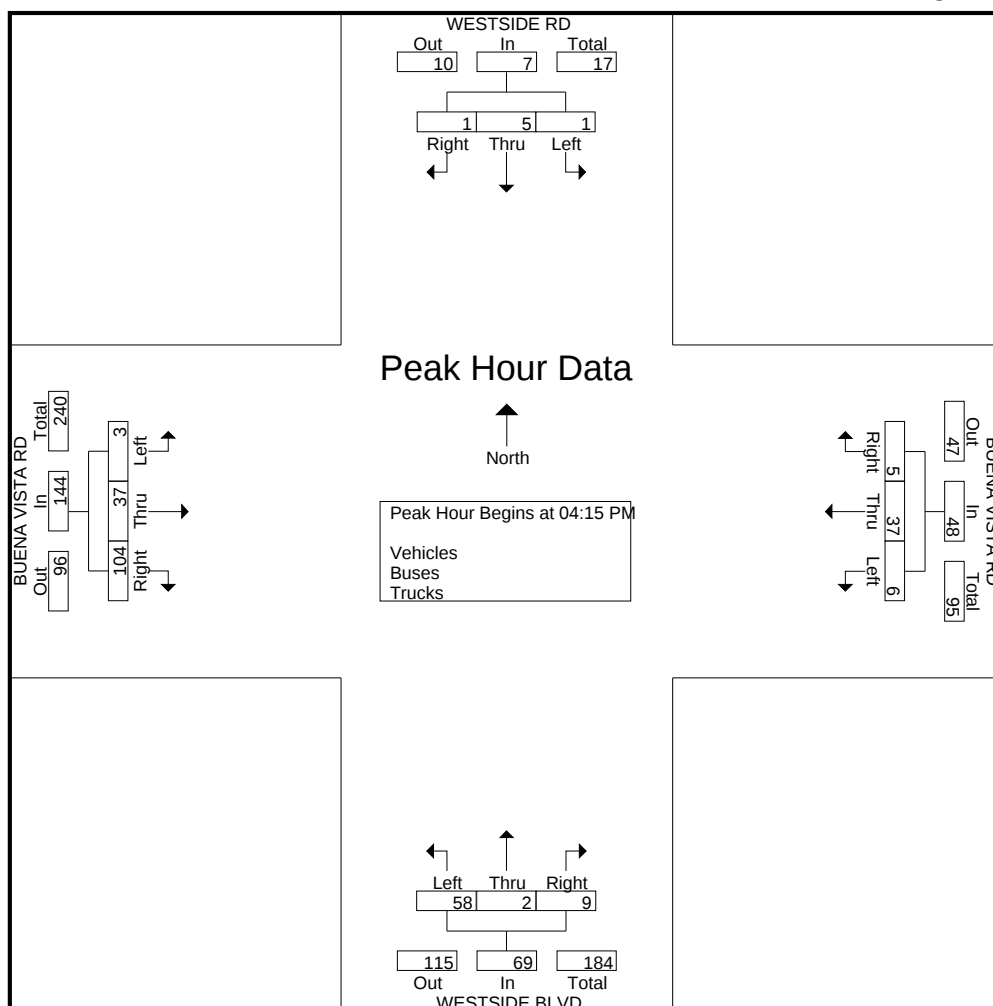
tdsbay@cs.com

File Name : 3PM FINAL

Site Code : 00000003

Start Date : 3/10/2015

Page No : 2



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File Name : 4PM FINAL

Site Code : 00000004

Start Date : 3/10/2015

Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	MILLER RD Southbound					SAN JUAN RD Westbound					LIVE OAK DR Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	3	1	22	0	26	18	93	18	0	129	25	2	2	0	29	2	136	5	0	143	327
04:15 PM	7	7	22	1	37	15	88	14	1	118	14	6	2	0	22	9	136	2	0	147	324
04:30 PM	5	3	19	0	27	20	100	23	2	145	12	3	4	0	19	3	128	2	0	133	324
04:45 PM	1	4	27	0	32	25	96	23	6	150	19	2	1	0	22	6	110	4	0	120	324
Total	16	15	90	1	122	78	377	78	9	542	70	13	9	0	92	20	510	13	0	543	1299
05:00 PM	4	2	25	0	31	16	105	25	2	148	23	2	3	0	28	5	109	6	0	120	327
05:15 PM	4	10	22	0	36	20	102	27	0	149	20	3	7	2	32	9	120	5	0	134	351
05:30 PM	6	11	22	0	39	15	67	22	9	113	29	5	2	0	36	5	159	5	0	169	357
05:45 PM	4	12	14	1	31	24	67	23	4	118	23	6	2	0	31	2	116	10	0	128	308
Total	18	35	83	1	137	75	341	97	15	528	95	16	14	2	127	21	504	26	0	551	1343
Grand Total	34	50	173	2	259	153	718	175	24	1070	165	29	23	2	219	41	1014	39	0	1094	2642
Apprch %	13.1	19.3	66.8	0.8		14.3	67.1	16.4	2.2		75.3	13.2	10.5	0.9		3.7	92.7	3.6	0		
Total %	1.3	1.9	6.5	0.1	9.8	5.8	27.2	6.6	0.9	40.5	6.2	1.1	0.9	0.1	8.3	1.6	38.4	1.5	0	41.4	
Vehicles	34	49	173	2	258	153	710	174	24	1061	163	29	23	2	217	40	993	38	0	1071	2607
% Vehicles	100	98	100	100	99.6	100	98.9	99.4	100	99.2	98.8	100	100	100	99.1	97.6	97.9	97.4	0	97.9	98.7
Buses	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	10	0	0	11	13
% Buses	0	0	0	0	0	0	0.1	0	0	0.1	0.6	0	0	0	0.5	2.4	1	0	0	1	0.5
Trucks	0	1	0	0	1	0	7	1	0	8	1	0	0	0	1	0	11	1	0	12	22
% Trucks	0	2	0	0	0.4	0	1	0.6	0	0.7	0.6	0	0	0	0.5	0	1.1	2.6	0	1.1	0.8

	MILLER RD Southbound					SAN JUAN RD Westbound					LIVE OAK DR Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Right	Thru	Left	App. Total		Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	4	27	32		25	96	23	144		19	2	1	22		6	110	4	120		318
05:00 PM	4	2	25	31		16	105	25	146		23	2	3	28		5	109	6	120		325
05:15 PM	4	10	22	36		20	102	27	149		20	3	7	30		9	120	5	134		349
05:30 PM	6	11	22	39		15	67	22	104		29	5	2	36		5	159	5	169		348
Total Volume	15	27	96	138		76	370	97	543		91	12	13	116		25	498	20	543		1340
% App. Total	10.9	19.6	69.6			14	68.1	17.9			78.4	10.3	11.2			4.6	91.7	3.7			
PHF	.625	.614	.889	.885		.760	.881	.898	.911		.784	.600	.464	.806		.694	.783	.833	.803		.960

Traffic Data Service

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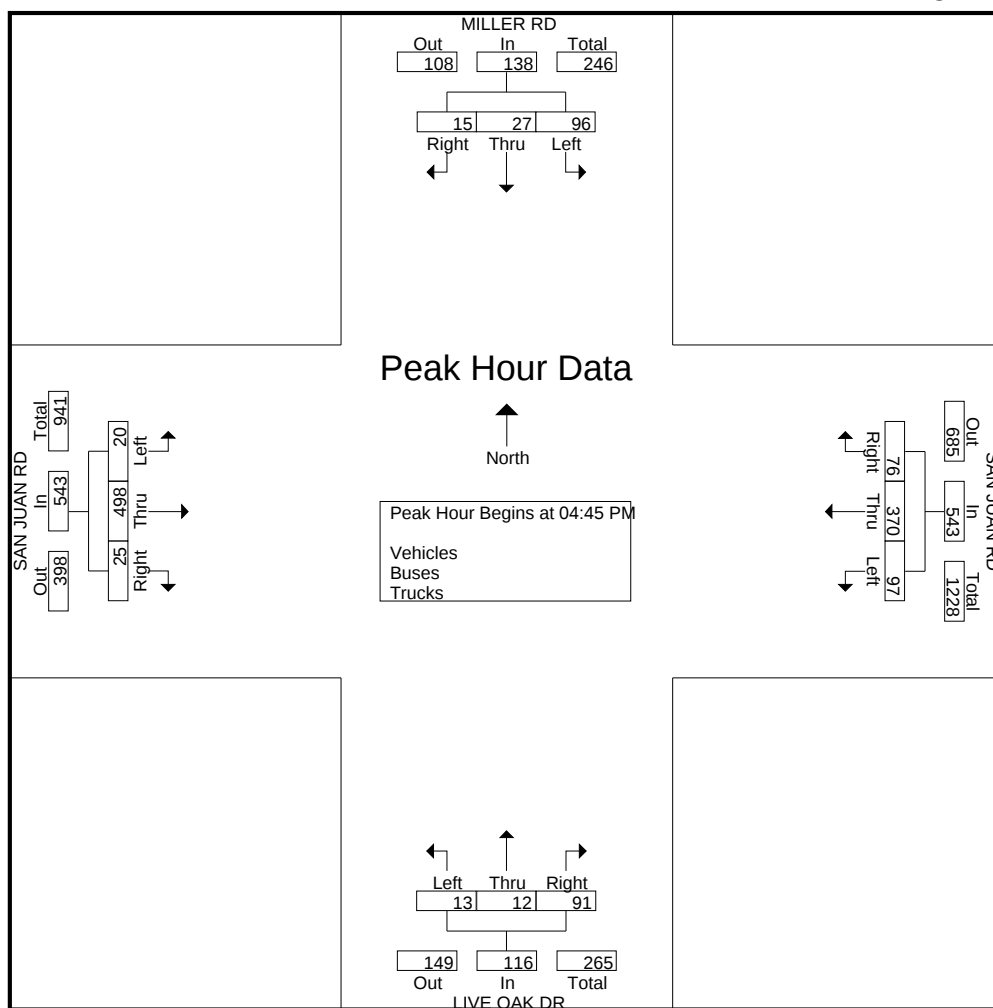
tdsbay@cs.com

File Name : 4PM FINAL

Site Code : 00000004

Start Date : 3/10/2015

Page No : 2



Traffic Data Service

Campbell, CA
(408) 377-2988
tdsbay@cs.com

File Name : 5PM FINAL
Site Code : 00000005
Start Date : 3/10/2015
Page No : 1

Groups Printed- Vehicles - Buses - Trucks

	WESTSIDE BLVD Southbound					SAN JUAN RD Westbound					WESTSIDE BLVD Northbound					SAN JUAN RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	2	18	18	2	40	13	112	23	2	150	9	12	40	2	63	41	132	1	6	180	433
04:15 PM	5	20	25	3	53	14	93	13	1	121	12	16	50	0	78	39	132	2	1	174	426
04:30 PM	4	23	26	0	53	11	128	21	0	160	17	16	44	0	77	36	131	5	0	172	462
04:45 PM	8	12	15	0	35	7	113	21	0	141	18	16	48	0	82	51	127	6	1	185	443
Total	19	73	84	5	181	45	446	78	3	572	56	60	182	2	300	167	522	14	8	711	1764
05:00 PM	6	18	17	0	41	11	121	22	0	154	6	9	63	1	79	37	111	4	0	152	426
05:15 PM	6	10	18	1	35	15	141	24	0	180	8	13	36	2	59	44	136	6	2	188	462
05:30 PM	2	19	18	1	40	15	92	18	4	129	18	8	36	2	64	62	129	7	0	198	431
05:45 PM	4	18	22	0	44	12	87	20	0	119	15	14	33	0	62	40	122	3	0	165	390
Total	18	65	75	2	160	53	441	84	4	582	47	44	168	5	264	183	498	20	2	703	1709
Grand Total	37	138	159	7	341	98	887	162	7	1154	103	104	350	7	564	350	1020	34	10	1414	3473
Apprch %	10.9	40.5	46.6	2.1		8.5	76.9	14	0.6		18.3	18.4	62.1	1.2		24.8	72.1	2.4	0.7		
Total %	1.1	4	4.6	0.2	9.8	2.8	25.5	4.7	0.2	33.2	3	3	10.1	0.2	16.2	10.1	29.4	1	0.3	40.7	
Vehicles	36	136	158	7	337	96	876	161	7	1140	103	100	347	7	557	350	1000	33	10	1393	3427
% Vehicles	97.3	98.6	99.4	100	98.8	98	98.8	99.4	100	98.8	100	96.2	99.1	100	98.8	100	98	97.1	100	98.5	98.7
Buses	1	1	0	0	2	1	3	0	0	4	0	2	0	0	2	0	8	0	0	8	16
% Buses	2.7	0.7	0	0	0.6	1	0.3	0	0	0.3	0	1.9	0	0	0.4	0	0.8	0	0	0.6	0.5
Trucks	0	1	1	0	2	1	8	1	0	10	0	2	3	0	5	0	12	1	0	13	30
% Trucks	0	0.7	0.6	0	0.6	1	0.9	0.6	0	0.9	0	1.9	0.9	0	0.9	0	1.2	2.9	0	0.9	0.9

	WESTSIDE BLVD Southbound				SAN JUAN RD Westbound				WESTSIDE BLVD Northbound				SAN JUAN RD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	4	23	26	53	11	128	21	160	17	16	44	77	36	131	5	172	462
04:45 PM	8	12	15	35	7	113	21	141	18	16	48	82	51	127	6	184	442
05:00 PM	6	18	17	41	11	121	22	154	6	9	63	78	37	111	4	152	425
05:15 PM	6	10	18	34	15	141	24	180	8	13	36	57	44	136	6	186	457
Total Volume	24	63	76	163	44	503	88	635	49	54	191	294	168	505	21	694	1786
% App. Total	14.7	38.7	46.6		6.9	79.2	13.9		16.7	18.4	65		24.2	72.8	3		
PHF	.750	.685	.731	.769	.733	.892	.917	.882	.681	.844	.758	.896	.824	.928	.875	.933	.966

Traffic Data Service

Campbell, CA

(408) 377-2988

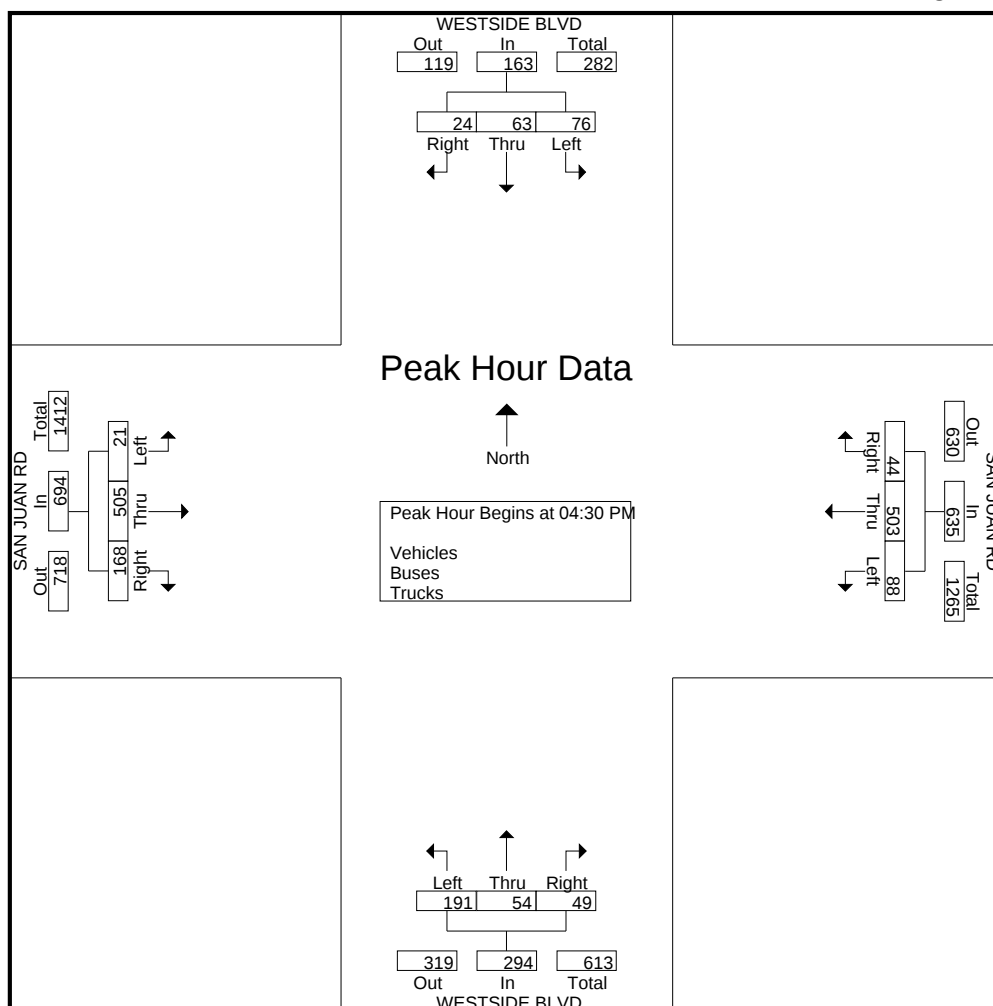
tdsbay@cs.com

File Name : 5PM FINAL

Site Code : 00000005

Start Date : 3/10/2015

Page No : 2



Appendix C

Intersection Level of Service Calculations

Existing Conditions

1: State Route 156 & Buena Vista Rd.

Intersection

Int Delay, s/veh 3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	59	0	158	2	250	46	24	257	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	62	0	166	2	263	48	25	271	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	588	588	271	591	588	263	271	0	0	263	0	0
Stage 1	321	321	-	267	267	-	-	-	-	-	-	-
Stage 2	267	267	-	324	321	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	421	421	768	419	421	776	1237	-	-	1174	-	-
Stage 1	691	652	-	738	688	-	-	-	-	-	-	-
Stage 2	738	688	-	688	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	411	768	406	411	776	1237	-	-	1174	-	-
Mov Cap-2 Maneuver	325	411	-	406	411	-	-	-	-	-	-	-
Stage 1	690	638	-	737	687	-	-	-	-	-	-	-
Stage 2	579	687	-	666	638	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	12.2	0.1	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1237	-	-	385	768	406	-	776	1174	-	-
HCM Lane V/C Ratio	0.002	-	-	0.022	0.001	0.153	-	0.214	0.022	-	-
HCM Control Delay (s)	7.9	-	-	14.6	9.7	15.5	0	10.9	8.1	-	-
HCM Lane LOS	A	-	-	B	A	C	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.5	-	0.8	0.1	-	-

Intersection												
Int Delay, s/veh		3.9										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	135	12	37	113	0	30	2	70	4	1	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	190	17	52	159	0	42	3	99	6	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	216	0	0	483	482	209	533	491	169
Stage 1	-	-	-	-	-	-	210	210	-	272	272	-
Stage 2	-	-	-	-	-	-	273	272	-	261	219	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1410	-	-	1354	-	-	494	484	831	458	478	875
Stage 1	-	-	-	-	-	-	792	728	-	734	685	-
Stage 2	-	-	-	-	-	-	733	685	-	744	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1409	-	-	1353	-	-	473	456	824	385	451	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	456	-	385	451	-
Stage 1	-	-	-	-	-	-	785	722	-	728	651	-
Stage 2	-	-	-	-	-	-	700	651	-	651	716	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.9			11.9			14.2		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	668	1409	-	-	1353	-	-	397				
HCM Lane V/C Ratio	0.215	0.001	-	-	0.039	-	-	0.018				
HCM Control Delay (s)	11.9	7.6	0	-	7.8	0	-	14.2				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.1				

Intersection												
Int Delay, s/veh		5.9										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	97	127	10	86	1	138	9	4	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	145	190	15	128	1	206	13	6	3	4	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	353	0	0	444	441	259	449	534	148
Stage 1	-	-	-	-	-	-	262	262	-	178	178	-
Stage 2	-	-	-	-	-	-	182	179	-	271	356	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1432	-	-	1206	-	-	524	510	780	520	452	899
Stage 1	-	-	-	-	-	-	743	691	-	824	752	-
Stage 2	-	-	-	-	-	-	820	751	-	735	629	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1432	-	-	1206	-	-	504	487	768	492	432	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	487	-	492	432	-
Stage 1	-	-	-	-	-	-	731	679	-	810	730	-
Stage 2	-	-	-	-	-	-	802	730	-	714	618	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.8			17.6			12		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	508	1432	-	-	1206	-	-	528				
HCM Lane V/C Ratio	0.444	0.001	-	-	0.012	-	-	0.02				
HCM Control Delay (s)	17.6	7.5	0	-	8	0	-	12				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	2.2	0	-	-	0	-	-	0.1				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	369	8	63	390	47	26	31	116	95	17	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	11	405	9	69	429	52	29	34	127	104	19	25
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	20	574	13	87	665	549	134	157	416	487	92	93
Arrive On Green	0.01	0.32	0.32	0.05	0.36	0.36	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1740	1780	40	1757	1845	1522	129	407	1080	944	239	240
Grp Volume(v), veh/h	11	0	414	69	429	52	190	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1820	1757	1845	1522	1616	0	0	1423	0	0
Q Serve(g_s), s	0.3	0.0	9.8	1.9	9.6	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	9.8	1.9	9.6	1.1	3.9	0.0	0.0	2.7	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.70		0.17
Lane Grp Cap(c), veh/h	20	0	587	87	665	549	706	0	0	672	0	0
V/C Ratio(X)	0.56	0.00	0.71	0.79	0.64	0.09	0.27	0.00	0.00	0.22	0.00	0.00
Avail Cap(c_a), veh/h	141	0	848	214	934	771	706	0	0	672	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.3	0.0	14.7	23.2	13.1	10.4	10.5	0.0	0.0	10.2	0.0	0.0
Incr Delay (d2), s/veh	22.3	0.0	1.6	14.7	1.1	0.1	0.9	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	5.2	1.3	5.0	0.5	2.0	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	46.6	0.0	16.2	37.9	14.2	10.5	11.5	0.0	0.0	10.9	0.0	0.0
LnGrp LOS	D		B	D	B	B	B			B		
Approach Vol, veh/h		425			550			190			148	
Approach Delay, s/veh		17.0			16.8			11.5			10.9	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.4	19.9		23.0	4.6	21.8				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		5.9	3.9	11.8		4.7	2.3	11.6				
Green Ext Time (p_c), s		1.7	0.0	4.0		1.8	0.0	4.5				
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	472	137	34	329	81	204	92	84	110	56	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	519	151	37	362	89	224	101	92	121	62	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	557	474	53	596	505	251	290	264	154	503	420
Arrive On Green	0.01	0.30	0.30	0.03	0.32	0.32	0.14	0.33	0.33	0.09	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	888	809	1774	1863	1554
Grp Volume(v), veh/h	9	519	151	37	362	89	224	0	193	121	62	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1696	1774	1863	1554
Q Serve(g_s), s	0.3	17.2	4.7	1.3	10.4	2.6	7.9	0.0	5.4	4.2	1.6	1.0
Cycle Q Clear(g_c), s	0.3	17.2	4.7	1.3	10.4	2.6	7.9	0.0	5.4	4.2	1.6	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	16	557	474	53	596	505	251	0	553	154	503	420
V/C Ratio(X)	0.55	0.93	0.32	0.70	0.61	0.18	0.89	0.00	0.35	0.78	0.12	0.08
Avail Cap(c_a), veh/h	112	557	474	112	596	505	251	0	553	197	503	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	21.3	17.0	30.2	17.9	15.3	26.5	0.0	16.1	28.1	17.3	17.1
Incr Delay (d2), s/veh	26.2	22.6	0.4	15.1	1.8	0.2	30.1	0.0	1.7	14.5	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	12.2	2.1	0.8	5.5	1.1	5.9	0.0	2.8	2.7	0.9	0.5
LnGrp Delay(d),s/veh	57.3	43.9	17.3	45.3	19.7	15.4	56.6	0.0	17.8	42.6	17.8	17.5
LnGrp LOS	E	D	B	D	B	B	E		B	D	B	B
Approach Vol, veh/h		679			488			417			217	
Approach Delay, s/veh		38.2			20.9			38.7			31.6	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.5	24.5	5.9	23.0	13.0	21.0	4.6	24.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	6.2	7.4	3.3	19.2	9.9	3.6	2.3	12.4				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	1.3	0.0	3.4				
Intersection Summary												
HCM 2010 Ctrl Delay			32.8									
HCM 2010 LOS			C									

1: State Route 156 & Buena Vista Rd.

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	60	4	63	2	377	45	180	334	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	61	4	64	2	381	45	182	337	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1088	1086	337	1086	1086	381	337	0	0	381	0	0
Stage 1	701	701	-	385	385	-	-	-	-	-	-	-
Stage 2	387	385	-	701	701	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	193	216	705	194	216	666	1163	-	-	1135	-	-
Stage 1	429	441	-	638	611	-	-	-	-	-	-	-
Stage 2	637	611	-	429	441	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	150	181	705	170	181	666	1163	-	-	1135	-	-
Mov Cap-2 Maneuver	150	181	-	170	181	-	-	-	-	-	-	-
Stage 1	428	370	-	637	610	-	-	-	-	-	-	-
Stage 2	571	610	-	360	370	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	24	0	3.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1163	-	-	-	-	170	181	666	1135	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-	0.357	0.022	0.096	0.16	-	-
HCM Control Delay (s)	8.1	-	-	0	0	37.5	25.3	11	8.8	-	-
HCM Lane LOS	A	-	-	A	A	E	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	1.5	0.1	0.3	0.6	-	-

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	108	51	22	84	0	18	1	16	0	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	126	59	26	98	0	21	1	19	0	2	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	103	0	0	190	0	0	322	319	160	329	349	103
Stage 1	-	-	-	-	-	-	165	165	-	154	154	-
Stage 2	-	-	-	-	-	-	157	154	-	175	195	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1489	-	-	1384	-	-	631	598	885	624	575	952
Stage 1	-	-	-	-	-	-	837	762	-	848	770	-
Stage 2	-	-	-	-	-	-	845	770	-	827	739	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1489	-	-	1384	-	-	614	580	881	597	558	948
Mov Cap-2 Maneuver	-	-	-	-	-	-	614	580	-	597	558	-
Stage 1	-	-	-	-	-	-	832	757	-	843	751	-
Stage 2	-	-	-	-	-	-	822	751	-	807	734	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.6			10.4			9.9		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	711	1489	-	-	1384	-	-	741				
HCM Lane V/C Ratio	0.057	0.002	-	-	0.018	-	-	0.008				
HCM Control Delay (s)	10.4	7.4	0	-	7.7	0	-	9.9				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0				

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	37	104	6	37	5	58	2	9	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	46	130	8	46	6	72	2	11	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	181	0	0	197	197	116	200	258	54
Stage 1	-	-	-	-	-	-	124	124	-	69	69	-
Stage 2	-	-	-	-	-	-	73	73	-	131	189	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1546	-	-	1394	-	-	762	699	936	759	646	1013
Stage 1	-	-	-	-	-	-	880	793	-	941	837	-
Stage 2	-	-	-	-	-	-	937	834	-	873	744	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1394	-	-	747	687	932	740	635	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	747	687	-	740	635	-
Stage 1	-	-	-	-	-	-	874	787	-	934	829	-
Stage 2	-	-	-	-	-	-	923	826	-	857	739	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.9			10.3			10.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	765	1546	-	-	1394	-	-	685				
HCM Lane V/C Ratio	0.113	0.002	-	-	0.005	-	-	0.013				
HCM Control Delay (s)	10.3	7.3	0	-	7.6	0	-	10.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	498	25	97	370	76	13	12	91	96	27	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	21	519	26	101	385	79	14	12	95	100	28	16
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	635	32	129	771	642	101	92	437	442	119	56
Arrive On Green	0.02	0.36	0.36	0.07	0.41	0.41	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1774	1759	88	1774	1863	1551	81	264	1261	952	342	162
Grp Volume(v), veh/h	21	0	545	101	385	79	121	0	0	144	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1847	1774	1863	1551	1606	0	0	1455	0	0
Q Serve(g_s), s	0.6	0.0	14.6	3.1	8.4	1.7	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	14.6	3.1	8.4	1.7	2.9	0.0	0.0	3.2	0.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	0.12		0.79	0.69		0.11
Lane Grp Cap(c), veh/h	35	0	667	129	771	642	630	0	0	616	0	0
V/C Ratio(X)	0.59	0.00	0.82	0.78	0.50	0.12	0.19	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	130	0	776	194	850	708	630	0	0	616	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.6	0.0	15.9	25.0	11.9	9.9	12.6	0.0	0.0	12.7	0.0	0.0
Incr Delay (d2), s/veh	14.8	0.0	6.0	11.0	0.5	0.1	0.7	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	8.5	1.9	4.4	0.7	1.4	0.0	0.0	1.7	0.0	0.0
LnGrp Delay(d),s/veh	41.4	0.0	21.9	36.0	12.4	10.0	13.3	0.0	0.0	13.6	0.0	0.0
LnGrp LOS	D		C	D	B	A	B			B		
Approach Vol, veh/h		566			565			121			144	
Approach Delay, s/veh		22.6			16.3			13.3			13.6	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.0	23.8		23.0	5.1	26.7				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		4.9	5.1	16.6		5.2	2.6	10.4				
Green Ext Time (p_c), s		1.3	0.0	3.1		1.3	0.0	5.3				
Intersection Summary												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	505	168	88	503	44	191	54	49	76	63	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	521	173	91	519	45	197	56	51	78	65	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	35	541	460	108	617	525	239	304	277	100	489	415
Arrive On Green	0.02	0.29	0.29	0.06	0.33	0.33	0.14	0.34	0.34	0.06	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	889	809	1774	1863	1580
Grp Volume(v), veh/h	22	521	173	91	519	45	197	0	107	78	65	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1698	1774	1863	1580
Q Serve(g_s), s	0.8	18.0	5.7	3.3	16.9	1.3	7.1	0.0	2.9	2.8	1.7	0.8
Cycle Q Clear(g_c), s	0.8	18.0	5.7	3.3	16.9	1.3	7.1	0.0	2.9	2.8	1.7	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	35	541	460	108	617	525	239	0	580	100	489	415
V/C Ratio(X)	0.62	0.96	0.38	0.84	0.84	0.09	0.82	0.00	0.18	0.78	0.13	0.06
Avail Cap(c_a), veh/h	108	541	460	108	617	525	244	0	580	192	489	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	22.6	18.2	30.1	20.0	14.8	27.2	0.0	15.0	30.2	18.3	17.9
Incr Delay (d2), s/veh	16.4	29.6	0.5	41.3	10.1	0.1	19.8	0.0	0.7	12.3	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	13.6	2.5	2.8	10.2	0.6	4.8	0.0	1.5	1.7	1.0	0.4
LnGrp Delay(d),s/veh	47.9	52.1	18.7	71.4	30.1	14.8	47.0	0.0	15.7	42.5	18.8	18.2
LnGrp LOS	D	D	B	E	C	B	D		B	D	B	B
Approach Vol, veh/h		716			655			304			168	
Approach Delay, s/veh		43.9			34.8			36.0			29.7	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	26.2	8.0	23.0	12.8	21.0	5.3	25.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	4.8	4.9	5.3	20.0	9.1	3.7	2.8	18.9				
Green Ext Time (p_c), s	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			38.1									
HCM 2010 LOS			D									

Appendix D

Intersection Level of Service Calculations

Existing Plus Project Conditions

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	59	0	205	2	250	46	40	257	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	62	0	216	2	263	48	42	271	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	622	622	271	625	622	263	271	0	0	263	0	0
Stage 1	355	355	-	267	267	-	-	-	-	-	-	-
Stage 2	267	267	-	358	355	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	399	403	768	397	403	776	1237	-	-	1174	-	-
Stage 1	662	630	-	738	688	-	-	-	-	-	-	-
Stage 2	738	688	-	660	630	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	280	388	768	380	388	776	1237	-	-	1174	-	-
Mov Cap-2 Maneuver	280	388	-	380	388	-	-	-	-	-	-	-
Stage 1	661	607	-	737	687	-	-	-	-	-	-	-
Stage 2	532	687	-	629	607	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.8			12.5			0.1			1.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1237	-	-	354	768	380	-	776	1174	-	-	
HCM Lane V/C Ratio	0.002	-	-	0.024	0.001	0.163	-	0.278	0.036	-	-	
HCM Control Delay (s)	7.9	-	-	15.4	9.7	16.3	0	11.4	8.2	-	-	
HCM Lane LOS	A	-	-	C	A	C	A	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.6	-	1.1	0.1	-	-	

Intersection												
Int Delay, s/veh		7.2										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	164	46	37	123	9	41	19	70	32	52	9
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	231	65	52	173	13	58	27	99	45	73	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	195	0	0	305	0	0	620	583	273	639	609	190
Stage 1	-	-	-	-	-	-	284	284	-	293	293	-
Stage 2	-	-	-	-	-	-	336	299	-	346	316	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1378	-	-	1256	-	-	400	424	766	389	410	852
Stage 1	-	-	-	-	-	-	723	676	-	715	670	-
Stage 2	-	-	-	-	-	-	678	666	-	670	655	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1377	-	-	1255	-	-	321	396	760	306	383	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	396	-	306	383	-
Stage 1	-	-	-	-	-	-	714	668	-	706	634	-
Stage 2	-	-	-	-	-	-	563	631	-	556	647	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.7			16.9			19.9		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	485	1377	-	-	1255	-	-	371				
HCM Lane V/C Ratio	0.378	0.004	-	-	0.042	-	-	0.353				
HCM Control Delay (s)	16.9	7.6	0	-	8	0	-	19.9				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	1.7	0	-	-	0.1	-	-	1.6				

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	97	184	10	86	1	157	9	4	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	145	275	15	128	1	234	13	6	3	4	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	438	0	0	486	483	301	492	619	148
Stage 1	-	-	-	-	-	-	304	304	-	178	178	-
Stage 2	-	-	-	-	-	-	182	179	-	314	441	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1432	-	-	1122	-	-	492	483	739	487	404	899
Stage 1	-	-	-	-	-	-	705	663	-	824	752	-
Stage 2	-	-	-	-	-	-	820	751	-	697	577	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1432	-	-	1122	-	-	473	461	727	459	385	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	473	461	-	459	385	-
Stage 1	-	-	-	-	-	-	693	652	-	810	730	-
Stage 2	-	-	-	-	-	-	801	729	-	676	567	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.9			20.9			12.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	476	1432	-	-	1122	-	-	486				
HCM Lane V/C Ratio	0.533	0.001	-	-	0.013	-	-	0.021				
HCM Control Delay (s)	20.9	7.5	0	-	8.3	0	-	12.6				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	3.1	0	-	-	0	-	-	0.1				

HCM 2010 Signalized Intersection Summary

4: Live Oak Dr./Miller Rd. & San Juan Rd.

Existing Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	369	8	63	390	66	26	31	116	152	17	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	18	405	9	69	429	73	29	34	127	167	19	46
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	31	575	13	87	655	540	134	156	415	496	65	108
Arrive On Green	0.02	0.32	0.32	0.05	0.35	0.35	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1740	1780	40	1757	1845	1522	129	406	1079	964	169	280
Grp Volume(v), veh/h	18	0	414	69	429	73	190	0	0	232	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1820	1757	1845	1522	1614	0	0	1412	0	0
Q Serve(g_s), s	0.5	0.0	9.8	1.9	9.7	1.6	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	9.8	1.9	9.7	1.6	3.9	0.0	0.0	4.8	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.72		0.20
Lane Grp Cap(c), veh/h	31	0	588	87	655	540	704	0	0	668	0	0
V/C Ratio(X)	0.58	0.00	0.70	0.79	0.66	0.14	0.27	0.00	0.00	0.35	0.00	0.00
Avail Cap(c_a), veh/h	141	0	847	213	933	770	704	0	0	668	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.1	0.0	14.7	23.2	13.4	10.8	10.6	0.0	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	16.3	0.0	1.6	14.7	1.1	0.1	0.9	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.2	1.3	5.1	0.7	2.0	0.0	0.0	2.5	0.0	0.0
LnGrp Delay(d),s/veh	40.4	0.0	16.2	38.0	14.5	10.9	11.5	0.0	0.0	12.2	0.0	0.0
LnGrp LOS	D		B	D	B	B	B			B		
Approach Vol, veh/h		432			571			190			232	
Approach Delay, s/veh		17.2			16.9			11.5			12.2	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.4	20.0		23.0	4.9	21.5				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		5.9	3.9	11.8		6.8	2.5	11.7				
Green Ext Time (p_c), s		2.2	0.0	4.1		2.2	0.0	4.5				
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	501	165	34	339	90	213	102	84	138	85	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	551	181	37	373	99	234	112	92	152	93	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	557	474	53	596	505	251	286	235	190	503	420
Arrive On Green	0.01	0.30	0.30	0.03	0.32	0.32	0.14	0.31	0.31	0.11	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	935	768	1774	1863	1554
Grp Volume(v), veh/h	9	551	181	37	373	99	234	0	204	152	93	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1703	1774	1863	1554
Q Serve(g_s), s	0.3	18.7	5.7	1.3	10.8	2.9	8.3	0.0	5.9	5.3	2.4	1.0
Cycle Q Clear(g_c), s	0.3	18.7	5.7	1.3	10.8	2.9	8.3	0.0	5.9	5.3	2.4	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	16	557	474	53	596	505	251	0	521	190	503	420
V/C Ratio(X)	0.55	0.99	0.38	0.70	0.63	0.20	0.93	0.00	0.39	0.80	0.18	0.08
Avail Cap(c_a), veh/h	112	557	474	112	596	505	251	0	521	197	503	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	21.8	17.3	30.2	18.1	15.4	26.6	0.0	17.2	27.4	17.6	17.1
Incr Delay (d2), s/veh	26.2	35.2	0.5	15.1	2.1	0.2	38.5	0.0	2.2	19.7	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	14.8	2.5	0.8	5.8	1.3	6.7	0.0	3.1	3.6	1.4	0.5
LnGrp Delay(d),s/veh	57.3	57.0	17.8	45.3	20.1	15.6	65.1	0.0	19.4	47.1	18.4	17.5
LnGrp LOS	E	E	B	D	C	B	E		B	D	B	B
Approach Vol, veh/h		741			509			438			279	
Approach Delay, s/veh		47.5			21.1			43.8			33.9	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	23.2	5.9	23.0	13.0	21.0	4.6	24.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	7.3	7.9	3.3	20.7	10.3	4.4	2.3	12.8				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	1.5	0.0	3.5				
Intersection Summary												
HCM 2010 Ctrl Delay			37.9									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	13	151	152	21	63	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	164	165	23	68	41
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	369	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	192	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1386	-	-	-	631	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	841	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	624	866
Mov Cap-2 Maneuver	-	-	-	-	624	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	832	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.6		0		11.1	
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1386	-	-	-	697	
HCM Lane V/C Ratio	0.01	-	-	-	0.158	
HCM Control Delay (s)	7.6	0	-	-	11.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

Intersection						
Int Delay, s/veh	8.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	88	29	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	96	32	0	1	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	64	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	942	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1084	1622	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	7.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1622	-	1084	-	-	
HCM Lane V/C Ratio	0.019	-	0.088	-	-	
HCM Control Delay (s)	7.3	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	60	4	94	2	377	45	233	334	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	61	4	95	2	381	45	235	337	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1195	1193	337	1193	1193	381	337	0	0	381	0	0
Stage 1	808	808	-	385	385	-	-	-	-	-	-	-
Stage 2	387	385	-	808	808	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	163	187	705	164	187	666	1163	-	-	1135	-	-
Stage 1	375	394	-	638	611	-	-	-	-	-	-	-
Stage 2	637	611	-	375	394	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	115	148	705	138	148	666	1163	-	-	1135	-	-
Mov Cap-2 Maneuver	115	148	-	138	148	-	-	-	-	-	-	-
Stage 1	374	312	-	637	610	-	-	-	-	-	-	-
Stage 2	542	610	-	297	312	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			26.5			0			3.7		
HCM LOS	A			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1163	-	-	-	-	138	148	666	1135	-	-	
HCM Lane V/C Ratio	0.002	-	-	-	-	0.439	0.027	0.143	0.207	-	-	
HCM Control Delay (s)	8.1	-	-	0	0	50.1	30	11.3	9	-	-	
HCM Lane LOS	A	-	-	A	A	F	D	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	2	0.1	0.5	0.8	-	-	

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	127	73	22	116	32	56	58	16	18	36	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	148	85	26	135	37	65	67	19	21	42	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	238	0	0	461	453	195	478	478	158
Stage 1	-	-	-	-	-	-	225	225	-	210	210	-
Stage 2	-	-	-	-	-	-	236	228	-	268	268	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1399	-	-	1329	-	-	511	503	846	498	486	887
Stage 1	-	-	-	-	-	-	778	718	-	792	728	-
Stage 2	-	-	-	-	-	-	767	715	-	738	687	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1399	-	-	1329	-	-	456	482	842	422	466	883
Mov Cap-2 Maneuver	-	-	-	-	-	-	456	482	-	422	466	-
Stage 1	-	-	-	-	-	-	765	706	-	779	709	-
Stage 2	-	-	-	-	-	-	697	696	-	645	676	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1			15.4			13.8		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	496	1399	-	-	1329	-	-	484				
HCM Lane V/C Ratio	0.305	0.011	-	-	0.019	-	-	0.151				
HCM Control Delay (s)	15.4	7.6	0	-	7.8	0	-	13.8				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.3	0	-	-	0.1	-	-	0.5				

Intersection												
Int Delay, s/veh		4.5										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	37	141	6	37	5	122	2	9	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	46	176	8	46	6	152	2	11	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	228	0	0	220	220	139	223	304	54
Stage 1	-	-	-	-	-	-	147	147	-	69	69	-
Stage 2	-	-	-	-	-	-	73	73	-	154	235	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1546	-	-	1340	-	-	736	678	909	733	609	1013
Stage 1	-	-	-	-	-	-	856	775	-	941	837	-
Stage 2	-	-	-	-	-	-	937	834	-	848	710	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1340	-	-	721	666	905	714	599	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	721	666	-	714	599	-
Stage 1	-	-	-	-	-	-	850	769	-	934	829	-
Stage 2	-	-	-	-	-	-	923	826	-	832	705	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			11.4			10.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	730	1546	-	-	1340	-	-	652				
HCM Lane V/C Ratio	0.228	0.002	-	-	0.006	-	-	0.013				
HCM Control Delay (s)	11.4	7.3	0	-	7.7	0	-	10.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Existing Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	498	25	97	370	140	13	12	91	133	27	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	43	519	26	101	385	146	14	12	95	139	28	29
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	637	32	129	745	620	101	91	436	447	91	74
Arrive On Green	0.04	0.36	0.36	0.07	0.40	0.40	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1774	1759	88	1774	1863	1550	81	264	1260	968	262	214
Grp Volume(v), veh/h	43	0	545	101	385	146	121	0	0	196	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1847	1774	1863	1550	1604	0	0	1443	0	0
Q Serve(g_s), s	1.3	0.0	14.6	3.1	8.6	3.4	0.0	0.0	0.0	2.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	0.0	14.6	3.1	8.6	3.4	2.9	0.0	0.0	4.9	0.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	0.12		0.79	0.71		0.15
Lane Grp Cap(c), veh/h	62	0	669	129	745	620	629	0	0	612	0	0
V/C Ratio(X)	0.69	0.00	0.81	0.78	0.52	0.24	0.19	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	129	0	774	194	848	706	629	0	0	612	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.2	0.0	15.8	25.0	12.4	10.9	12.7	0.0	0.0	13.2	0.0	0.0
Incr Delay (d2), s/veh	12.8	0.0	5.9	11.1	0.6	0.2	0.7	0.0	0.0	1.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	8.5	1.9	4.5	1.5	1.4	0.0	0.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	39.0	0.0	21.7	36.1	13.0	11.1	13.4	0.0	0.0	14.6	0.0	0.0
LnGrp LOS	D		C	D	B	B	B			B		
Approach Vol, veh/h		588			632			121			196	
Approach Delay, s/veh		23.0			16.3			13.4			14.6	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.0	23.9		23.0	5.9	26.0				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		4.9	5.1	16.6		6.9	3.3	10.6				
Green Ext Time (p_c), s		1.6	0.0	3.2		1.5	0.0	5.5				
Intersection Summary												
HCM 2010 Ctrl Delay			18.4									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	524	186	88	535	76	223	86	49	94	82	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	540	192	91	552	78	230	89	51	97	85	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	35	539	458	108	616	523	243	363	208	125	487	413
Arrive On Green	0.02	0.29	0.29	0.06	0.33	0.33	0.14	0.33	0.33	0.07	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1100	630	1774	1863	1580
Grp Volume(v), veh/h	22	540	192	91	552	78	230	0	140	97	85	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1730	1774	1863	1580
Q Serve(g_s), s	0.8	19.0	6.4	3.3	18.5	2.3	8.4	0.0	3.8	3.5	2.3	0.8
Cycle Q Clear(g_c), s	0.8	19.0	6.4	3.3	18.5	2.3	8.4	0.0	3.8	3.5	2.3	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	35	539	458	108	616	523	243	0	571	125	487	413
V/C Ratio(X)	0.62	1.00	0.42	0.84	0.90	0.15	0.95	0.00	0.25	0.78	0.17	0.06
Avail Cap(c_a), veh/h	108	539	458	108	616	523	243	0	571	191	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	23.0	18.5	30.2	20.6	15.2	27.8	0.0	15.9	29.7	18.6	18.0
Incr Delay (d2), s/veh	16.4	39.1	0.6	41.9	15.9	0.1	42.8	0.0	1.0	10.5	0.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	15.4	2.9	2.9	12.1	1.0	7.0	0.0	2.0	2.1	1.3	0.4
LnGrp Delay(d),s/veh	48.0	62.1	19.2	72.1	36.5	15.3	70.5	0.0	16.9	40.2	19.3	18.3
LnGrp LOS	D	F	B	E	D	B	E		B	D	B	B
Approach Vol, veh/h		754			721			370			207	
Approach Delay, s/veh		50.8			38.7			50.2			29.0	
Approach LOS		D			D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	25.4	8.0	23.0	13.0	21.0	5.3	25.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	5.5	5.8	5.3	21.0	10.4	4.3	2.8	20.5				
Green Ext Time (p_c), s	0.0	1.1	0.0	0.0	0.0	1.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			44.2									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	42	172	111	70	41	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	187	121	76	45	27
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	197	0	-	0	437	159
Stage 1	-	-	-	-	159	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1376	-	-	-	577	886
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	769	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1376	-	-	-	556	886
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	741	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.5		0		11.3	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1376	-	-	-	647	
HCM Lane V/C Ratio	0.033	-	-	-	0.111	
HCM Control Delay (s)	7.7	0	-	-	11.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

Intersection						
Int Delay, s/veh	7.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	58	100	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	109	0	1	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	218	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	718	1084	1622	-	-	-
Mov Cap-2 Maneuver	718	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.5	7.4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1622	-	1084	-	-	
HCM Lane V/C Ratio	0.067	-	0.058	-	-	
HCM Control Delay (s)	7.4	0	8.5	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-	

HCM 2010 Signalized Intersection Summary

1: State Route 156 & Buena Vista Rd.

Existing Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	6	1	59	0	205	2	250	46	40	257	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1696	1696	1696	1508	1508	1900
Adj Flow Rate, veh/h	2	6	1	62	0	216	2	263	48	42	271	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	12	12	12	26	26	26
Cap, veh/h	4	13	15	287	301	256	5	461	391	56	465	0
Arrive On Green	0.01	0.01	0.01	0.16	0.00	0.16	0.00	0.27	0.27	0.04	0.31	0.00
Sat Flow, veh/h	460	1380	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Grp Volume(v), veh/h	8	0	1	62	0	216	2	263	48	42	271	0
Grp Sat Flow(s),veh/h/ln	1840	0	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Q Serve(g_s), s	0.1	0.0	0.0	0.9	0.0	4.1	0.0	4.1	0.8	0.9	4.7	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	0.9	0.0	4.1	0.0	4.1	0.8	0.9	4.7	0.0
Prop In Lane	0.25		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	18	0	15	287	301	256	5	461	391	56	465	0
V/C Ratio(X)	0.45	0.00	0.07	0.22	0.00	0.84	0.38	0.57	0.12	0.75	0.58	0.00
Avail Cap(c_a), veh/h	953	0	820	287	301	256	209	988	840	232	927	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.2	0.0	15.2	11.2	0.0	12.6	15.4	9.7	8.5	14.7	9.0	0.0
Incr Delay (d2), s/veh	16.9	0.0	1.8	0.4	0.0	21.7	40.2	1.1	0.1	17.6	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.5	0.0	3.3	0.1	2.0	0.3	0.6	2.0	0.0
LnGrp Delay(d),s/veh	32.2	0.0	16.9	11.6	0.0	34.3	55.6	10.8	8.6	32.3	10.2	0.0
LnGrp LOS	C		B	B		C	E	B	A	C	B	
Approach Vol, veh/h		9			278			313			313	
Approach Delay, s/veh		30.5			29.2			10.8			13.1	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.2	12.4		4.3	4.1	13.5		9.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	5.0	18.0		16.0	4.0	19.0		5.0				
Max Q Clear Time (g_c+I1), s	2.9	6.1		2.1	2.0	6.7		6.1				
Green Ext Time (p_c), s	0.0	2.3		0.0	0.0	2.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			17.4									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	501	165	34	339	90	213	102	84	138	85	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	551	181	37	373	99	234	112	92	152	93	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	586	499	53	625	530	251	271	222	191	474	395
Arrive On Green	0.01	0.32	0.32	0.03	0.34	0.34	0.14	0.29	0.29	0.11	0.25	0.25
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	935	768	1774	1863	1552
Grp Volume(v), veh/h	9	551	181	37	373	99	234	0	204	152	93	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1703	1774	1863	1552
Q Serve(g_s), s	0.3	18.3	5.6	1.3	10.5	2.8	8.3	0.0	6.1	5.3	2.5	1.1
Cycle Q Clear(g_c), s	0.3	18.3	5.6	1.3	10.5	2.8	8.3	0.0	6.1	5.3	2.5	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	16	586	499	53	625	530	251	0	493	191	474	395
V/C Ratio(X)	0.55	0.94	0.36	0.70	0.60	0.19	0.93	0.00	0.41	0.80	0.20	0.09
Avail Cap(c_a), veh/h	112	586	499	112	625	530	251	0	493	226	474	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	20.9	16.5	30.2	17.2	14.7	26.6	0.0	18.0	27.4	18.4	17.9
Incr Delay (d2), s/veh	26.2	23.3	0.4	15.1	1.6	0.2	38.5	0.0	2.5	15.3	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	13.0	2.5	0.8	5.6	1.2	6.7	0.0	3.2	3.4	1.4	0.5
LnGrp Delay(d),s/veh	57.3	44.1	17.0	45.3	18.8	14.8	65.1	0.0	20.6	42.7	19.3	18.3
LnGrp LOS	E	D	B	D	B	B	E		C	D	B	B
Approach Vol, veh/h		741			509			438			279	
Approach Delay, s/veh		37.7			19.9			44.4			31.9	
Approach LOS		D			B			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.8	22.2	5.9	24.0	13.0	20.0	4.6	25.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	8.0	17.0	4.0	20.0	9.0	16.0	4.0	20.0				
Max Q Clear Time (g_c+I1), s	7.3	8.1	3.3	20.3	10.3	4.5	2.3	12.5				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	1.4	0.0	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			33.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

1: State Route 156 & Buena Vista Rd.

Existing Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	60	4	94	2	377	45	233	334	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1681	1681	1681	1727	1727	1900
Adj Flow Rate, veh/h	0	0	0	61	4	95	2	381	45	235	337	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	13	13	13	10	10	10
Cap, veh/h	0	6	5	169	178	151	5	579	492	299	904	0
Arrive On Green	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.34	0.34	0.18	0.52	0.00
Sat Flow, veh/h	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Grp Volume(v), veh/h	0	0	0	61	4	95	2	381	45	235	337	0
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.1	1.8	0.0	6.1	0.7	4.3	3.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.1	1.8	0.0	6.1	0.7	4.3	3.7	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	6	5	169	178	151	5	579	492	299	904	0
V/C Ratio(X)	0.00	0.00	0.00	0.36	0.02	0.63	0.40	0.66	0.09	0.79	0.37	0.00
Avail Cap(c_a), veh/h	0	941	800	224	235	200	202	956	812	571	1364	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.4	13.0	13.8	15.8	8.8	7.0	12.4	4.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.3	0.1	4.3	43.4	1.3	0.1	4.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.6	0.0	1.0	0.1	3.0	0.3	2.3	1.7	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	14.7	13.0	18.0	59.2	10.1	7.1	17.0	4.7	0.0
LnGrp LOS				B	B	B	E	B	A	B	A	
Approach Vol, veh/h		0			160			428			572	
Approach Delay, s/veh		0.0			16.6			10.0			9.7	
Approach LOS					B			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.7	14.9		0.0	4.1	20.6		7.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	11.0	18.0		16.0	4.0	25.0		4.0				
Max Q Clear Time (g_c+I1), s	6.3	8.1		0.0	2.0	5.7		3.8				
Green Ext Time (p_c), s	0.3	2.8		0.0	0.0	3.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	10.8											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Existing Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	524	186	88	535	76	223	86	49	94	82	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	540	192	91	552	78	230	89	51	97	85	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	35	568	482	108	644	547	243	345	198	125	459	389
Arrive On Green	0.02	0.31	0.31	0.06	0.35	0.35	0.14	0.31	0.31	0.07	0.25	0.25
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1100	630	1774	1863	1580
Grp Volume(v), veh/h	22	540	192	91	552	78	230	0	140	97	85	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1730	1774	1863	1580
Q Serve(g_s), s	0.8	18.6	6.3	3.3	18.1	2.2	8.4	0.0	3.9	3.5	2.3	0.8
Cycle Q Clear(g_c), s	0.8	18.6	6.3	3.3	18.1	2.2	8.4	0.0	3.9	3.5	2.3	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	35	568	482	108	644	547	243	0	543	125	459	389
V/C Ratio(X)	0.62	0.95	0.40	0.84	0.86	0.14	0.95	0.00	0.26	0.77	0.19	0.06
Avail Cap(c_a), veh/h	108	568	482	108	644	547	243	0	543	246	459	389
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	22.0	17.8	30.2	19.7	14.5	27.8	0.0	16.6	29.7	19.4	18.8
Incr Delay (d2), s/veh	16.4	26.1	0.5	41.9	11.1	0.1	42.8	0.0	1.1	9.7	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	13.6	2.8	2.9	11.2	1.0	7.0	0.0	2.0	2.0	1.3	0.4
LnGrp Delay(d),s/veh	48.0	48.2	18.3	72.1	30.8	14.6	70.5	0.0	17.8	39.4	20.2	19.1
LnGrp LOS	D	D	B	E	C	B	E		B	D	C	B
Approach Vol, veh/h		754			721			370			207	
Approach Delay, s/veh		40.5			34.2			50.6			29.1	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	24.4	8.0	24.0	13.0	20.0	5.3	26.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	16.0	4.0	20.0	9.0	16.0	4.0	20.0				
Max Q Clear Time (g_c+I1), s	5.5	5.9	5.3	20.6	10.4	4.3	2.8	20.1				
Green Ext Time (p_c), s	0.1	0.9	0.0	0.0	0.0	1.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			39.0									
HCM 2010 LOS			D									

Appendix E

Approved
Projects
within
Hollister

APPROVED DEVELOPMENT PROJECTS

Project Name	Location	Project Description	Daily Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
1 Fairfield Inn & Suites Marriot Hotel	380 Gateway Drive	Hotel 81 rooms	723	31	23	54	28	29	57
2 Community Food Bank of San Benito County	172 McCloskey Road	Office 3,072 SF	34	4	1	5	1	4	5
		Warehouse 10,560 SF	38	2	1	3	1	2	3
3 1980 Airway Drive	1980 Airway Drive	Industrial 15,600 SF	109	12	2	14	2	13	15
		Mech. Shop/Office 6,250 Sf	69	9	1	10	2	7	9
4 North Florida Development (Ladd Lane)	W/o Ladd Lane, at Hillock Drive	Medical Office/Retail 12,420 SF	449	24	6	30	12	32	44
		Retail 20,500 SF	909	67	73	140	25	31	56
		Apartments 63 Units	419	6	26	32	25	14	39
		Courtyard Units 25 Units	238	5	14	19	16	9	25
		Single Family 13 Units	124	3	7	10	8	5	13
5 Airport Business Park	Flynn Rd, between SR 25 and San Felipe Rd	Industrial 12,100 SF	84	10	1	11	1	11	12
6 Hollister Business Park	Fallon Rd	Warehouse 49,569 SF	176	12	3	15	4	12	16
7 Legacy Guerra (Lowes Project -190 Hillcreset Rd)	W/o Hwy 25 bypass between Meridian St and Hillcrest Rd	Home Impr 150,000 SF	4,611	128	96	224	172	178	350
		Commercial 100,480 SF	4,290	60	36	96	179	194	373
		Apartments 120 Units	798	12	49	61	48	26	74
8 Cerrato Estates	Between Meridian St and Hillcrest Rd, w/o Memorial Drive	Residential 241 Units	2,294	45	136	181	152	89	241
9 Villages Brigantino	North of Brigantino Drive	Residential 154 Units	1,466	29	87	116	97	57	154
10 CSDC	Westside Blvd between 4th Street and South Street	Apartments 15 Units	100	2	6	8	6	3	9
11 Pacific West Communities	NE corner of Miller Rd/San Juan Rd	Apartments 57 Units	379	6	23	29	23	12	35
12 Valles	E/o Cushman Street, S/o Nash Rd	Apartments 50 Units	333	5	21	26	20	11	31
13 Silver Oaks	W/o Valley View, s/o Hazel Hawkins Hospital, e/o Airline, n/o Valle Way	Senior Apartments 170 Units	585	11	21	32	23	16	39
14 Braer	N/w of San Benito St/South St	Apartments 6 Units	40	1	2	3	3	1	4
15 Eden West	Between Apricot KLn, Line St, Steinbeck Dr, and Cannery Row	Residential 55 Units	524	10	31	41	35	20	55
16 Rajkovich	W/o San Benito St and Cienega Rd	Residential 81 Units	771	15	46	61	51	30	81
		Apartments 100 Units	665	10	41	51	40	22	62
17 Coria	W/o Westside Blvd at Jan Avenue	Residential 7 Units	67	1	4	5	4	3	7
18 Hillview 2	Buena Vista Rd, w/o Ranchito Dr	Residential 30 Units	286	6	17	23	19	11	30
19 Award Homes	W/o Fairview, s/o St. Benedict's Church, e/o Calistoga Dr	Residential 567 Units	5,398	106	319	425	357	210	567
		Apartments 100 Units	665	10	41	51	40	22	62
20 Givson/Sunnyslope	Between sr 25 and Black Forest	Residential 29 Units	276	6	16	22	18	11	29
21 Las Brisas 7	N/o Sunnuyslope, E and W of Clearview along Marily Ct and McDonald Ct	Residential 3 Units	29	1	1	2	2	1	3
22 Las Brisas 8	N/o Sunnyslope, E and W of Clearview along Marily Ct and McDonald Ct	Residential 11 Units	105	2	6	8	7	4	11
23 Santana Ranch 1,092 residential, 800 student elementary school 65,000 sf commercial	E/o Fairview Rd from Hillcrest to Sunnyslope	Net Trips	13,273	401	767	1,168	864	607	1,471
24 Fairview Corners Residential	N/E Corners of Fairview Rd and Airline Hwy	Single Family 220 Units	2,094	41	124	165	139	81	220
25 Creekside 5 & 6	Los Altos Dr, south of Hillcrest	Residential 14 Lots	133	3	8	11	9	5	14
26 Humboldt West	Southside/Airline	Residential 16 Lots	152	3	9	12	10	6	16
27 Easde	Southside/Airline	Residential 5 Lots	48	1	3	4	3	2	5
28 Don Marcus	Santa Ana Valley Road	Residential 4 Lots	38	1	2	3	3	1	4
29 VLM/Mendonsa	Santa Ana Valley Road	Residential 3 Lots	29	1	1	2	2	1	3
30 Chamber's Equestrian Center	SR 25 and Shore Rd	Horse Show	-	-	-	-	-	-	-

Appendix F

Intersection Level of Service Calculations

Background Conditions

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	59	0	186	2	254	46	40	258	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	62	0	196	2	267	48	42	272	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	628	628	272	631	628	267	272	0	0	267	0	0
Stage 1	356	356	-	272	272	-	-	-	-	-	-	-
Stage 2	272	272	-	359	356	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	395	400	767	394	400	772	1236	-	-	1170	-	-
Stage 1	661	629	-	734	685	-	-	-	-	-	-	-
Stage 2	734	685	-	659	629	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	286	385	767	377	385	772	1236	-	-	1170	-	-
Mov Cap-2 Maneuver	286	385	-	377	385	-	-	-	-	-	-	-
Stage 1	660	606	-	733	684	-	-	-	-	-	-	-
Stage 2	547	684	-	628	606	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	14.8			12.5			0.1			1.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1236	-	-	354	767	377	-	772	1170	-	-	
HCM Lane V/C Ratio	0.002	-	-	0.024	0.001	0.165	-	0.254	0.036	-	-	
HCM Control Delay (s)	7.9	-	-	15.4	9.7	16.4	0	11.2	8.2	-	-	
HCM Lane LOS	A	-	-	C	A	C	A	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.6	-	1	0.1	-	-	

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	151	12	37	141	0	30	2	70	4	1	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	213	17	52	199	0	42	3	99	6	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	239	0	0	546	545	231	596	553	209
Stage 1	-	-	-	-	-	-	233	233	-	312	312	-
Stage 2	-	-	-	-	-	-	313	312	-	284	241	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1363	-	-	1328	-	-	448	446	808	415	441	831
Stage 1	-	-	-	-	-	-	770	712	-	699	658	-
Stage 2	-	-	-	-	-	-	698	658	-	723	706	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1362	-	-	1327	-	-	428	420	801	347	415	824
Mov Cap-2 Maneuver	-	-	-	-	-	-	428	420	-	347	415	-
Stage 1	-	-	-	-	-	-	763	706	-	693	624	-
Stage 2	-	-	-	-	-	-	665	624	-	630	700	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.6			12.4			15.2		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	629	1362	-	-	1327	-	-	359				
HCM Lane V/C Ratio	0.228	0.001	-	-	0.039	-	-	0.02				
HCM Control Delay (s)	12.4	7.6	0	-	7.8	0	-	15.2				
HCM Lane LOS	B	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	0.1				

Intersection												
Int Delay, s/veh		7.2										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	97	143	10	86	1	166	9	4	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	145	213	15	128	1	248	13	6	3	4	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	377	0	0	455	452	270	461	558	148
Stage 1	-	-	-	-	-	-	273	273	-	178	178	-
Stage 2	-	-	-	-	-	-	182	179	-	283	380	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1432	-	-	1181	-	-	515	503	769	511	438	899
Stage 1	-	-	-	-	-	-	733	684	-	824	752	-
Stage 2	-	-	-	-	-	-	820	751	-	724	614	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1432	-	-	1181	-	-	495	480	757	483	418	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	495	480	-	483	418	-
Stage 1	-	-	-	-	-	-	721	672	-	810	730	-
Stage 2	-	-	-	-	-	-	801	729	-	703	604	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.8			20.3			12.1		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	498	1432	-	-	1181	-	-	516				
HCM Lane V/C Ratio	0.536	0.001	-	-	0.013	-	-	0.02				
HCM Control Delay (s)	20.3	7.5	0	-	8.1	0	-	12.1				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	3.1	0	-	-	0	-	-	0.1				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Background AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	447	8	63	474	47	26	31	116	95	17	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	11	491	9	69	521	52	29	34	127	104	19	25
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	20	641	12	86	731	605	126	148	392	462	87	88
Arrive On Green	0.01	0.36	0.36	0.05	0.40	0.40	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1740	1788	33	1757	1845	1526	129	407	1080	950	240	242
Grp Volume(v), veh/h	11	0	500	69	521	52	190	0	0	148	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1821	1757	1845	1526	1616	0	0	1433	0	0
Q Serve(g_s), s	0.3	0.0	12.7	2.0	12.4	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	12.7	2.0	12.4	1.1	4.3	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.70		0.17
Lane Grp Cap(c), veh/h	20	0	653	86	731	605	666	0	0	637	0	0
V/C Ratio(X)	0.56	0.00	0.77	0.80	0.71	0.09	0.29	0.00	0.00	0.23	0.00	0.00
Avail Cap(c_a), veh/h	133	0	800	201	881	729	666	0	0	637	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.7	0.0	14.8	24.6	13.3	9.9	12.0	0.0	0.0	11.6	0.0	0.0
Incr Delay (d2), s/veh	22.6	0.0	3.6	15.5	2.2	0.1	1.1	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	6.9	1.3	6.7	0.5	2.2	0.0	0.0	1.6	0.0	0.0
LnGrp Delay(d),s/veh	48.3	0.0	18.4	40.1	15.4	9.9	13.1	0.0	0.0	12.4	0.0	0.0
LnGrp LOS	D		B	D	B	A	B			B		
Approach Vol, veh/h		511			642			190			148	
Approach Delay, s/veh		19.1			17.6			13.1			12.4	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.6	22.8		23.0	4.6	24.7				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		6.3	4.0	14.7		5.0	2.3	14.4				
Green Ext Time (p_c), s		1.7	0.0	4.1		1.8	0.0	4.8				
Intersection Summary												
HCM 2010 Ctrl Delay			17.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Background AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	542	145	36	405	99	212	101	87	119	63	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	596	159	40	445	109	233	111	96	131	69	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	556	473	56	598	507	251	291	251	166	503	419
Arrive On Green	0.01	0.30	0.30	0.03	0.32	0.32	0.14	0.32	0.32	0.09	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	911	788	1774	1863	1554
Grp Volume(v), veh/h	9	596	159	40	445	109	233	0	207	131	69	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1700	1774	1863	1554
Q Serve(g_s), s	0.3	19.0	5.0	1.4	13.5	3.2	8.3	0.0	6.0	4.6	1.8	1.0
Cycle Q Clear(g_c), s	0.3	19.0	5.0	1.4	13.5	3.2	8.3	0.0	6.0	4.6	1.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	16	556	473	56	598	507	251	0	542	166	503	419
V/C Ratio(X)	0.55	1.07	0.34	0.71	0.74	0.22	0.93	0.00	0.38	0.79	0.14	0.08
Avail Cap(c_a), veh/h	112	556	473	112	598	507	251	0	542	197	503	419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	22.0	17.1	30.2	19.0	15.5	26.7	0.0	16.6	27.9	17.4	17.2
Incr Delay (d2), s/veh	26.3	58.8	0.4	15.3	5.0	0.2	38.0	0.0	2.0	16.3	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	18.7	2.2	0.9	7.6	1.4	6.7	0.0	3.1	3.0	1.0	0.5
LnGrp Delay(d),s/veh	57.3	80.8	17.5	45.6	24.0	15.7	64.7	0.0	18.7	44.3	18.0	17.6
LnGrp LOS	E	F	B	D	C	B	E		B	D	B	B
Approach Vol, veh/h		764			594			440			234	
Approach Delay, s/veh		67.3			23.9			43.0			32.6	
Approach LOS		E			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	24.1	6.0	23.0	13.0	21.0	4.6	24.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	6.6	8.0	3.4	21.0	10.3	3.8	2.3	15.5				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.0	0.0	1.4	0.0	2.3				
Intersection Summary												
HCM 2010 Ctrl Delay			45.4									
HCM 2010 LOS			D									

1: State Route 156 & Buena Vista Rd.

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	60	4	91	2	378	45	215	338	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	61	4	92	2	382	45	217	341	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1164	1162	341	1162	1162	382	341	0	0	382	0	0
Stage 1	776	776	-	386	386	-	-	-	-	-	-	-
Stage 2	388	386	-	776	776	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	171	195	701	172	195	665	1159	-	-	1134	-	-
Stage 1	390	407	-	637	610	-	-	-	-	-	-	-
Stage 2	636	610	-	390	407	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	123	157	701	147	157	665	1159	-	-	1134	-	-
Mov Cap-2 Maneuver	123	157	-	147	157	-	-	-	-	-	-	-
Stage 1	389	329	-	636	609	-	-	-	-	-	-	-
Stage 2	544	609	-	315	329	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	25.1	0	3.5
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1159	-	-	-	-	147	157	665	1134	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-	0.412	0.026	0.138	0.192	-	-
HCM Control Delay (s)	8.1	-	-	0	0	45.7	28.5	11.3	8.9	-	-
HCM Lane LOS	A	-	-	A	A	E	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	1.8	0.1	0.5	0.7	-	-

Intersection												
Int Delay, s/veh		1.7										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	143	51	22	112	0	18	1	16	0	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	166	59	26	130	0	21	1	19	0	2	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	135	0	0	231	0	0	395	392	201	401	421	135
Stage 1	-	-	-	-	-	-	206	206	-	186	186	-
Stage 2	-	-	-	-	-	-	189	186	-	215	235	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1449	-	-	1337	-	-	565	544	840	560	524	914
Stage 1	-	-	-	-	-	-	796	731	-	816	746	-
Stage 2	-	-	-	-	-	-	813	746	-	787	710	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1449	-	-	1337	-	-	549	527	837	535	508	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	549	527	-	535	508	-
Stage 1	-	-	-	-	-	-	791	726	-	811	727	-
Stage 2	-	-	-	-	-	-	790	727	-	767	706	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.3			10.9			10.3		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	651	1449	-	-	1337	-	-	691				
HCM Lane V/C Ratio	0.063	0.002	-	-	0.019	-	-	0.008				
HCM Control Delay (s)	10.9	7.5	0	-	7.7	0	-	10.3				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0				

3: Westside Blvd./Westside Rd. & Buena Vista Rd.

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	37	139	6	37	5	86	2	9	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	46	174	8	46	6	108	2	11	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	225	0	0	219	219	138	222	302	54
Stage 1	-	-	-	-	-	-	146	146	-	69	69	-
Stage 2	-	-	-	-	-	-	73	73	-	153	233	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1546	-	-	1344	-	-	737	679	910	734	611	1013
Stage 1	-	-	-	-	-	-	857	776	-	941	837	-
Stage 2	-	-	-	-	-	-	937	834	-	849	712	-
Platoon blocked, %			-	-		-						
Mov Cap-1 Maneuver	1546	-	-	1344	-	-	722	667	906	715	600	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	722	667	-	715	600	-
Stage 1	-	-	-	-	-	-	851	770	-	934	829	-
Stage 2	-	-	-	-	-	-	923	826	-	833	707	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			10.9			10.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	735	1546	-	-	1344	-	-	653				
HCM Lane V/C Ratio	0.165	0.002	-	-	0.006	-	-	0.013				
HCM Control Delay (s)	10.9	7.3	0	-	7.7	0	-	10.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-	0				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	608	25	97	477	76	13	12	91	96	27	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	21	633	26	101	497	79	14	12	95	100	28	16
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	689	28	129	821	684	97	87	417	422	113	54
Arrive On Green	0.02	0.39	0.39	0.07	0.44	0.44	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1777	73	1774	1863	1553	81	264	1260	955	343	162
Grp Volume(v), veh/h	21	0	659	101	497	79	121	0	0	144	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1850	1774	1863	1553	1605	0	0	1460	0	0
Q Serve(g_s), s	0.7	0.0	19.5	3.2	11.7	1.7	0.0	0.0	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	19.5	3.2	11.7	1.7	3.1	0.0	0.0	3.4	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.79	0.69		0.11
Lane Grp Cap(c), veh/h	35	0	717	129	821	684	601	0	0	589	0	0
V/C Ratio(X)	0.60	0.00	0.92	0.78	0.61	0.12	0.20	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	123	0	740	185	821	684	601	0	0	589	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.9	0.0	16.7	26.2	12.3	9.5	13.9	0.0	0.0	14.0	0.0	0.0
Incr Delay (d2), s/veh	15.1	0.0	16.3	12.6	1.3	0.1	0.8	0.0	0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	13.1	2.0	6.2	0.7	1.5	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	43.1	0.0	33.0	38.8	13.5	9.5	14.7	0.0	0.0	15.0	0.0	0.0
LnGrp LOS	D		C	D	B	A	B			B		
Approach Vol, veh/h		680			677			121			144	
Approach Delay, s/veh		33.3			16.8			14.7			15.0	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.2	26.3		23.0	5.1	29.3				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		5.1	5.2	21.5		5.4	2.7	13.7				
Green Ext Time (p_c), s		1.3	0.0	0.8		1.3	0.0	5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			23.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Background PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	605	178	91	599	60	202	65	52	99	75	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	624	184	94	618	62	208	67	54	102	77	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	35	539	458	108	616	523	243	308	248	131	487	413
Arrive On Green	0.02	0.29	0.29	0.06	0.33	0.33	0.14	0.33	0.33	0.07	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	945	761	1774	1863	1580
Grp Volume(v), veh/h	22	624	184	94	618	62	208	0	121	102	77	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1706	1774	1863	1580
Q Serve(g_s), s	0.8	19.0	6.1	3.4	21.7	1.8	7.5	0.0	3.3	3.7	2.1	0.8
Cycle Q Clear(g_c), s	0.8	19.0	6.1	3.4	21.7	1.8	7.5	0.0	3.3	3.7	2.1	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.45	1.00		1.00
Lane Grp Cap(c), veh/h	35	539	458	108	616	523	243	0	557	131	487	413
V/C Ratio(X)	0.62	1.16	0.40	0.87	1.00	0.12	0.86	0.00	0.22	0.78	0.16	0.06
Avail Cap(c_a), veh/h	108	539	458	108	616	523	243	0	557	191	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	23.0	18.4	30.2	21.7	15.0	27.4	0.0	15.9	29.6	18.5	18.0
Incr Delay (d2), s/veh	16.4	90.1	0.6	48.4	37.3	0.1	24.5	0.0	0.9	11.7	0.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	23.1	2.7	3.1	17.3	0.8	5.3	0.0	1.7	2.2	1.2	0.4
LnGrp Delay(d),s/veh	48.0	113.1	19.0	78.6	58.9	15.1	51.9	0.0	16.8	41.3	19.2	18.3
LnGrp LOS	D	F	B	E	F	B	D		B	D	B	B
Approach Vol, veh/h		830			774			329			204	
Approach Delay, s/veh		90.5			57.8			39.0			30.1	
Approach LOS		F			E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	25.2	8.0	23.0	13.0	21.0	5.3	25.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	5.7	5.3	5.4	21.0	9.5	4.1	2.8	23.7				
Green Ext Time (p_c), s	0.0	0.9	0.0	0.0	0.0	0.9	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			65.0									
HCM 2010 LOS			E									

Appendix G

Intersection Level of Service Calculations

Background Plus Project Conditions

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	59	0	233	2	254	46	56	258	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	62	0	245	2	267	48	59	272	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	661	661	272	665	661	267	272	0	0	267	0	0
Stage 1	389	389	-	272	272	-	-	-	-	-	-	-
Stage 2	272	272	-	393	389	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	376	383	767	374	383	772	1236	-	-	1170	-	-
Stage 1	635	608	-	734	685	-	-	-	-	-	-	-
Stage 2	734	685	-	632	608	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	363	767	354	363	772	1236	-	-	1170	-	-
Mov Cap-2 Maneuver	246	363	-	354	363	-	-	-	-	-	-	-
Stage 1	634	577	-	733	684	-	-	-	-	-	-	-
Stage 2	500	684	-	593	577	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15.7			12.9			0.1			1.5		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1236	-	-	324	767	354	-	772	1170	-	-	
HCM Lane V/C Ratio	0.002	-	-	0.026	0.001	0.175	-	0.318	0.05	-	-	
HCM Control Delay (s)	7.9	-	-	16.4	9.7	17.3	0	11.8	8.2	-	-	
HCM Lane LOS	A	-	-	C	A	C	A	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.6	-	1.4	0.2	-	-	

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	180	46	37	151	9	41	19	70	32	52	9
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	254	65	52	213	13	58	27	99	45	73	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	234	0	0	327	0	0	681	645	296	701	671	229
Stage 1	-	-	-	-	-	-	306	306	-	332	332	-
Stage 2	-	-	-	-	-	-	375	339	-	369	339	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1333	-	-	1233	-	-	364	391	743	353	378	810
Stage 1	-	-	-	-	-	-	704	662	-	681	644	-
Stage 2	-	-	-	-	-	-	646	640	-	651	640	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1332	-	-	1232	-	-	287	364	737	275	352	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	287	364	-	275	352	-
Stage 1	-	-	-	-	-	-	695	653	-	672	608	-
Stage 2	-	-	-	-	-	-	532	605	-	537	631	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.5			18.5			22.2		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	448	1332	-	-	1232	-	-	338				
HCM Lane V/C Ratio	0.409	0.004	-	-	0.042	-	-	0.388				
HCM Control Delay (s)	18.5	7.7	0	-	8.1	0	-	22.2				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	2	0	-	-	0.1	-	-	1.8				

Intersection												
Int Delay, s/veh	8.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	97	200	10	86	1	185	9	4	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	145	299	15	128	1	276	13	6	3	4	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	149	0	0	462	0	0	498	495	313	504	643	148
Stage 1	-	-	-	-	-	-	316	316	-	178	178	-
Stage 2	-	-	-	-	-	-	182	179	-	326	465	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1432	-	-	1099	-	-	483	476	727	478	392	899
Stage 1	-	-	-	-	-	-	695	655	-	824	752	-
Stage 2	-	-	-	-	-	-	820	751	-	687	563	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1432	-	-	1099	-	-	464	454	715	450	374	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	454	-	450	374	-
Stage 1	-	-	-	-	-	-	683	644	-	810	729	-
Stage 2	-	-	-	-	-	-	800	728	-	666	554	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.9			25.1			12.7		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	467	1432	-	-	1099	-	-	475				
HCM Lane V/C Ratio	0.633	0.001	-	-	0.014	-	-	0.022				
HCM Control Delay (s)	25.1	7.5	0	-	8.3	0	-	12.7				
HCM Lane LOS	D	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	4.3	0	-	-	0	-	-	0.1				

HCM 2010 Signalized Intersection Summary

4: Live Oak Dr./Miller Rd. & San Juan Rd.

Background Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	447	8	63	474	66	26	31	116	152	17	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	18	491	9	69	521	73	29	34	127	167	19	46
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	31	642	12	86	721	596	126	147	391	470	61	102
Arrive On Green	0.02	0.36	0.36	0.05	0.39	0.39	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1740	1788	33	1757	1845	1526	129	406	1078	970	169	282
Grp Volume(v), veh/h	18	0	500	69	521	73	190	0	0	232	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1821	1757	1845	1526	1613	0	0	1422	0	0
Q Serve(g_s), s	0.5	0.0	12.7	2.0	12.6	1.6	0.0	0.0	0.0	0.9	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	12.7	2.0	12.6	1.6	4.3	0.0	0.0	5.2	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.72		0.20
Lane Grp Cap(c), veh/h	31	0	654	86	721	596	664	0	0	634	0	0
V/C Ratio(X)	0.59	0.00	0.76	0.80	0.72	0.12	0.29	0.00	0.00	0.37	0.00	0.00
Avail Cap(c_a), veh/h	133	0	800	201	880	728	664	0	0	634	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.5	0.0	14.8	24.7	13.6	10.2	12.0	0.0	0.0	12.2	0.0	0.0
Incr Delay (d2), s/veh	16.6	0.0	3.6	15.4	2.3	0.1	1.1	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	6.9	1.3	6.8	0.7	2.2	0.0	0.0	2.7	0.0	0.0
LnGrp Delay(d),s/veh	42.2	0.0	18.4	40.1	15.9	10.3	13.1	0.0	0.0	13.9	0.0	0.0
LnGrp LOS	D		B	D	B	B	B			B		
Approach Vol, veh/h		518			663			190			232	
Approach Delay, s/veh		19.2			17.8			13.1			13.9	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.6	22.8		23.0	4.9	24.5				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+I1), s		6.3	4.0	14.7		7.2	2.5	14.6				
Green Ext Time (p_c), s		2.2	0.0	4.1		2.1	0.0	4.8				
Intersection Summary												
HCM 2010 Ctrl Delay			17.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Background Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	571	173	36	415	108	221	111	87	147	92	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	627	190	40	456	119	243	122	96	162	101	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	556	473	56	598	507	251	288	227	197	503	419
Arrive On Green	0.01	0.30	0.30	0.03	0.32	0.32	0.14	0.30	0.30	0.11	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	955	751	1774	1863	1554
Grp Volume(v), veh/h	9	627	190	40	456	119	243	0	218	162	101	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1706	1774	1863	1554
Q Serve(g_s), s	0.3	19.0	6.1	1.4	14.0	3.5	8.7	0.0	6.4	5.6	2.6	1.0
Cycle Q Clear(g_c), s	0.3	19.0	6.1	1.4	14.0	3.5	8.7	0.0	6.4	5.6	2.6	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	16	556	473	56	598	507	251	0	514	197	503	419
V/C Ratio(X)	0.55	1.13	0.40	0.71	0.76	0.23	0.97	0.00	0.42	0.82	0.20	0.08
Avail Cap(c_a), veh/h	112	556	473	112	598	507	251	0	514	197	503	419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	22.0	17.5	30.2	19.1	15.6	26.9	0.0	17.6	27.4	17.8	17.2
Incr Delay (d2), s/veh	26.3	78.3	0.6	15.3	5.8	0.2	47.9	0.0	2.5	23.5	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	21.7	2.7	0.9	8.0	1.5	7.5	0.0	3.4	4.0	1.5	0.5
LnGrp Delay(d),s/veh	57.3	100.3	18.0	45.6	24.9	15.8	74.7	0.0	20.2	50.9	18.7	17.6
LnGrp LOS	E	F	B	D	C	B	E		C	D	B	B
Approach Vol, veh/h		826			615			461			297	
Approach Delay, s/veh		80.9			24.5			48.9			36.1	
Approach LOS		F			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	23.0	6.0	23.0	13.0	21.0	4.6	24.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	7.6	8.4	3.4	21.0	10.7	4.6	2.3	16.0				
Green Ext Time (p_c), s	0.0	1.4	0.0	0.0	0.0	1.6	0.0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			52.4									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	13	167	180	21	63	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	182	196	23	68	41
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	417	207
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	210	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1352	-	-	-	592	833
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	825	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	-	585	833
Mov Cap-2 Maneuver	-	-	-	-	585	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	815	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.6		0		11.6	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1352	-	-	-	659	
HCM Lane V/C Ratio	0.01	-	-	-	0.167	
HCM Control Delay (s)	7.7	0	-	-	11.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

Intersection						
Int Delay, s/veh	8.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	88	29	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	96	32	0	1	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	64	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	942	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1084	1622	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	7.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1622	-	1084	-	-	
HCM Lane V/C Ratio	0.019	-	0.088	-	-	
HCM Control Delay (s)	7.3	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	60	4	122	2	378	45	268	338	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	61	4	123	2	382	45	271	341	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1271	1269	341	1269	1269	382	341	0	0	382	0	0
Stage 1	883	883	-	386	386	-	-	-	-	-	-	-
Stage 2	388	386	-	883	883	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	145	168	701	145	168	665	1159	-	-	1134	-	-
Stage 1	340	364	-	637	610	-	-	-	-	-	-	-
Stage 2	636	610	-	340	364	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	94	128	701	118	128	665	1159	-	-	1134	-	-
Mov Cap-2 Maneuver	94	128	-	118	128	-	-	-	-	-	-	-
Stage 1	339	277	-	636	609	-	-	-	-	-	-	-
Stage 2	514	609	-	259	277	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			29			0			4.1		
HCM LOS	A			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1159	-	-	-	-	118	128	665	1134	-	-	
HCM Lane V/C Ratio	0.002	-	-	-	-	0.514	0.032	0.185	0.239	-	-	
HCM Control Delay (s)	8.1	-	-	0	0	64	34	11.6	9.2	-	-	
HCM Lane LOS	A	-	-	A	A	F	D	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	2.4	0.1	0.7	0.9	-	-	

Intersection												
Int Delay, s/veh		5.4										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	162	73	22	144	32	56	58	16	18	36	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	188	85	26	167	37	65	67	19	21	42	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	210	0	0	278	0	0	534	527	236	551	550	191
Stage 1	-	-	-	-	-	-	266	266	-	242	242	-
Stage 2	-	-	-	-	-	-	268	261	-	309	308	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1361	-	-	1285	-	-	457	456	803	445	443	851
Stage 1	-	-	-	-	-	-	739	689	-	762	705	-
Stage 2	-	-	-	-	-	-	738	692	-	701	660	-
Platoon blocked, %												
Mov Cap-1 Maneuver	1361	-	-	1285	-	-	404	436	800	371	424	847
Mov Cap-2 Maneuver	-	-	-	-	-	-	404	436	-	371	424	-
Stage 1	-	-	-	-	-	-	726	677	-	749	686	-
Stage 2	-	-	-	-	-	-	669	673	-	608	649	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.9			17.2			14.9		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	446	1361	-	-	1285	-	-	437				
HCM Lane V/C Ratio	0.339	0.011	-	-	0.02	-	-	0.168				
HCM Control Delay (s)	17.2	7.7	0	-	7.9	0	-	14.9				
HCM Lane LOS	C	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.5	0	-	-	0.1	-	-	0.6				

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	37	176	6	37	5	150	2	9	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	46	220	8	46	6	188	2	11	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	58	0	0	271	0	0	242	242	161	245	348	54
Stage 1	-	-	-	-	-	-	169	169	-	69	69	-
Stage 2	-	-	-	-	-	-	73	73	-	176	279	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1546	-	-	1292	-	-	712	660	884	709	576	1013
Stage 1	-	-	-	-	-	-	833	759	-	941	837	-
Stage 2	-	-	-	-	-	-	937	834	-	826	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1292	-	-	697	649	880	690	566	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	697	649	-	690	566	-
Stage 1	-	-	-	-	-	-	827	754	-	934	829	-
Stage 2	-	-	-	-	-	-	923	826	-	810	675	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			12.1			10.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	705	1546	-	-	1292	-	-	621				
HCM Lane V/C Ratio	0.285	0.002	-	-	0.006	-	-	0.014				
HCM Control Delay (s)	12.1	7.3	0	-	7.8	0	-	10.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	1.2	0	-	-	0	-	-	0				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Background Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	608	25	97	477	140	13	12	91	133	27	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	43	633	26	101	497	146	14	12	95	139	28	29
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	694	29	129	799	666	96	87	414	426	86	70
Arrive On Green	0.03	0.39	0.39	0.07	0.43	0.43	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1777	73	1774	1863	1552	81	264	1259	971	262	214
Grp Volume(v), veh/h	43	0	659	101	497	146	121	0	0	196	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1850	1774	1863	1552	1604	0	0	1448	0	0
Q Serve(g_s), s	1.4	0.0	19.5	3.2	12.0	3.4	0.0	0.0	0.0	2.2	0.0	0.0
Cycle Q Clear(g_c), s	1.4	0.0	19.5	3.2	12.0	3.4	3.1	0.0	0.0	5.3	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.79	0.71		0.15
Lane Grp Cap(c), veh/h	61	0	723	129	799	666	597	0	0	583	0	0
V/C Ratio(X)	0.70	0.00	0.91	0.78	0.62	0.22	0.20	0.00	0.00	0.34	0.00	0.00
Avail Cap(c_a), veh/h	123	0	736	184	806	671	597	0	0	583	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.6	0.0	16.7	26.3	12.8	10.4	14.1	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	13.6	0.0	15.5	12.8	1.5	0.2	0.8	0.0	0.0	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	13.0	2.0	6.4	1.5	1.5	0.0	0.0	2.6	0.0	0.0
LnGrp Delay(d),s/veh	41.2	0.0	32.2	39.2	14.3	10.6	14.8	0.0	0.0	16.2	0.0	0.0
LnGrp LOS	D		C	D	B	B	B			B		
Approach Vol, veh/h		702			744			121			196	
Approach Delay, s/veh		32.7			17.0			14.8			16.2	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.2	26.6		23.0	6.0	28.8				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		5.1	5.2	21.5		7.3	3.4	14.0				
Green Ext Time (p_c), s		1.6	0.0	1.1		1.5	0.0	5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Background Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	624	196	91	631	92	234	97	52	117	94	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	643	202	94	651	95	241	100	54	121	97	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	35	539	458	108	616	523	243	353	190	154	487	413
Arrive On Green	0.02	0.29	0.29	0.06	0.33	0.33	0.14	0.31	0.31	0.09	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1126	608	1774	1863	1580
Grp Volume(v), veh/h	22	643	202	94	651	95	241	0	154	121	97	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1734	1774	1863	1580
Q Serve(g_s), s	0.8	19.0	6.8	3.4	21.7	2.8	8.9	0.0	4.4	4.3	2.6	0.8
Cycle Q Clear(g_c), s	0.8	19.0	6.8	3.4	21.7	2.8	8.9	0.0	4.4	4.3	2.6	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	35	539	458	108	616	523	243	0	543	154	487	413
V/C Ratio(X)	0.62	1.19	0.44	0.87	1.06	0.18	0.99	0.00	0.28	0.79	0.20	0.06
Avail Cap(c_a), veh/h	108	539	458	108	616	523	243	0	543	191	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	23.0	18.7	30.2	21.7	15.4	28.0	0.0	16.8	29.1	18.7	18.0
Incr Delay (d2), s/veh	16.4	103.9	0.7	48.4	52.5	0.2	55.0	0.0	1.3	15.6	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	25.1	3.0	3.1	19.9	1.2	8.0	0.0	2.3	2.8	1.5	0.4
LnGrp Delay(d),s/veh	48.0	126.9	19.4	78.6	74.1	15.5	82.9	0.0	18.1	44.7	19.6	18.3
LnGrp LOS	D	F	B	E	F	B	F		B	D	B	B
Approach Vol, veh/h		867			840			395			243	
Approach Delay, s/veh		99.8			68.0			57.7			32.0	
Approach LOS		F			E			E			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	24.4	8.0	23.0	13.0	21.0	5.3	25.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	6.3	6.4	5.4	21.0	10.9	4.6	2.8	23.7				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	1.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			74.3									
HCM 2010 LOS			E									

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	42	207	139	70	41	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	225	151	76	45	27
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	227	0	-	0	505	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	316	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1341	-	-	-	527	853
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1341	-	-	-	506	853
Mov Cap-2 Maneuver	-	-	-	-	506	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	710	-
Approach	EB		WB		SB	
HCM Control Delay, s	1.3		0		11.8	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1341	-	-	-	598	
HCM Lane V/C Ratio	0.034	-	-	-	0.12	
HCM Control Delay (s)	7.8	0	-	-	11.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	

Intersection

Int Delay, s/veh 7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	58	100	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	109	0	1	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	218	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	718	1084	1622	-	-	-
Mov Cap-2 Maneuver	718	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1084	-	-
HCM Lane V/C Ratio	0.067	-	0.058	-	-
HCM Control Delay (s)	7.4	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

HCM 2010 Signalized Intersection Summary

1: State Route 156 & Buena Vista Rd.

Background Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	6	1	59	0	233	2	254	46	56	258	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1696	1696	1696	1508	1508	1900
Adj Flow Rate, veh/h	2	6	1	62	0	245	2	267	48	59	272	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	12	12	12	26	26	26
Cap, veh/h	4	13	15	283	297	252	5	457	388	74	480	0
Arrive On Green	0.01	0.01	0.01	0.16	0.00	0.16	0.00	0.27	0.27	0.05	0.32	0.00
Sat Flow, veh/h	460	1380	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Grp Volume(v), veh/h	8	0	1	62	0	245	2	267	48	59	272	0
Grp Sat Flow(s),veh/h/ln	1840	0	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Q Serve(g_s), s	0.1	0.0	0.0	1.0	0.0	4.8	0.0	4.3	0.8	1.3	4.7	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	1.0	0.0	4.8	0.0	4.3	0.8	1.3	4.7	0.0
Prop In Lane	0.25		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	18	0	15	283	297	252	5	457	388	74	480	0
V/C Ratio(X)	0.45	0.00	0.07	0.22	0.00	0.97	0.39	0.58	0.12	0.80	0.57	0.00
Avail Cap(c_a), veh/h	939	0	808	283	297	252	206	920	782	275	914	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.4	0.0	15.4	11.5	0.0	13.1	15.6	9.9	8.7	14.7	8.9	0.0
Incr Delay (d2), s/veh	17.0	0.0	1.8	0.4	0.0	48.2	41.6	1.2	0.1	17.8	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.5	0.0	5.4	0.1	2.2	0.3	0.9	2.0	0.0
LnGrp Delay(d),s/veh	32.4	0.0	17.2	11.9	0.0	61.3	57.2	11.1	8.8	32.5	9.9	0.0
LnGrp LOS	C		B	B		E	E	B	A	C	A	
Approach Vol, veh/h		9			307			317			331	
Approach Delay, s/veh		30.7			51.3			11.1			14.0	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	12.4		4.3	4.1	14.0		9.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	6.0	17.0		16.0	4.0	19.0		5.0				
Max Q Clear Time (g_c+I1), s	3.3	6.3		2.1	2.0	6.7		6.8				
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	2.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			25.1									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

5: Westside Blvd. & San Juan Rd./Fourth St.

Background Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	571	173	36	415	108	221	111	87	147	92	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	9	627	190	40	456	119	243	122	96	162	101	34
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	16	670	569	54	709	601	266	261	205	200	437	363
Arrive On Green	0.01	0.36	0.36	0.03	0.38	0.38	0.15	0.27	0.27	0.11	0.23	0.23
Sat Flow, veh/h	1757	1845	1568	1757	1845	1564	1757	955	751	1774	1863	1550
Grp Volume(v), veh/h	9	627	190	40	456	119	243	0	218	162	101	34
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1564	1757	0	1706	1774	1863	1550
Q Serve(g_s), s	0.4	23.8	6.4	1.6	14.7	3.7	9.9	0.0	7.7	6.5	3.2	1.2
Cycle Q Clear(g_c), s	0.4	23.8	6.4	1.6	14.7	3.7	9.9	0.0	7.7	6.5	3.2	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	16	670	569	54	709	601	266	0	466	200	437	363
V/C Ratio(X)	0.56	0.94	0.33	0.75	0.64	0.20	0.91	0.00	0.47	0.81	0.23	0.09
Avail Cap(c_a), veh/h	97	687	584	97	709	601	266	0	466	220	437	363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	22.3	16.7	34.9	18.3	14.9	30.3	0.0	22.0	31.4	22.5	21.7
Incr Delay (d2), s/veh	27.1	20.1	0.3	18.4	2.0	0.2	33.0	0.0	3.3	18.6	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	15.8	2.8	1.1	7.9	1.6	7.2	0.0	4.1	4.2	1.8	0.6
LnGrp Delay(d),s/veh	62.9	42.4	17.1	53.3	20.3	15.0	63.3	0.0	25.3	50.0	23.7	22.3
LnGrp LOS	E	D	B	D	C	B	E		C	D	C	C
Approach Vol, veh/h		826			615			461			297	
Approach Delay, s/veh		36.8			21.4			45.3			37.9	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	23.8	6.2	30.3	15.0	21.0	4.7	31.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	19.0	4.0	27.0	11.0	17.0	4.0	27.0				
Max Q Clear Time (g_c+I1), s	8.5	9.7	3.6	25.8	11.9	5.2	2.4	16.7				
Green Ext Time (p_c), s	0.0	1.3	0.0	0.5	0.0	1.5	0.0	5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			34.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

1: State Route 156 & Buena Vista Rd.

Background Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	60	4	122	2	378	45	268	338	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1681	1681	1681	1727	1727	1900
Adj Flow Rate, veh/h	0	0	0	61	4	123	2	382	45	271	341	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	13	13	13	10	10	10
Cap, veh/h	0	5	5	197	207	176	5	555	472	341	924	0
Arrive On Green	0.00	0.00	0.00	0.11	0.11	0.11	0.00	0.33	0.33	0.21	0.54	0.00
Sat Flow, veh/h	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Grp Volume(v), veh/h	0	0	0	61	4	123	2	382	45	271	341	0
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.1	2.6	0.0	6.7	0.7	5.3	3.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.1	0.1	2.6	0.0	6.7	0.7	5.3	3.9	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	5	5	197	207	176	5	555	472	341	924	0
V/C Ratio(X)	0.00	0.00	0.00	0.31	0.02	0.70	0.43	0.69	0.10	0.80	0.37	0.00
Avail Cap(c_a), veh/h	0	873	742	208	218	186	188	838	712	578	1265	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.0	13.5	14.6	17.0	9.9	7.9	12.8	4.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.9	0.0	10.4	51.3	1.5	0.1	4.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.6	0.0	1.6	0.1	3.3	0.3	2.8	1.9	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	14.8	13.6	25.1	68.3	11.4	8.0	17.1	4.8	0.0
LnGrp LOS				B	B	C	E	B	A	B	A	
Approach Vol, veh/h		0			188			429			612	
Approach Delay, s/veh		0.0			21.5			11.3			10.3	
Approach LOS					C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.1	15.3		0.0	4.1	22.3		7.8				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	12.0	17.0		16.0	4.0	25.0		4.0				
Max Q Clear Time (g_c+I1), s	7.3	8.7		0.0	2.0	5.9		4.6				
Green Ext Time (p_c), s	0.3	2.5		0.0	0.0	3.8		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	12.4											
HCM 2010 LOS	B											

HCM 2010 Signalized Intersection Summary 5: Westside Blvd. & San Juan Rd./Fourth St.

Background Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	21	624	196	91	631	92	234	97	52	117	94	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	22	643	202	94	651	95	241	100	54	121	97	25
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	34	664	564	117	751	638	258	307	166	155	397	337
Arrive On Green	0.02	0.36	0.36	0.07	0.41	0.41	0.15	0.27	0.27	0.09	0.21	0.21
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1126	608	1774	1863	1580
Grp Volume(v), veh/h	22	643	202	94	651	95	241	0	154	121	97	25
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1733	1774	1863	1580
Q Serve(g_s), s	0.9	25.7	7.1	4.0	24.3	2.9	10.2	0.0	5.3	5.0	3.2	0.9
Cycle Q Clear(g_c), s	0.9	25.7	7.1	4.0	24.3	2.9	10.2	0.0	5.3	5.0	3.2	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	34	664	564	117	751	638	258	0	473	155	397	337
V/C Ratio(X)	0.64	0.97	0.36	0.80	0.87	0.15	0.94	0.00	0.33	0.78	0.24	0.07
Avail Cap(c_a), veh/h	94	664	564	117	751	638	258	0	473	260	397	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	23.6	17.6	34.5	20.4	14.0	31.6	0.0	21.8	33.5	24.5	23.6
Incr Delay (d2), s/veh	18.0	27.1	0.4	31.8	10.5	0.1	38.9	0.0	1.8	8.4	1.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	18.0	3.1	2.9	14.5	1.2	7.7	0.0	2.8	2.8	1.8	0.4
LnGrp Delay(d),s/veh	54.5	50.7	18.0	66.3	30.9	14.1	70.5	0.0	23.6	41.9	25.9	24.0
LnGrp LOS	D	D	B	E	C	B	E		C	D	C	C
Approach Vol, veh/h		867			840			395			243	
Approach Delay, s/veh		43.2			33.0			52.2			33.7	
Approach LOS		D			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	24.5	9.0	31.0	15.0	20.0	5.5	34.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	11.0	16.0	5.0	27.0	11.0	16.0	4.0	28.0				
Max Q Clear Time (g_c+I1), s	7.0	7.3	6.0	27.7	12.2	5.2	2.9	26.3				
Green Ext Time (p_c), s	0.1	0.9	0.0	0.0	0.0	1.1	0.0	1.4				
Intersection Summary												
HCM 2010 Ctrl Delay			40.1									
HCM 2010 LOS			D									

Appendix H

Cumulative
Projects
within
Hollister

Table 9
Pending Development Projects

Applicant/Owner/Project Name	Address/Location	Proposed Project Description
Chaney	S/o Union Rd at Calistoga Dr	46 multi-family homes
West Gateway Mixed-Use	Gateway Dr	19,163 s.f. commercial building
Buena Vista Apartments	Buena Vista Rd between Westside Blvd and Locust St	80 Apartments
Apricot Ln	W/o Westside Blvd between Steinbeck Dr and Apricot Ln	173 homes
Rajkovich/Ivanovich	W/o Buena Vista Rd/Miller Rd	103 homes
Gonzales	W/o Buena Vista Rd/Miller Rd	92 homes
King	Memorial Dr, South of Sunset Dr	8 homes
KT Orchard Park	Between Buena Vista Rd and Central Av, E/o Miller Rd	91 small lots
Roberts Ranch	N/e of Enterprise/Airline	206 residential lots
Ladd Ranch	E/o San Benito St and Cienega Rd	82 homes
Pivetti	Valley View Rd between Sunnyslope Rd and Sunset Dr	24 Apartments
Saroyan/Howard	San Juan Rd, between Graf Rd and Miller Rd	97 Condos
Sywak	SW corner of Westside Bl/South St	8 homes
Dike	SW corner of Westside Bl/South St	39 homes
Thorning	S/o 4th Street, between Westside Bl and Rajkovich Wy	10 row houses, 74 apartments
Source: City of Hollister and San Benito County Planning Departments (August 2014)		

Table 4
Project Trip Generation Estimates

Land Use	ITE Land Use	Size	Daily Trip Rate /a/	Daily Trips	AM Peak Hour				PM Peak Hour							
					Pk-Hr Rate /a/	Splits		Trips Total	Pk-Hr Rate /a/	Splits		Trips Total				
						In	Out			In	Out					
Gonzales																
Single Family Homes	210 - Single-Family Detached Housing	92	D.U.	876	0.75	25%	75%	17	52	69	1.00	63%	37%	58	34	92
Source: ITE Trip Generation, 9th Edition, 2012.																
/a/ Based on the average trip generation rate from the ITE Trip Generation Manual.																

Project Trip Generation - Homestead Ave. (Sywak)											
<u>TRIP GENERATION RATES</u>	ITE LAND USE CODE	DAILY TRIP RATE	AM PEAK HOUR				PM PEAK HOUR				
			PEAK HOUR RATE	% OF ADT	% IN	% OUT	PEAK HOUR RATE	% OF ADT	% IN	% OUT	%
Single-Family Detached Housing (per dwelling unit)	210	9.52	0.75	8%	25%	75%	1.00	11%	63%	37%	
<u>GENERATED TRIPS</u>	PROJECT SIZE	DAILY TRIPS	AM PEAK HOUR				PM PEAK HOUR				
			PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	PEAK HOUR TRIPS	% OF ADT	TRIPS IN	TRIPS OUT	
Single-Family Detached Housing	63 units	600	47	8%	12	35	63	11%	40	23	
Total Project Trip Generation:		600	47		12	35	63		40	23	

Notes:

1. Trip generation rates from Institute of Transportation Engineers, "Trip Generation Manual," 9th Edition, 2012, unless otherwise noted.

Appendix I

Intersection Level of Service Calculations

Cumulative Without Project Conditions

HCM 2010 TWSC
1: State Route 156 & Buena Vista Rd.

Cumulative Without Project AM

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	78	0	282	2	278	79	64	266	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	82	0	297	2	293	83	67	280	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	712	712	280	715	712	293	280	0	0	293	0	0
Stage 1	415	415	-	297	297	-	-	-	-	-	-	-
Stage 2	297	297	-	418	415	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	347	358	759	346	358	746	1227	-	-	1143	-	-
Stage 1	615	592	-	712	668	-	-	-	-	-	-	-
Stage 2	712	668	-	612	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	336	759	325	336	746	1227	-	-	1143	-	-
Mov Cap-2 Maneuver	199	336	-	325	336	-	-	-	-	-	-	-
Stage 1	614	557	-	711	667	-	-	-	-	-	-	-
Stage 2	428	667	-	569	557	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	17			14.5			0			1.6		
HCM LOS	C			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1227	-	-	287	759	325	-	746	1143	-	-	
HCM Lane V/C Ratio	0.002	-	-	0.029	0.001	0.253	-	0.398	0.059	-	-	
HCM Control Delay (s)	7.9	-	-	17.9	9.8	19.8	0	13	8.3	-	-	
HCM Lane LOS	A	-	-	C	A	C	A	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	0.1	0	1	-	1.9	0.2	-	-	

Intersection												
Int Delay, s/veh	3.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	239	16	40	260	0	38	2	71	4	1	0
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	337	23	56	366	0	54	3	100	6	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	375	0	0	368	0	0	849	848	358	899	859	376
Stage 1	-	-	-	-	-	-	360	360	-	488	488	-
Stage 2	-	-	-	-	-	-	489	488	-	411	371	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1183	-	-	1191	-	-	281	298	686	260	294	670
Stage 1	-	-	-	-	-	-	658	626	-	561	550	-
Stage 2	-	-	-	-	-	-	561	550	-	618	620	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1182	-	-	1190	-	-	265	276	680	208	272	664
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	276	-	208	272	-
Stage 1	-	-	-	-	-	-	652	621	-	556	514	-
Stage 2	-	-	-	-	-	-	526	514	-	524	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	17.8	22.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	435	1182	-	-	1190	-	-	218
HCM Lane V/C Ratio	0.359	0.001	-	-	0.047	-	-	0.032
HCM Control Delay (s)	17.8	8	0	-	8.2	0	-	22.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0	-	-	0.1	-	-	0.1

HCM 2010 TWSC
3: Westside Blvd./Westside Rd. & Buena Vista Rd.

Cumulative Without Project AM

Intersection												
Int Delay, s/veh	34.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	215	129	55	232	1	138	9	40	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	321	193	82	346	1	206	13	60	3	4	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	367	0	0	532	0	0	973	970	436	1006	1065	366
Stage 1	-	-	-	-	-	-	439	439	-	530	530	-
Stage 2	-	-	-	-	-	-	534	531	-	476	535	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1192	-	-	1036	-	-	231	253	620	220	223	679
Stage 1	-	-	-	-	-	-	597	578	-	533	527	-
Stage 2	-	-	-	-	-	-	530	526	-	570	524	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1192	-	-	1036	-	-	206	221	610	172	195	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	221	-	172	195	-
Stage 1	-	-	-	-	-	-	587	568	-	524	468	-
Stage 2	-	-	-	-	-	-	471	467	-	502	515	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.7	150.6	21.2
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	241	1192	-	-	1036	-	-	233
HCM Lane V/C Ratio	1.158	0.001	-	-	0.079	-	-	0.045
HCM Control Delay (s)	150.6	8	0	-	8.8	0	-	21.2
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	12.9	0	-	-	0.3	-	-	0.1

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Cumulative Without Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	11	464	8	63	504	55	26	31	116	99	17	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	12	510	9	69	554	60	29	34	127	109	19	29
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	21	655	12	86	744	616	125	146	387	452	83	95
Arrive On Green	0.01	0.37	0.37	0.05	0.40	0.40	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1740	1790	32	1757	1845	1527	129	406	1080	939	232	265
Grp Volume(v), veh/h	12	0	519	69	554	60	190	0	0	157	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1821	1757	1845	1527	1615	0	0	1436	0	0
Q Serve(g_s), s	0.4	0.0	13.4	2.1	13.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	13.4	2.1	13.6	1.3	4.4	0.0	0.0	3.3	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.69		0.18
Lane Grp Cap(c), veh/h	21	0	667	86	744	616	657	0	0	630	0	0
V/C Ratio(X)	0.56	0.00	0.78	0.80	0.75	0.10	0.29	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	131	0	790	199	870	720	657	0	0	630	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.0	0.0	14.9	24.9	13.5	9.8	12.3	0.0	0.0	12.0	0.0	0.0
Incr Delay (d2), s/veh	21.4	0.0	4.2	15.4	3.0	0.1	1.1	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	7.4	1.4	7.4	0.5	2.2	0.0	0.0	1.8	0.0	0.0
LnGrp Delay(d),s/veh	47.4	0.0	19.1	40.3	16.5	9.9	13.4	0.0	0.0	12.9	0.0	0.0
LnGrp LOS	D		B	D	B	A	B			B		
Approach Vol, veh/h		531			683			190			157	
Approach Delay, s/veh		19.7			18.3			13.4			12.9	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.6	23.4		23.0	4.6	25.4				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		6.4	4.1	15.4		5.3	2.4	15.6				
Green Ext Time (p_c), s		1.7	0.0	4.0		1.8	0.0	4.7				
Intersection Summary												
HCM 2010 Ctrl Delay			17.7									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Cumulative Without Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	538	160	46	395	56	233	147	93	93	104	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	20	591	176	51	434	62	256	162	102	102	114	64
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	33	553	470	66	588	498	250	356	224	131	500	417
Arrive On Green	0.02	0.30	0.30	0.04	0.32	0.32	0.14	0.34	0.34	0.07	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	1057	666	1774	1863	1554
Grp Volume(v), veh/h	20	591	176	51	434	62	256	0	264	102	114	64
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1723	1774	1863	1554
Q Serve(g_s), s	0.7	19.0	5.6	1.8	13.3	1.8	9.0	0.0	7.6	3.6	3.0	2.0
Cycle Q Clear(g_c), s	0.7	19.0	5.6	1.8	13.3	1.8	9.0	0.0	7.6	3.6	3.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	33	553	470	66	588	498	250	0	580	131	500	417
V/C Ratio(X)	0.61	1.07	0.37	0.78	0.74	0.12	1.03	0.00	0.46	0.78	0.23	0.15
Avail Cap(c_a), veh/h	111	553	470	111	588	498	250	0	580	196	500	417
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	22.2	17.5	30.2	19.2	15.3	27.2	0.0	16.5	28.8	18.1	17.7
Incr Delay (d2), s/veh	16.7	57.9	0.5	17.5	4.9	0.1	63.9	0.0	2.6	10.8	1.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	18.4	2.5	1.2	7.6	0.8	8.7	0.0	4.0	2.2	1.7	0.9
LnGrp Delay(d),s/veh	47.6	80.1	18.0	47.7	24.2	15.4	91.1	0.0	19.0	39.7	19.1	18.5
LnGrp LOS	D	F	B	D	C	B	F		B	D	B	B
Approach Vol, veh/h		787			547			520			280	
Approach Delay, s/veh		65.4			25.4			54.5			26.5	
Approach LOS		E			C			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	25.3	6.4	23.0	13.0	21.0	5.2	24.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	5.6	9.6	3.8	21.0	11.0	5.0	2.7	15.3				
Green Ext Time (p_c), s	0.0	1.7	0.0	0.0	0.0	2.0	0.0	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay			47.4									
HCM 2010 LOS			D									

HCM 2010 TWSC
1: State Route 156 & Buena Vista Rd.

Cumulative Without Project PM

Intersection												
Int Delay, s/veh	12.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	84	4	139	2	393	70	301	364	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	85	4	140	2	397	71	304	368	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1379	1377	368	1377	1377	397	368	0	0	397	0	0
Stage 1	976	976	-	401	401	-	-	-	-	-	-	-
Stage 2	403	401	-	976	976	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	122	145	677	122	145	652	1132	-	-	1119	-	-
Stage 1	302	329	-	626	601	-	-	-	-	-	-	-
Stage 2	624	601	-	302	329	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	73	105	677	96	105	652	1132	-	-	1119	-	-
Mov Cap-2 Maneuver	73	105	-	96	105	-	-	-	-	-	-	-
Stage 1	301	240	-	625	600	-	-	-	-	-	-	-
Stage 2	485	600	-	220	240	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			60.4			0			4.3		
HCM LOS	A			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1132	-	-	-	-	96	105	652	1119	-	-	
HCM Lane V/C Ratio	0.002	-	-	-	-	0.884	0.038	0.215	0.272	-	-	
HCM Control Delay (s)	8.2	-	-	0	0	141.3	40.7	12	9.4	-	-	
HCM Lane LOS	A	-	-	A	A	F	E	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	5	0.1	0.8	1.1	-	-	

Intersection												
Int Delay, s/veh		1.4										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	287	60	24	197	10	25	1	19	0	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	334	70	28	229	12	29	1	22	0	2	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	246	0	0	408	0	0	677	680	374	686	709	240
Stage 1	-	-	-	-	-	-	378	378	-	296	296	-
Stage 2	-	-	-	-	-	-	299	302	-	390	413	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1320	-	-	1151	-	-	367	373	672	362	359	799
Stage 1	-	-	-	-	-	-	644	615	-	712	668	-
Stage 2	-	-	-	-	-	-	710	664	-	634	594	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1151	-	-	354	359	669	340	345	796
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	359	-	340	345	-
Stage 1	-	-	-	-	-	-	640	611	-	708	647	-
Stage 2	-	-	-	-	-	-	685	643	-	611	590	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.9			14.2			12		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	442	1320	-	-	1151	-	-	523				
HCM Lane V/C Ratio	0.118	0.002	-	-	0.024	-	-	0.011				
HCM Control Delay (s)	14.2	7.7	0	-	8.2	0	-	12				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0				

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	210	114	50	163	5	87	2	60	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	262	142	62	204	6	109	2	75	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	410	0	0	687	686	339	722	755	212
Stage 1	-	-	-	-	-	-	346	346	-	337	337	-
Stage 2	-	-	-	-	-	-	341	340	-	385	418	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1355	-	-	1149	-	-	361	370	703	342	338	828
Stage 1	-	-	-	-	-	-	670	635	-	677	641	-
Stage 2	-	-	-	-	-	-	674	639	-	638	591	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1355	-	-	1149	-	-	336	343	700	287	313	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	336	343	-	287	313	-
Stage 1	-	-	-	-	-	-	665	630	-	671	599	-
Stage 2	-	-	-	-	-	-	625	597	-	565	586	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.9			19.9			15.9		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	425	1355	-	-	1149	-	-	339				
HCM Lane V/C Ratio	0.438	0.003	-	-	0.054	-	-	0.026				
HCM Control Delay (s)	19.9	7.7	0	-	8.3	0	-	15.9				
HCM Lane LOS	C	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	2.2	0	-	-	0.2	-	-	0.1				

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Cumulative Without Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	651	25	97	515	83	13	12	91	105	27	17
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	24	678	26	101	536	86	14	12	95	109	28	18
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	704	27	129	830	692	95	86	411	421	104	55
Arrive On Green	0.02	0.39	0.39	0.07	0.45	0.45	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1782	68	1774	1863	1553	81	264	1260	967	320	169
Grp Volume(v), veh/h	24	0	704	101	536	86	121	0	0	155	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1851	1774	1863	1553	1605	0	0	1457	0	0
Q Serve(g_s), s	0.8	0.0	21.6	3.3	13.0	1.9	0.0	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	21.6	3.3	13.0	1.9	3.1	0.0	0.0	3.9	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.79	0.70		0.12
Lane Grp Cap(c), veh/h	39	0	731	129	830	692	593	0	0	580	0	0
V/C Ratio(X)	0.61	0.00	0.96	0.78	0.65	0.12	0.20	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	122	0	731	183	830	692	593	0	0	580	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.2	0.0	17.2	26.5	12.6	9.5	14.3	0.0	0.0	14.5	0.0	0.0
Incr Delay (d2), s/veh	14.5	0.0	24.5	13.1	1.7	0.1	0.8	0.0	0.0	1.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	15.9	2.1	7.0	0.8	1.5	0.0	0.0	2.0	0.0	0.0
LnGrp Delay(d),s/veh	42.7	0.0	41.7	39.6	14.3	9.6	15.1	0.0	0.0	15.6	0.0	0.0
LnGrp LOS	D		D	D	B	A	B			B		
Approach Vol, veh/h		728			723			121			155	
Approach Delay, s/veh		41.8			17.3			15.1			15.6	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.2	27.0		23.0	5.3	30.0				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+I1), s		5.1	5.3	23.6		5.9	2.8	15.0				
Green Ext Time (p_c), s		1.4	0.0	0.0		1.3	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			27.3									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Cumulative Without Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	600	205	108	604	47	223	118	69	53	129	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	53	619	211	111	623	48	230	122	71	55	133	44
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	67	539	458	108	583	495	243	395	230	69	487	413
Arrive On Green	0.04	0.29	0.29	0.06	0.32	0.32	0.14	0.36	0.36	0.04	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1093	636	1774	1863	1580
Grp Volume(v), veh/h	53	619	211	111	623	48	230	0	193	55	133	44
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1729	1774	1863	1580
Q Serve(g_s), s	1.9	19.0	7.2	4.0	20.5	1.4	8.4	0.0	5.2	2.0	3.7	1.4
Cycle Q Clear(g_c), s	1.9	19.0	7.2	4.0	20.5	1.4	8.4	0.0	5.2	2.0	3.7	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	67	539	458	108	583	495	243	0	624	69	487	413
V/C Ratio(X)	0.80	1.15	0.46	1.03	1.07	0.10	0.95	0.00	0.31	0.80	0.27	0.11
Avail Cap(c_a), veh/h	108	539	458	108	583	495	243	0	624	191	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	23.0	18.8	30.5	22.2	15.7	27.8	0.0	14.9	31.0	19.1	18.2
Incr Delay (d2), s/veh	18.9	86.5	0.7	93.9	57.1	0.1	42.8	0.0	1.3	18.3	1.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	22.5	3.1	4.7	19.6	0.6	7.0	0.0	2.7	1.3	2.1	0.7
LnGrp Delay(d),s/veh	49.9	109.5	19.5	124.8	79.3	15.8	70.5	0.0	16.2	49.3	20.5	18.7
LnGrp LOS	D	F	B	F	F	B	E		B	D	C	B
Approach Vol, veh/h		883			782			423			232	
Approach Delay, s/veh		84.4			81.9			45.8			27.0	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	27.5	8.0	23.0	13.0	21.0	6.5	24.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+l1), s	4.0	7.2	6.0	21.0	10.4	5.7	3.9	22.5				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.0	0.0	1.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			E									

Appendix J

Intersection Level of Service Calculations

Cumulative Plus Project Conditions

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	6	1	78	0	329	2	278	79	80	266	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	12	12	12	26	26	26
Mvmt Flow	2	6	1	82	0	346	2	293	83	84	280	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	745	745	280	749	745	293	280	0	0	293	0	0
Stage 1	448	448	-	297	297	-	-	-	-	-	-	-
Stage 2	297	297	-	452	448	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.22	-	-	4.36	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.308	-	-	2.434	-	-
Pot Cap-1 Maneuver	330	342	759	328	342	746	1227	-	-	1143	-	-
Stage 1	590	573	-	712	668	-	-	-	-	-	-	-
Stage 2	712	668	-	587	573	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	316	759	304	316	746	1227	-	-	1143	-	-
Mov Cap-2 Maneuver	167	316	-	304	316	-	-	-	-	-	-	-
Stage 1	589	531	-	711	667	-	-	-	-	-	-	-
Stage 2	381	667	-	537	531	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	18.3			15.3			0			1.9		
HCM LOS	C			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR	
Capacity (veh/h)	1227	-	-	258	759	304	-	746	1143	-	-	
HCM Lane V/C Ratio	0.002	-	-	0.033	0.001	0.27	-	0.464	0.074	-	-	
HCM Control Delay (s)	7.9	-	-	19.4	9.8	21.2	0	13.9	8.4	-	-	
HCM Lane LOS	A	-	-	C	A	C	A	B	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	0.1	0	1.1	-	2.5	0.2	-	-	

Intersection												
Int Delay, s/veh	12.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	268	50	40	270	9	49	19	71	32	52	9
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	9	9	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	377	70	56	380	13	69	27	100	45	73	13
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	457	0	0	984	948	423	1004	976	397
Stage 1	-	-	-	-	-	-	433	433	-	508	508	-
Stage 2	-	-	-	-	-	-	551	515	-	496	468	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1157	-	-	1104	-	-	228	261	631	220	251	652
Stage 1	-	-	-	-	-	-	601	582	-	547	539	-
Stage 2	-	-	-	-	-	-	519	535	-	556	561	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1156	-	-	1103	-	-	158	239	626	159	230	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	158	239	-	159	230	-
Stage 1	-	-	-	-	-	-	592	574	-	539	500	-
Stage 2	-	-	-	-	-	-	406	496	-	442	553	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.1			44.5			46.5		
HCM LOS							E			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	276	1156	-	-	1103	-	-	211				
HCM Lane V/C Ratio	0.709	0.005	-	-	0.051	-	-	0.621				
HCM Control Delay (s)	44.5	8.1	0	-	8.4	0	-	46.5				
HCM Lane LOS	E	A	A	-	A	A	-	E				
HCM 95th %tile Q(veh)	4.9	0	-	-	0.2	-	-	3.6				

Intersection												
Int Delay, s/veh		55.3										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	234	167	55	238	1	151	9	40	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	19	19	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	349	249	82	355	1	225	13	60	3	4	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	0	618	0	0	1039	1036	493	1071	1159	375
Stage 1	-	-	-	-	-	-	496	496	-	539	539	-
Stage 2	-	-	-	-	-	-	543	540	-	532	620	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1182	-	-	962	-	-	~ 209	232	576	198	196	671
Stage 1	-	-	-	-	-	-	556	545	-	527	522	-
Stage 2	-	-	-	-	-	-	524	521	-	531	480	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1182	-	-	962	-	-	~ 184	201	567	152	170	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 184	201	-	152	170	-
Stage 1	-	-	-	-	-	-	547	536	-	518	459	-
Stage 2	-	-	-	-	-	-	462	458	-	463	472	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.7			246.5			23.3		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	214	1182	-	-	962	-	-	207				
HCM Lane V/C Ratio	1.395	0.001	-	-	0.085	-	-	0.05				
HCM Control Delay (s)	246.5	8.1	0	-	9.1	0	-	23.3				
HCM Lane LOS	F	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	17.1	0	-	-	0.3	-	-	0.2				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined			*: All major volume in platoon					

HCM 2010 Signalized Intersection Summary
4: Live Oak Dr./Miller Rd. & San Juan Rd.

Cumulative Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	464	8	63	504	74	26	31	116	156	17	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1827	1900	1845	1845	1845	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	19	510	9	69	554	81	29	34	127	171	19	49
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	3	3	3	2	2	2	2	2	2
Cap, veh/h	32	656	12	86	733	607	124	145	386	462	60	105
Arrive On Green	0.02	0.37	0.37	0.05	0.40	0.40	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	1740	1790	32	1757	1845	1527	129	406	1078	966	167	292
Grp Volume(v), veh/h	19	0	519	69	554	81	190	0	0	239	0	0
Grp Sat Flow(s),veh/h/ln	1740	0	1821	1757	1845	1527	1613	0	0	1425	0	0
Q Serve(g_s), s	0.6	0.0	13.4	2.1	13.7	1.8	0.0	0.0	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	13.4	2.1	13.7	1.8	4.4	0.0	0.0	5.6	0.0	0.0
Prop In Lane	1.00		0.02	1.00		1.00	0.15		0.67	0.72		0.21
Lane Grp Cap(c), veh/h	32	0	668	86	733	607	656	0	0	627	0	0
V/C Ratio(X)	0.59	0.00	0.78	0.80	0.76	0.13	0.29	0.00	0.00	0.38	0.00	0.00
Avail Cap(c_a), veh/h	131	0	790	199	869	719	656	0	0	627	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.8	0.0	14.9	25.0	13.8	10.2	12.3	0.0	0.0	12.6	0.0	0.0
Incr Delay (d2), s/veh	16.2	0.0	4.2	15.4	3.2	0.1	1.1	0.0	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.4	1.4	7.6	0.8	2.2	0.0	0.0	2.9	0.0	0.0
LnGrp Delay(d),s/veh	42.1	0.0	19.1	40.3	17.0	10.3	13.5	0.0	0.0	14.4	0.0	0.0
LnGrp LOS	D		B	D	B	B	B			B		
Approach Vol, veh/h		538			704			190			239	
Approach Delay, s/veh		19.9			18.5			13.5			14.4	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	6.6	23.5		23.0	5.0	25.1				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+I1), s		6.4	4.1	15.4		7.6	2.6	15.7				
Green Ext Time (p_c), s		2.2	0.0	4.1		2.1	0.0	4.7				
Intersection Summary												
HCM 2010 Ctrl Delay			17.8									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Cumulative Plus Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	567	188	46	405	59	242	157	93	102	133	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	20	623	207	51	445	65	266	173	102	112	146	64
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	33	553	470	66	588	498	250	358	211	143	500	417
Arrive On Green	0.02	0.30	0.30	0.04	0.32	0.32	0.14	0.33	0.33	0.08	0.27	0.27
Sat Flow, veh/h	1757	1845	1568	1757	1845	1563	1757	1086	641	1774	1863	1554
Grp Volume(v), veh/h	20	623	207	51	445	65	266	0	275	112	146	64
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1563	1757	0	1727	1774	1863	1554
Q Serve(g_s), s	0.7	19.0	6.7	1.8	13.7	1.9	9.0	0.0	8.0	3.9	3.9	2.0
Cycle Q Clear(g_c), s	0.7	19.0	6.7	1.8	13.7	1.9	9.0	0.0	8.0	3.9	3.9	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	33	553	470	66	588	498	250	0	569	143	500	417
V/C Ratio(X)	0.61	1.13	0.44	0.78	0.76	0.13	1.07	0.00	0.48	0.78	0.29	0.15
Avail Cap(c_a), veh/h	111	553	470	111	588	498	250	0	569	196	500	417
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	22.2	17.9	30.2	19.4	15.4	27.2	0.0	16.9	28.6	18.4	17.7
Incr Delay (d2), s/veh	16.7	78.0	0.6	17.5	5.6	0.1	75.6	0.0	2.9	13.0	1.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	21.5	3.0	1.2	7.8	0.8	9.5	0.0	4.3	2.4	2.2	0.9
LnGrp Delay(d),s/veh	47.6	100.2	18.5	47.7	25.0	15.5	102.7	0.0	19.9	41.6	19.9	18.5
LnGrp LOS	D	F	B	D	C	B	F		B	D	B	B
Approach Vol, veh/h	850				561				541			
Approach Delay, s/veh	79.1				26.0				60.6			
Approach LOS	E				C				E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	24.9	6.4	23.0	13.0	21.0	5.2	24.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	5.9	10.0	3.8	21.0	11.0	5.9	2.7	15.7				
Green Ext Time (p_c), s	0.0	1.9	0.0	0.0	0.0	2.1	0.0	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay	54.2											
HCM 2010 LOS	D											

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	13	259	307	21	63	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	282	334	23	68	41

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	357	0	655
Stage 1	-	-	345
Stage 2	-	-	310
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1202	-	431
Stage 1	-	-	717
Stage 2	-	-	744
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1202	-	425
Mov Cap-2 Maneuver	-	-	425
Stage 1	-	-	717
Stage 2	-	-	734

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1202	-	-	-	498
HCM Lane V/C Ratio	0.012	-	-	-	0.22
HCM Control Delay (s)	8	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Intersection						
Int Delay, s/veh	8.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	88	29	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	96	32	0	1	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	64	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	942	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1084	1622	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	7.3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1622	-	1084	-	-	
HCM Lane V/C Ratio	0.019	-	0.088	-	-	
HCM Control Delay (s)	7.3	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Intersection

Int Delay, s/veh 19

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	0	84	4	170	2	393	70	354	424	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	50	325	-	70	520	-	520	515	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	13	13	13	10	10	10
Mvmt Flow	0	0	0	85	4	172	2	397	71	358	428	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1546	1544	428	1544	1544	397	428	0	0	397	0	0
Stage 1	1143	1143	-	401	401	-	-	-	-	-	-	-
Stage 2	403	401	-	1143	1143	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.23	-	-	4.2	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.317	-	-	2.29	-	-
Pot Cap-1 Maneuver	93	115	627	94	115	652	1075	-	-	1119	-	-
Stage 1	243	275	-	626	601	-	-	-	-	-	-	-
Stage 2	624	601	-	243	275	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	50	78	627	~ 71	78	652	1075	-	-	1119	-	-
Mov Cap-2 Maneuver	50	78	-	~ 71	78	-	-	-	-	-	-	-
Stage 1	243	187	-	625	600	-	-	-	-	-	-	-
Stage 2	456	600	-	165	187	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	97.1	0	4.4
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1075	-	-	-	-	71	78	652	1119	-	-
HCM Lane V/C Ratio	0.002	-	-	-	-	1.195	0.052	0.263	0.32	-	-
HCM Control Delay (s)	8.4	-	-	0	0	270.5	53.7	12.5	9.7	-	-
HCM Lane LOS	A	-	-	A	A	F	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	6.6	0.2	1.1	1.4	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh		6.9										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	13	306	82	24	229	42	63	58	19	18	36	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	356	95	28	266	49	73	67	22	21	42	10
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	320	0	0	456	0	0	817	815	408	835	838	296
Stage 1	-	-	-	-	-	-	439	439	-	352	352	-
Stage 2	-	-	-	-	-	-	378	376	-	483	486	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1240	-	-	1105	-	-	295	312	643	287	302	743
Stage 1	-	-	-	-	-	-	597	578	-	665	632	-
Stage 2	-	-	-	-	-	-	644	616	-	565	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1240	-	-	1105	-	-	248	295	640	220	286	740
Mov Cap-2 Maneuver	-	-	-	-	-	-	248	295	-	220	286	-
Stage 1	-	-	-	-	-	-	585	566	-	652	610	-
Stage 2	-	-	-	-	-	-	573	594	-	473	540	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.7			32			21.8		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	291	1240	-	-	1105	-	-	287				
HCM Lane V/C Ratio	0.559	0.012	-	-	0.025	-	-	0.255				
HCM Control Delay (s)	32	7.9	0	-	8.3	0	-	21.8				
HCM Lane LOS	D	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	3.2	0	-	-	0.1	-	-	1				

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	223	138	50	184	5	130	2	60	1	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	5	5	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	279	172	62	230	6	162	2	75	1	6	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	241	0	0	456	0	0	745	744	370	779	827	238
Stage 1	-	-	-	-	-	-	378	378	-	363	363	-
Stage 2	-	-	-	-	-	-	367	366	-	416	464	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1326	-	-	1105	-	-	330	343	676	313	307	801
Stage 1	-	-	-	-	-	-	644	615	-	656	625	-
Stage 2	-	-	-	-	-	-	653	623	-	614	564	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	1105	-	-	305	316	673	261	283	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	316	-	261	283	-
Stage 1	-	-	-	-	-	-	639	610	-	651	581	-
Stage 2	-	-	-	-	-	-	602	579	-	541	559	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1.8			31.4			17		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	368	1326	-	-	1105	-	-	308				
HCM Lane V/C Ratio	0.652	0.003	-	-	0.057	-	-	0.028				
HCM Control Delay (s)	31.4	7.7	0	-	8.5	0	-	17				
HCM Lane LOS	D	A	A	-	A	A	-	C				
HCM 95th %tile Q(veh)	4.4	0	-	-	0.2	-	-	0.1				

HCM 2010 Signalized Intersection Summary

4: Live Oak Dr./Miller Rd. & San Juan Rd.

Cumulative Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	44	651	25	97	515	147	13	12	91	142	27	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	46	678	26	101	536	153	14	12	95	148	28	31
Adj No. of Lanes	1	1	0	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	704	27	129	804	670	95	86	411	426	82	71
Arrive On Green	0.04	0.39	0.39	0.07	0.43	0.43	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1782	68	1774	1863	1552	81	264	1259	980	250	217
Grp Volume(v), veh/h	46	0	704	101	536	153	121	0	0	207	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1851	1774	1863	1552	1604	0	0	1446	0	0
Q Serve(g_s), s	1.5	0.0	21.6	3.3	13.4	3.6	0.0	0.0	0.0	2.7	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	21.6	3.3	13.4	3.6	3.1	0.0	0.0	5.8	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	0.12		0.79	0.71		0.15
Lane Grp Cap(c), veh/h	64	0	731	129	804	670	592	0	0	578	0	0
V/C Ratio(X)	0.72	0.00	0.96	0.78	0.67	0.23	0.20	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	122	0	731	183	804	670	592	0	0	578	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.8	0.0	17.2	26.5	13.2	10.4	14.3	0.0	0.0	15.0	0.0	0.0
Incr Delay (d2), s/veh	14.0	0.0	24.5	13.1	2.1	0.2	0.8	0.0	0.0	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	15.9	2.1	7.3	1.6	1.5	0.0	0.0	2.8	0.0	0.0
LnGrp Delay(d),s/veh	41.8	0.0	41.7	39.6	15.3	10.6	15.1	0.0	0.0	16.8	0.0	0.0
LnGrp LOS	D		D	D	B	B	B			B		
Approach Vol, veh/h		750			790			121			207	
Approach Delay, s/veh		41.7			17.5			15.1			16.8	
Approach LOS		D			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	8.2	27.0		23.0	6.1	29.1				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s		19.0	6.0	23.0		19.0	4.0	25.0				
Max Q Clear Time (g_c+l1), s		5.1	5.3	23.6		7.8	3.5	15.4				
Green Ext Time (p_c), s		1.7	0.0	0.0		1.5	0.0	5.7				
Intersection Summary												
HCM 2010 Ctrl Delay			27.0									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Cumulative Plus Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	619	223	108	636	58	255	150	69	58	148	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	53	638	230	111	656	60	263	155	71	60	153	44
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	67	539	458	108	583	495	243	428	196	76	487	413
Arrive On Green	0.04	0.29	0.29	0.06	0.32	0.32	0.14	0.36	0.36	0.04	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1197	548	1774	1863	1580
Grp Volume(v), veh/h	53	638	230	111	656	60	263	0	226	60	153	44
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1745	1774	1863	1580
Q Serve(g_s), s	1.9	19.0	7.9	4.0	20.5	1.8	9.0	0.0	6.2	2.2	4.3	1.4
Cycle Q Clear(g_c), s	1.9	19.0	7.9	4.0	20.5	1.8	9.0	0.0	6.2	2.2	4.3	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	67	539	458	108	583	495	243	0	623	76	487	413
V/C Ratio(X)	0.80	1.18	0.50	1.03	1.13	0.12	1.08	0.00	0.36	0.79	0.31	0.11
Avail Cap(c_a), veh/h	108	539	458	108	583	495	243	0	623	191	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	23.0	19.1	30.5	22.2	15.8	28.0	0.0	15.4	30.8	19.3	18.2
Incr Delay (d2), s/veh	18.9	100.2	0.9	93.9	76.9	0.1	81.0	0.0	1.6	16.5	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	24.6	3.5	4.7	22.8	0.8	9.8	0.0	3.2	1.4	2.4	0.7
LnGrp Delay(d),s/veh	49.9	123.2	19.9	124.8	99.1	15.9	109.0	0.0	17.1	47.3	21.0	18.7
LnGrp LOS	D	F	B	F	F	B	F		B	D	C	B
Approach Vol, veh/h		921			827			489			257	
Approach Delay, s/veh		93.2			96.5			66.5			26.8	
Approach LOS		F			F			E			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	27.2	8.0	23.0	13.0	21.0	6.5	24.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	19.0	4.0	19.0	9.0	17.0	4.0	19.0				
Max Q Clear Time (g_c+I1), s	4.2	8.2	6.0	21.0	11.0	6.3	3.9	22.5				
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	1.8	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			82.2									
HCM 2010 LOS			F									

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	42	360	231	70	41	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	391	251	76	45	27
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	327	0	-	0	772	289
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	483	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1233	-	-	-	368	750
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1233	-	-	-	350	750
Mov Cap-2 Maneuver	-	-	-	-	350	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	590	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.8		0		14.8	
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1233	-	-	-	439	
HCM Lane V/C Ratio	0.037	-	-	-	0.163	
HCM Control Delay (s)	8	0	-	-	14.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6	

Intersection

Int Delay, s/veh 7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	58	100	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	63	109	0	1	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	218	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	718	1084	1622	-	-	-
Mov Cap-2 Maneuver	718	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	764	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	7.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1084	-	-
HCM Lane V/C Ratio	0.067	-	0.058	-	-
HCM Control Delay (s)	7.4	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

HCM 2010 Signalized Intersection Summary

1: State Route 156 & Buena Vista Rd.

Cumulative Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	6	1	78	0	329	2	278	79	80	266	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1696	1696	1696	1508	1508	1900
Adj Flow Rate, veh/h	2	6	1	82	0	346	2	293	83	84	280	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	12	12	12	26	26	26
Cap, veh/h	4	13	15	383	402	342	4	470	400	94	514	0
Arrive On Green	0.01	0.01	0.01	0.22	0.00	0.22	0.00	0.28	0.28	0.07	0.34	0.00
Sat Flow, veh/h	460	1380	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Grp Volume(v), veh/h	8	0	1	82	0	346	2	293	83	84	280	0
Grp Sat Flow(s),veh/h/ln	1840	0	1583	1774	1863	1583	1616	1696	1442	1436	1508	0
Q Serve(g_s), s	0.2	0.0	0.0	1.4	0.0	8.0	0.0	5.6	1.6	2.2	5.6	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	1.4	0.0	8.0	0.0	5.6	1.6	2.2	5.6	0.0
Prop In Lane	0.25		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	18	0	15	383	402	342	4	470	400	94	514	0
V/C Ratio(X)	0.46	0.00	0.07	0.21	0.00	1.01	0.46	0.62	0.21	0.89	0.54	0.00
Avail Cap(c_a), veh/h	794	0	683	383	402	342	174	961	817	349	1058	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.3	0.0	18.2	11.9	0.0	14.5	18.5	11.7	10.3	17.2	9.9	0.0
Incr Delay (d2), s/veh	17.3	0.0	1.8	0.3	0.0	51.9	60.6	1.4	0.3	22.7	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.7	0.0	8.3	0.1	2.8	0.7	1.4	2.4	0.0
LnGrp Delay(d),s/veh	35.5	0.0	20.0	12.2	0.0	66.5	79.0	13.1	10.5	39.9	10.8	0.0
LnGrp LOS	D		C	B		F	E	B	B	D	B	
Approach Vol, veh/h		9			428			378			364	
Approach Delay, s/veh		33.8			56.1			12.9			17.5	
Approach LOS		C			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	14.3		4.4	4.1	16.6		12.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	9.0	21.0		16.0	4.0	26.0		8.0				
Max Q Clear Time (g_c+I1), s	4.2	7.6		2.2	2.0	7.6		10.0				
Green Ext Time (p_c), s	0.1	2.7		0.0	0.0	3.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			30.1									
HCM 2010 LOS			C									

Intersection												
Intersection Delay, s/veh	18.2											
Intersection LOS	C											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	1	234	167	0	55	238	1	0	151	9	40
Peak Hour Factor	0.92	0.67	0.67	0.67	0.92	0.67	0.67	0.67	0.92	0.67	0.67	0.67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1	349	249	0	82	355	1	0	225	13	60
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	15.6	22.9	16.8
HCM LOS	C	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	76%	0%	0%	19%	29%
Vol Thru, %	4%	100%	0%	81%	43%
Vol Right, %	20%	0%	100%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	200	235	167	294	7
LT Vol	151	1	0	55	2
Through Vol	9	234	0	238	3
RT Vol	40	0	167	1	2
Lane Flow Rate	299	351	249	439	10
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.535	0.608	0.383	0.721	0.021
Departure Headway (Hd)	6.45	6.24	5.525	5.916	7.407
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	555	575	648	610	486
Service Time	4.52	4.01	3.295	3.982	5.407
HCM Lane V/C Ratio	0.539	0.61	0.384	0.72	0.021
HCM Control Delay	16.8	18.3	11.7	22.9	10.6
HCM Lane LOS	C	C	B	C	B
HCM 95th-tile Q	3.1	4.1	1.8	6	0.1

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	3	2
Peak Hour Factor	0.92	0.67	0.67	0.67
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	3	4	3
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	10.6
HCM LOS	B

Lane

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

Cumulative Plus Project AM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	567	188	46	405	59	242	157	93	102	133	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	20	623	207	51	445	65	266	173	102	112	146	64
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	32	671	570	64	705	597	305	340	201	142	409	340
Arrive On Green	0.02	0.36	0.36	0.04	0.38	0.38	0.17	0.31	0.31	0.08	0.22	0.22
Sat Flow, veh/h	1757	1845	1568	1757	1845	1564	1757	1086	640	1774	1863	1547
Grp Volume(v), veh/h	20	623	207	51	445	65	266	0	275	112	146	64
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1564	1757	0	1727	1774	1863	1547
Q Serve(g_s), s	0.9	25.1	7.5	2.2	15.2	2.1	11.4	0.0	10.1	4.8	5.1	2.6
Cycle Q Clear(g_c), s	0.9	25.1	7.5	2.2	15.2	2.1	11.4	0.0	10.1	4.8	5.1	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	32	671	570	64	705	597	305	0	541	142	409	340
V/C Ratio(X)	0.63	0.93	0.36	0.80	0.63	0.11	0.87	0.00	0.51	0.79	0.36	0.19
Avail Cap(c_a), veh/h	91	691	588	91	705	597	318	0	541	161	409	340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	23.7	18.0	37.0	19.5	15.4	31.1	0.0	21.7	34.9	25.6	24.6
Incr Delay (d2), s/veh	18.8	18.7	0.4	26.8	1.8	0.1	21.8	0.0	3.4	20.5	2.4	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	16.1	3.3	1.6	8.0	0.9	7.4	0.0	5.3	3.1	2.9	1.2
LnGrp Delay(d),s/veh	56.5	42.3	18.4	63.8	21.3	15.5	53.0	0.0	25.1	55.5	28.0	25.8
LnGrp LOS	E	D	B	E	C	B	D		C	E	C	C
Approach Vol, veh/h		850			561			541			322	
Approach Delay, s/veh		36.9			24.5			38.8			37.1	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	28.2	6.8	32.1	17.4	21.0	5.4	33.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	24.0	4.0	29.0	14.0	17.0	4.0	29.0				
Max Q Clear Time (g_c+l1), s	6.8	12.1	4.2	27.1	13.4	7.1	2.9	17.2				
Green Ext Time (p_c), s	0.0	2.2	0.0	1.0	0.1	2.0	0.0	6.2				
Intersection Summary												
HCM 2010 Ctrl Delay			34.3									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
1: State Route 156 & Buena Vista Rd.

Cumulative Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	84	4	170	2	393	70	354	424	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1863	1863	1863	1681	1681	1681	1727	1727	1900
Adj Flow Rate, veh/h	0	0	0	85	4	172	2	397	71	358	428	0
Adj No. of Lanes	0	1	1	1	1	1	1	1	1	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	13	13	13	10	10	10
Cap, veh/h	0	5	4	172	181	154	4	582	494	438	1053	0
Arrive On Green	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.35	0.35	0.27	0.61	0.00
Sat Flow, veh/h	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Grp Volume(v), veh/h	0	0	0	85	4	172	2	397	71	358	428	0
Grp Sat Flow(s),veh/h/ln	0	1863	1583	1774	1863	1583	1601	1681	1429	1645	1727	0
Q Serve(g_s), s	0.0	0.0	0.0	1.9	0.1	4.0	0.1	8.3	1.4	8.4	5.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.9	0.1	4.0	0.1	8.3	1.4	8.4	5.3	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	5	4	172	181	154	4	582	494	438	1053	0
V/C Ratio(X)	0.00	0.00	0.00	0.49	0.02	1.12	0.52	0.68	0.14	0.82	0.41	0.00
Avail Cap(c_a), veh/h	0	723	614	172	181	154	155	978	832	798	1675	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	17.7	16.9	18.6	20.6	11.5	9.3	14.2	4.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.0	108.5	78.3	1.4	0.1	3.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	1.0	0.0	6.3	0.1	4.1	0.6	4.2	2.6	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	19.8	16.9	127.1	98.9	13.0	9.4	18.0	4.4	0.0
LnGrp LOS				B	B	F	F	B	A	B	A	
Approach Vol, veh/h		0			261			470			786	
Approach Delay, s/veh		0.0			90.5			12.8			10.6	
Approach LOS					F			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	15.0	18.3		0.0	4.1	29.2		8.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	20.0	24.0		16.0	4.0	40.0		4.0				
Max Q Clear Time (g_c+I1), s	10.4	10.3		0.0	2.1	7.3		6.0				
Green Ext Time (p_c), s	0.7	3.9		0.0	0.0	5.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			25.0									
HCM 2010 LOS			C									

Intersection												
Intersection Delay, s/veh	12											
Intersection LOS	B											
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	3	223	138	0	50	184	5	0	130	2	60
Peak Hour Factor	0.92	0.80	0.80	0.80	0.92	0.80	0.80	0.80	0.92	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	279	172	0	62	230	6	0	162	2	75
Number of Lanes	0	0	1	1	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	11.4	12.7	12.2
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	68%	1%	0%	21%	14%
Vol Thru, %	1%	99%	0%	77%	71%
Vol Right, %	31%	0%	100%	2%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	192	226	138	239	7
LT Vol	130	3	0	50	1
Through Vol	2	223	0	184	5
RT Vol	60	0	138	5	1
Lane Flow Rate	240	282	172	299	9
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.379	0.444	0.237	0.447	0.015
Departure Headway (Hd)	5.688	5.659	4.944	5.389	6.225
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	634	638	726	669	574
Service Time	3.718	3.385	2.67	3.416	4.274
HCM Lane V/C Ratio	0.379	0.442	0.237	0.447	0.016
HCM Control Delay	12.2	12.8	9.2	12.7	9.4
HCM Lane LOS	B	B	A	B	A
HCM 95th-tile Q	1.8	2.3	0.9	2.3	0

Intersection

Intersection Delay, s/veh

Intersection LOS

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	1	5	1
Peak Hour Factor	0.92	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2
Mvmt Flow	0	1	6	1
Number of Lanes	0	0	1	0

Approach SB

Opposing Approach

NB

Opposing Lanes

1

Conflicting Approach Left

WB

Conflicting Lanes Left

1

Conflicting Approach Right

EB

Conflicting Lanes Right

2

HCM Control Delay

9.4

HCM LOS

A

Lane

HCM 2010 Signalized Intersection Summary
5: Westside Blvd. & San Juan Rd./Fourth St.

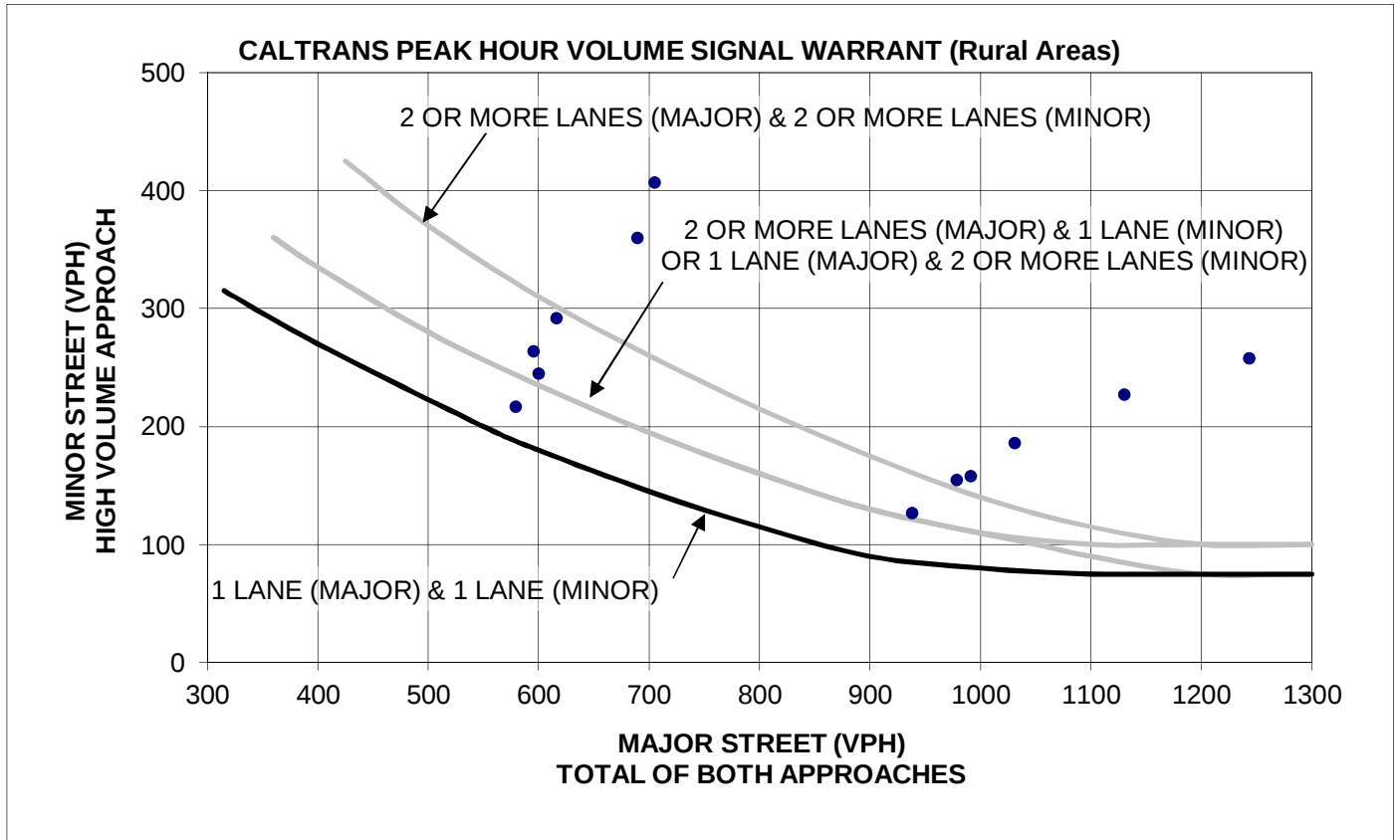
Cumulative Plus Project PM
With Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	619	223	108	636	58	255	150	69	58	148	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1863	1863	1863
Adj Flow Rate, veh/h	53	638	230	111	656	60	263	155	71	60	153	44
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	2	2	2
Cap, veh/h	67	568	482	108	611	520	216	409	187	76	487	413
Arrive On Green	0.04	0.31	0.31	0.06	0.33	0.33	0.12	0.34	0.34	0.04	0.26	0.26
Sat Flow, veh/h	1757	1845	1568	1757	1845	1568	1757	1197	548	1774	1863	1580
Grp Volume(v), veh/h	53	638	230	111	656	60	263	0	226	60	153	44
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	0	1745	1774	1863	1580
Q Serve(g_s), s	1.9	20.0	7.7	4.0	21.5	1.7	8.0	0.0	6.4	2.2	4.3	1.4
Cycle Q Clear(g_c), s	1.9	20.0	7.7	4.0	21.5	1.7	8.0	0.0	6.4	2.2	4.3	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	67	568	482	108	611	520	216	0	597	76	487	413
V/C Ratio(X)	0.80	1.12	0.48	1.03	1.07	0.12	1.22	0.00	0.38	0.79	0.31	0.11
Avail Cap(c_a), veh/h	108	568	482	108	611	520	216	0	597	164	487	413
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	22.5	18.3	30.5	21.7	15.1	28.5	0.0	16.2	30.8	19.3	18.2
Incr Delay (d2), s/veh	18.9	76.7	0.7	93.9	57.7	0.1	131.9	0.0	1.8	16.7	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	22.2	3.4	4.7	20.7	0.8	11.8	0.0	3.4	1.4	2.4	0.7
LnGrp Delay(d),s/veh	49.9	99.2	19.0	124.8	79.4	15.2	160.4	0.0	18.0	47.5	21.0	18.7
LnGrp LOS	D	F	B	F	F	B	F		B	D	C	B
Approach Vol, veh/h		921			827			489			257	
Approach Delay, s/veh		76.4			80.8			94.6			26.8	
Approach LOS		E			F			F			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	26.2	8.0	24.0	12.0	21.0	6.5	25.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	6.0	19.0	4.0	20.0	8.0	17.0	4.0	20.0				
Max Q Clear Time (g_c+l1), s	4.2	8.4	6.0	22.0	10.0	6.3	3.9	23.5				
Green Ext Time (p_c), s	0.0	1.8	0.0	0.0	0.0	1.8	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			76.3									
HCM 2010 LOS			E									

Appendix K

Warrant Worksheets

Warrant 3B - Peak-Hour Delay



Scenario	SR 156	Buena Vista	Warrant
	North/South	East/West	Met?
A. Existing AM	579	217	Yes
B. Existing PM	938	127	Yes
C. Ex+Pro AM	595	264	Yes
D. Ex+Pro PM	991	158	Yes
E. Bkgnd AM	600	245	Yes
F. Bkgnd PM	978	155	Yes
G. Bk+Pro AM	616	292	Yes
H. Bk+Pro PM	1031	186	Yes
I. CumNoPro AM	689	360	Yes
J. CumNoPro PM	1130	227	Yes
K. Cum+Pro AM	705	407	Yes
L. Cum+Pro PM	1243	258	Yes

Notes:

1. 100 VPH applies as the lower threshold volume for a minor street approach with two or more lanes

Warrant 3B - Peak-Hour Delay

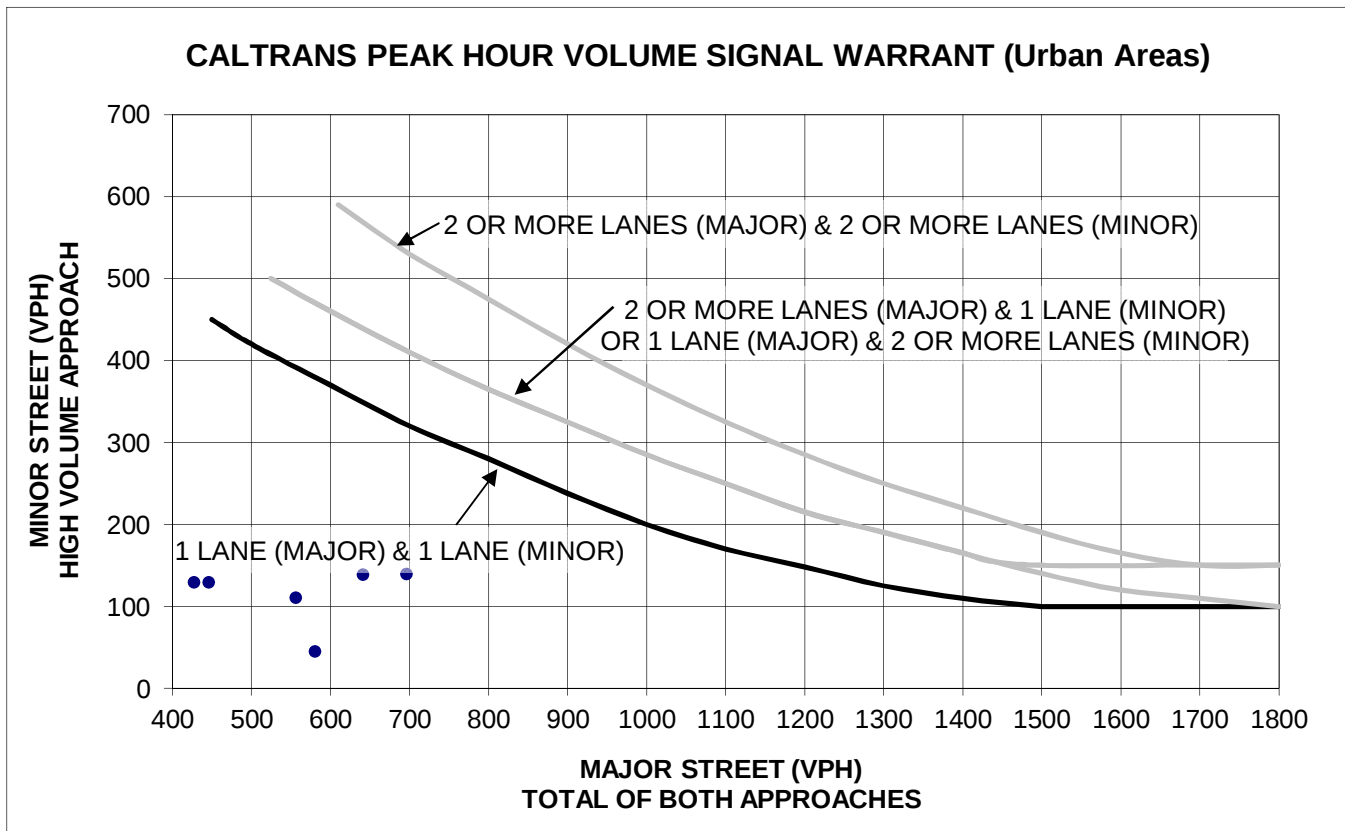
Warrant 3 (Part B) - Peak Hour Delay
State Route 156 / Buena Vista Road

<u>Number of Approaches to Intersection:</u>	4 approaches	Minimum Entering Vehicles:	800
<u>Total Entering Volumes:</u>	Existing AM: 805 vehicles	Bk+Pro AM:	917 vehicles
	Existing PM: 1065 vehicles	Bk+Pro PM:	1217 vehicles
	Ex+Pro AM: 868 vehicles	CumNoPro AM:	1058 vehicles
	Ex+Pro PM: 1149 vehicles	CumNoPro PM:	1357 vehicles
	Bkgnd AM: 854 vehicles	Cum+Pro AM:	1121 vehicles
	Bkgnd PM: 1133 vehicles	Cum+Pro PM:	1501 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 800 Veh? (Intersection)	Warrant Met?
Buena Vista	EB	Existing	AM	9	14.1	127	0.04	NO	NO	Yes	NO
Buena Vista	WB	Existing	AM	217	12.2	2647	0.74	NO	Yes	Yes	NO
Buena Vista	EB	Existing	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	Existing	PM	127	24.0	3048	0.85	NO	Yes	Yes	NO
Buena Vista	EB	Ex+Pro	AM	9	14.8	133	0.04	NO	NO	Yes	NO
Buena Vista	WB	Ex+Pro	AM	264	12.5	3300	0.92	NO	Yes	Yes	NO
Buena Vista	EB	Ex+Pro	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	Ex+Pro	PM	158	26.5	4187	1.16	NO	Yes	Yes	NO
Buena Vista	EB	Bkgnd	AM	9	14.8	133	0.04	NO	NO	Yes	NO
Buena Vista	WB	Bkgnd	AM	245	12.5	3063	0.85	NO	Yes	Yes	NO
Buena Vista	EB	Bkgnd	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	Bkgnd	PM	155	25.1	3891	1.08	NO	Yes	Yes	NO
Buena Vista	EB	Bk+Pro	AM	9	15.7	141	0.04	NO	NO	Yes	NO
Buena Vista	WB	Bk+Pro	AM	292	12.9	3767	1.05	NO	Yes	Yes	NO
Buena Vista	EB	Bk+Pro	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	Bk+Pro	PM	186	29.0	5394	1.50	NO	Yes	Yes	NO
Buena Vista	EB	CumNoPro	AM	9	17.0	153	0.04	NO	NO	Yes	NO
Buena Vista	WB	CumNoPro	AM	360	14.5	5220	1.45	NO	Yes	Yes	NO
Buena Vista	EB	CumNoPro	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	CumNoPro	PM	227	60.4	13711	3.81	NO	Yes	Yes	NO
Buena Vista	EB	Cum+Pro	AM	9	18.3	165	0.05	NO	NO	Yes	NO
Buena Vista	WB	Cum+Pro	AM	407	15.3	6227	1.73	NO	Yes	Yes	NO
Buena Vista	EB	Cum+Pro	PM	0	0.0	0	0.00	NO	NO	Yes	NO
Buena Vista	WB	Cum+Pro	PM	258	97.1	25052	6.96	Yes	Yes	Yes	Yes

- Notes:
1. Warrant based on level of service calculations. PM peak hour average approach delays are estimated.
 2. Cumult. = Cumulative

Warrant 3B - Peak-Hour Delay



Scenario	Buena Vista	Miller	Warrant
	East/West	North/South	Met?
A. Existing AM	198	102	No
B. Existing PM	267	35	No
C. Ex+Pro AM	383	130	No
D. Ex+Pro PM	383	130	No
E. Bkgnd AM	342	102	No
F. Bkgnd PM	330	35	No
G. Bk+Pro AM	427	130	No
H. Bk+Pro PM	446	130	No
I. CumNoPro AM	556	111	No
J. CumNoPro PM	580	45	No
K. Cum+Pro AM	641	139	No
L. Cum+Pro PM	696	140	No

Notes:

- 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.
- Bold line applies to intersection geometry.

Warrant 3B - Peak-Hour Delay

Warrant 3 (Part B) - Peak Hour Delay Miller Road / Buena Vista Road

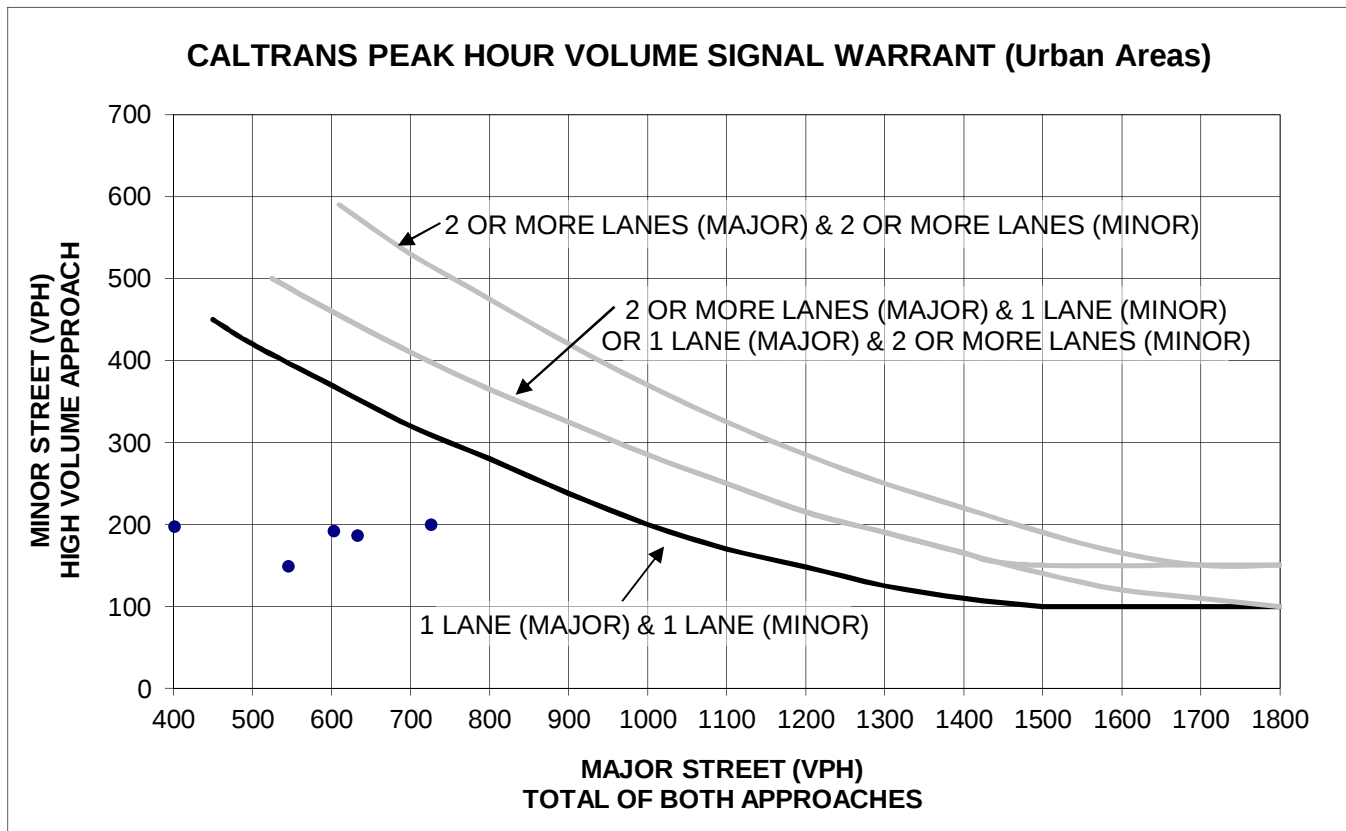
Number of Approaches to Intersection:	4 approaches	Minimum Entering Vehicles:	800
Total Entering Volumes:	Existing AM: 305 vehicles	Bk+Pro AM:	650 vehicles
	Existing PM: 307 vehicles	Bk+Pro PM:	639 vehicles
	Ex+Pro AM: 606 vehicles	CumNoPro AM:	672 vehicles
	Ex+Pro PM: 576 vehicles	CumNoPro PM:	630 vehicles
	Bkgnd AM: 449 vehicles	Cum+Pro AM:	873 vehicles
	Bkgnd PM: 370 vehicles	Cum+Pro PM:	899 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 800 Veh? (Intersection)	Warrant Met?
Miller	NB	Existing	AM	102	11.9	1214	0.34	NO	Yes	NO	NO
Miller	SB	Existing	AM	5	14.2	71	0.02	NO	NO	NO	NO
Miller	NB	Existing	PM	35	10.4	364	0.10	NO	NO	NO	NO
Miller	SB	Existing	PM	5	9.9	50	0.01	NO	NO	NO	NO
Miller	NB	Ex+Pro	AM	130	16.9	2197	0.61	NO	Yes	NO	NO
Miller	SB	Ex+Pro	AM	93	19.9	1851	0.51	NO	NO	NO	NO
Miller	NB	Ex+Pro	PM	130	15.4	2002	0.56	NO	Yes	NO	NO
Miller	SB	Ex+Pro	PM	63	13.8	869	0.24	NO	NO	NO	NO
Miller	NB	Bkgnd	AM	102	12.4	1265	0.35	NO	Yes	NO	NO
Miller	SB	Bkgnd	AM	5	15.2	76	0.02	NO	NO	NO	NO
Miller	NB	Bkgnd	PM	35	10.9	382	0.11	NO	NO	NO	NO
Miller	SB	Bkgnd	PM	5	10.3	52	0.01	NO	NO	NO	NO
Miller	NB	Bk+Pro	AM	130	18.5	2405	0.67	NO	Yes	NO	NO
Miller	SB	Bk+Pro	AM	93	22.2	2065	0.57	NO	NO	NO	NO
Miller	NB	Bk+Pro	PM	130	17.2	2236	0.62	NO	Yes	NO	NO
Miller	SB	Bk+Pro	PM	63	14.9	939	0.26	NO	NO	NO	NO
Miller	NB	CumNoPro	AM	111	17.8	1976	0.55	NO	Yes	NO	NO
Miller	SB	CumNoPro	AM	5	22.1	111	0.03	NO	NO	NO	NO
Miller	NB	CumNoPro	PM	45	14.2	639	0.18	NO	NO	NO	NO
Miller	SB	CumNoPro	PM	5	12.2	61	0.02	NO	NO	NO	NO
Miller	NB	Cum+Pro	AM	139	44.5	6186	1.72	NO	Yes	Yes	NO
Miller	SB	Cum+Pro	AM	93	46.5	4325	1.20	NO	NO	Yes	NO
Miller	NB	Cum+Pro	PM	140	32.0	4480	1.24	NO	Yes	Yes	NO
Miller	SB	Cum+Pro	PM	63	21.8	1373	0.38	NO	NO	Yes	NO

Notes:

1. Warrant based on level of service calculations. PM peak hour average approach delays are estimated.
2. Cumult. = Cumulative

Warrant 3B - Peak-Hour Delay



Scenario	Buena Vista	Westside	Warrant
	East/West	North/South	Met?
A. Existing AM	322	151	No
B. Existing PM	192	69	No
C. Ex+Pro AM	379	170	No
D. Ex+Pro PM	229	133	No
E. Bkgnd AM	338	179	No
F. Bkgnd PM	227	97	No
G. Bk+Pro AM	401	198	No
H. Bk+Pro PM	264	161	No
I. CumNoPro AM	633	187	No
J. CumNoPro PM	545	149	No
K. Cum+Pro AM	726	200	No
L. Cum+Pro PM	603	192	No

Notes:

1. 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approaching with one lane.
2. Bold line applies to intersection geometry.

Warrant 3B - Peak-Hour Delay

Warrant 3 (Part B) - Peak Hour Delay

Westside Blvd. - Westside Road / Buena Vista Road

Number of Approaches to Intersection:	4 approaches	Minimum Entering Vehicles:	800
Total Entering Volumes:	Existing AM: 480 vehicles	Bk+Pro AM:	606 vehicles
	Existing PM: 268 vehicles	Bk+Pro PM:	432 vehicles
	Ex+Pro AM: 556 vehicles	CumNoPro AM:	827 vehicles
	Ex+Pro PM: 369 vehicles	CumNoPro PM:	701 vehicles
	Bkgnd AM: 524 vehicles	Cum+Pro AM:	933 vehicles
	Bkgnd PM: 331 vehicles	Cum+Pro PM:	802 vehicles

Street	Direction	Scenario	Peak Hour	No. of Stopped Vehicles	Average Vehicle Delay (sec)	Total Vehicle Delay (sec)	Total Delay (hours)	Min. 4 Veh-Hrs of Delay? (Approach)	At least 100 Veh? (Approach)	At least 800 Veh? (Intersection)	Warrant Met?
Westside	NB	Existing	AM	151	17.6	2658	0.74	NO	Yes	NO	NO
Westside	SB	Existing	AM	7	12	84	0.02	NO	NO	NO	NO
Westside	NB	Existing	PM	69	10.3	711	0.20	NO	NO	NO	NO
Westside	SB	Existing	PM	7	10.3	72	0.02	NO	NO	NO	NO
Westside	NB	Ex+Pro	AM	170	20.9	3553	0.99	NO	Yes	NO	NO
Westside	SB	Ex+Pro	AM	7	12.6	88	0.02	NO	NO	NO	NO
Westside	NB	Ex+Pro	PM	133	11.4	1516	0.42	NO	Yes	NO	NO
Westside	SB	Ex+Pro	PM	7	10.6	74	0.02	NO	NO	NO	NO
Westside	NB	Bkgnd	AM	179	20.5	3670	1.02	NO	Yes	NO	NO
Westside	SB	Bkgnd	AM	7	12.1	85	0.02	NO	NO	NO	NO
Westside	NB	Bkgnd	PM	97	10.9	1057	0.29	NO	NO	NO	NO
Westside	SB	Bkgnd	PM	7	10.6	74	0.02	NO	NO	NO	NO
Westside	NB	Bk+Pro	AM	198	25.1	4970	1.38	NO	Yes	NO	NO
Westside	SB	Bk+Pro	AM	7	12.7	89	0.02	NO	NO	NO	NO
Westside	NB	Bk+Pro	PM	161	12.1	1948	0.54	NO	Yes	NO	NO
Westside	SB	Bk+Pro	PM	7	10.9	76	0.02	NO	NO	NO	NO
Westside	NB	CumNoPro	AM	187	150.6	28162	7.82	Yes	Yes	Yes	Yes
Westside	SB	CumNoPro	AM	7	21.2	148	0.04	NO	NO	Yes	NO
Westside	NB	CumNoPro	PM	149	19.1	2846	0.79	NO	Yes	NO	NO
Westside	SB	CumNoPro	PM	7	15.9	111	0.03	NO	NO	NO	NO
Westside	NB	Cum+Pro	AM	200	293.3	58660	16.29	Yes	Yes	Yes	Yes
Westside	SB	Cum+Pro	AM	7	24.8	174	0.05	NO	NO	Yes	NO
Westside	NB	Cum+Pro	PM	192	31.4	6029	1.67	NO	Yes	Yes	NO
Westside	SB	Cum+Pro	PM	7	17.0	119	0.03	NO	NO	Yes	NO

Notes:

1. Warrant based on level of service calculations. PM peak hour average approach delays are estimated.
2. Cumult. = Cumulative

All-Way Stop Warrant
353309 - Hollister Northwest Residential Annexation

Existing Plus Project Conditions
 Miller Road / Buena Vista Road

Major Street Approach: Buena Vista Road

≥300 vph 80% = 240

Minor Street Approach: Miller Road

≥200 vph 80% = 160

Hour	Miller Road			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Miller	Buena Vista
1 AM Peak	93	130	223	169	214	383	Yes	Yes
2 PM Peak	63	130	193	170	213	383	Yes	Yes
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8 N/A								
Average	208			383				

All-Way Stop Warrant
353309 - Hollister Northwest Residential Annexation

Background Plus Project Conditions
 Miller Road / Buena Vista Road

Major Street Approach: Buena Vista Road

≥300 vph 80% = 240

Minor Street Approach: Miller Road

≥200 vph 80% = 160

Hour	Miller Road			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Miller	Buena Vista
1 AM Peak	93	130	223	197	230	427	Yes	Yes
2 PM Peak	63	130	193	198	248	446	Yes	Yes
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8 N/A								
Average	208			436.5				

All-Way Stop Warrant
353309 - Hollister Northwest Residential Annexation

Cumulative Plus Project Conditions
 Miller Road / Buena Vista Road

Major Street Approach: Buena Vista Road
 ≥300 vph 80% = 240
 Minor Street Approach: Miller Road
 ≥200 uph 80% = 160

Hour	Miller Road			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Miller	Buena Vista
1 AM Peak	93	139	232	319	322	641	Yes	Yes
2 PM Peak	59	140	199	295	401	696	Yes	Yes
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8 N/A								
Average	215.5			668.5				

All-Way Stop Warrant

Existing Plus Project Conditions

Major Street Approach: Buena Vista Road

≥ 300 vph
80% = 240

Minor Street Approach: Westside Blvd - Westside Road

≥200 vph
80% = 160

Hour	Westside Bl. - Westside Rd.			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Westside	Buena Vista
1 AM Peak	7	170	177	97	282	379	Yes	Yes
2 PM Peak	7	133	140	48	181	229	No	No
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8								
Average			158.5			304		

All-Way Stop Warrant
353309 - Hollister Northwest Residential Annexation

Background Plus Project Conditions
 Westside Boulevard - Westside Road / Buena Vista Road

Major Street Approach: Buena Vista Road
 ≥300 vph 80% = 240
 Minor Street Approach: Westside Blvd - Westside Road
 ≥200 vph 80% = 160

Hour	Westside Bl. - Westside Rd.			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Westside	Buena Vista
1 AM Peak	7	198	205	97	298	395	Yes	Yes
2 PM Peak	7	161	168	48	216	264	Yes	Yes
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8 N/A								
Average	186.5			329.5				

All-Way Stop Warrant
353309 - Hollister Northwest Residential Annexation

Cumulative Plus Project Conditions
Westside Boulevard - Westside Road / Buena Vista Road

Major Street Approach: Buena Vista Road

≥300 vph 80% = 240

Minor Street Approach: Westside Blvd - Westside Road

≥200 uph 80% = 160

Hour	Westside Bl. - Westside Rd.			Buena Vista Road			80% met?	
	from N	from S	Both	from E	from W	Both	Westside	Buena Vista
1 AM Peak	7	200	207	324	402	726	Yes	Yes
2 PM Peak	7	192	199	239	364	603	Yes	Yes
3 N/A								
4 N/A								
5 N/A								
6 N/A								
7 N/A								
8 N/A								
Average	203			664.5				